Climate Justice Project

Making the Case for a Carbon Focus and Green Jobs in BC's Forest Industry

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SUMMARY

Healthy forests and a healthy, diversified forest industry are two things that most British Columbians agree are integral to the health and well-being of our provincial environment and economy alike. Managing for healthy forests and diversifying BC's forest product mix to include a greater number and array of higher value, solid wood products are also important tools that can be used to address the ongoing challenges of climate change.

This paper outlines what some of the key components and outcomes would be should BC choose to embrace a more carbon-focused, "green" approach to its forests and forest industry.

It concludes that there are tangible economic benefits that would flow from such an approach including:

- An additional 2,630 forest industry jobs processing logs that are currently exported from the province into solid wood, pulp and paper and bio-energy products here in BC;
- An additional 2,400 forest industry jobs processing "usable" wood waste left behind at logging operations into forest products;
- An additional 10,100 jobs (over time) with higher value forest product manufacturing; and
- An additional 5,200 seasonal jobs in tree-planting and associated tree nursery work to plant an additional 91 million seedlings per year.

The paper also concludes that current efforts to reforest public forestlands are in vital need of improvement and that a revitalized, refocused effort ought to be coordinated by a reinvigorated, more fully staffed provincial Forest Service, beginning with the immediate hiring of 200 forest inventory and research staff.

INTRODUCTION

As climate change alters BC's forests, the need for a greener, more flexible, more conservation-oriented forest industry is clear.

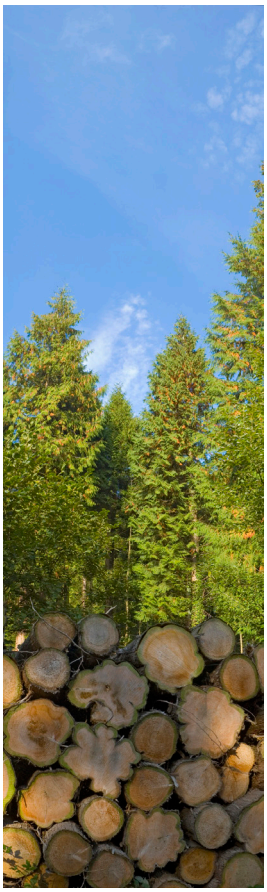
The most obvious reason why is evinced in the spectacular mountain pine beetle outbreak in BC's interior forests, an outbreak that left in its wake about one billion dead pine trees spread over an area equivalent in size to England.

As resources decline, the forest industry must do more with less both to restore health to our forests and to have healthy prospects for reasonably secure forest industry jobs in future years, particularly in the rural communities hardest hit by swings in forest industry fortunes.

The outbreak is partially attributable to climate change and a lack of severe cold weather in winter months, which allowed beetle populations to emerge in larger numbers each spring.

The vast number of trees killed by the beetles is one reason why there will be less wood for timber companies in future years, but another important factor is directly attributable to the forest industry itself.

During the beetle attack, the provincial government incentivized logging activities by reducing stumpage fees and, in some cases, waiving reforestation costs.[1] This was done to ensure that economic value was captured before the trees became unusable for conversion to standard forest products. It was also done to speed up the regeneration of most but not all logged lands with new crops of trees.[2] The end result was that the industry churned through a lot more trees than it otherwise would have, severely constraining future timber supplies.



As resources decline, the forest industry must do more with less both to restore health to our forests and to have healthy prospects for reasonably secure forest industry jobs in future years, particularly in the rural communities hardest hit by swings in forest industry fortunes.[3] But this is only one of four key changes necessary to green the province's forest industry and to better position the province's publicly-owned forests in an era of climatic uncertainty.

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1 BC forest laws stipulate that companies logging Crown forestlands must replant or reforest harvested sites. An important exception to this policy was made during the pine beetle outbreak when, as a further incentive to clear forestlands where beetle attacks had occurred, the province made an exception to the reforestation rule for so-called "small scale salvage" operations, areas of land that were cleared in patches of 10 hectares or less in size.

2 By law, companies logging pubic forests in BC are required to bring such lands back to a healthy, reforested state. (Typically this is achieved through tree planting, although companies may elect to allow logged lands to "naturally regenerate" with trees as long as stocking standards setting out how many trees must be growing on previously logged lands are met.) To promote increased logging of pine beetle-attacked forests, however, the provincial government waived such requirements on "small scale salvage" logging sites—areas of cleared forest 10 hectares or less in size. In 2009, the Forest Practices Branch of the provincial Forest Service estimated that 300,000 hectares of small scale salvage lands were insufficiently reforested. The figure is contained in a September 8, 2009 PowerPoint presentation, *Key BC Silviculture Statistics,* available at www.for.gov.bc.ca/hfp/silviculture/discussion_paper/focus.htm.

3 Ray Shultz and Al Gorley, *What is a Value-Added Forest Sector? Why is it important to Competitiveness in British Columbia?* A report for the BC Forum on Forest Economics and Policy, February 2006. In the report, it is noted that one historic advantage that BC's forest industry has had over competing jurisdictions is its "enviable supply of high quality, relatively low-cost publicly owned timber." However, the report continues, "timber supplies will decline and the primary lumber sector in the interior must contract. This reality limits the ability of the industry to grow with global demand for primary products by producing more volume. Growth in the secondary sector can help to offset reduced gross domestic product resulting from this contraction."

The second is to promote energy efficiency within the forest industry so that it continues its commendable record of reducing greenhouse gas emissions. The third is to enhance forest conservation and, where possible, financially reward individuals, companies and communities that do so. And the fourth is to pursue effective reforestation policies that ensure tree survival in light of climate change.

By doing so, we can have healthier, more resilient forests that lay the foundation for a healthier, more resilient forest industry. For such a vision to be realized, new provincial policies ought to be embraced and implemented by an adequately funded and empowered provincial Forest Service.

This paper outlines why such a green transformation is required and what its benefits would be, including:

- An additional estimated 15,330 full-time forest industry jobs;
- An additional estimated 5,200 seasonal forest industry jobs in tree planting, tree nursery and related industries; and
- Increased security for private landowners, forest companies, the public and First Nations alike from a more stable forest industry that is less vulnerable to swings in commodity markets.

The research builds on previous work by the BC office of the Canadian Centre for Policy Alternatives that focused on job losses and declining budgets in the BC Forest Service, and in particular upon a 2010 report by this author—*Managing BC's Forests for a Cooler Planet: Carbon Storage, Sustainable Jobs and Conservation*—that proposed a multi-faceted approach to elevating carbon storage in BC forests and forest products. That report recommended a dramatic new approach to managing BC's forests. This supplementary report offers additional implementation ideas, and projects the employment benefits of pursuing these recommendations.

A GREEN FOREST ECONOMY: MORE FROM LESS

Here is a provocative question posed by Rob Kozak, an associate professor of sustainable business management at the University of British Columbia's faculty of forestry:

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Kozak raises it for one reason. Douglas fir is an iconic West Coast tree species. So why are Manitobans reaping the rewards? To rub salt in the wound, why is the partially processed Douglas fir lumber used to make those windows coming not from BC but from sawmills to the south in Oregon?

The answer, Kozak believes, is that BC is too complacent. "From an economics point of view, one of the fundamental issues seems to be that the forest products sector has done

4 Rob Kozak, "Value-Added Wood Products From British Columbia—Getting Beyond the Rhetoric" *BC Forest Professional Magazine*, January—February 2007.

well for so long that it has become over-reliant on the production of commodity goods. This situation has led to what has been referred to as a culture of 'replication' as opposed to 'innovation'," Kozak says.

There is nothing inherently wrong with two-by-fours or other lumber commodities. But if we overemphasize their production, we forego opportunities in other markets; opportunities that also have immense environmental benefits.[5]

"Value-added" wood products include an array of items that begin as "primary" wood products—including two-by-fours—that are then re-processed by "secondary" manufacturers into things like those Douglas-fir window frames in Manitoba. Its outputs include furniture, cabinets, doors, window frames, flooring, mouldings, pre-fabricated houses and components, and more. In the United States alone, the value-added wood products market is worth $200 billion and is growing between 8 and 10 per cent per year. By comparison, the US softwood lumber market is about $10 billion, and prior to the significant collapse in its housing market was growing at an annualized rate of 1 to 1.5 per cent per year.

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Predictably, given the downturn in the US housing market, efforts have been made by BC's forest companies and the provincial government to increase the sale of BC forest products in other markets, most notably China. In November 2010, a trade delegation led by Pat Bell, then BC's Minister of Forests, Mines and Lands, boasted that it had set a record for lumber sales in China. After inking Chinese purchase orders to 418 million board feet of BC lumber, Bell enthused that the "incredible surge in demand" from China proved that the province's marketing efforts were "paying off in spades."[6]

But is the foray into the world's most populous and rapidly industrializing country a sound strategy for reinvigorating the health of BC's forest industry? Kozak is skeptical. First, the products shipped in growing numbers to China are overwhelmingly commodities, and many of them low-end commodities at that—raw logs or rough cut boards used for nothing more than forming concrete, boards that can easily be produced in other counties (see Table 1: BC's Raw Log and Lumber Exports to China).[7] Second, while demand grows in China for wood-frame construction, such demand is limited given demographic realities in such a rapidly urbanizing, highly populated country.

"This latest strategy to get as much wood as we can into China is setting us up for long-term failure," Kozak says. "They don't really have a wood culture and they have cities with 14 million people. There's not a lot of room for two and three-storey buildings. They need to build up."[8]

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5 Building materials made from wood are considered to be "greener," more environmentally friendly products than other conventional building products such as concrete or steel because less energy is required to produce them and therefore fewer greenhouse gases are emitted. Wood products also continue to store the carbon that the trees they came from stored. This is one reason among many that brought leading environmental organizations in BC to join with organized labour unions and the CCPA in calling for a multi-faceted approach to managing BC's forests and forest products in ways that would improve carbon storage. For more information, see Ben Parfitt, *Managing BC's Forests for a Cooler Planet: Carbon Storage, Sustainable Jobs and Conservation*, June 2010.

6 BC Ministry of Forests, Mines and Lands, "Trade Mission Sets New Record for Lumber Sales," News Release, November 5, 2010.

7 BC Stats, "British Columbia Origin Log Exports" and "BC Exports of Softwood Lumber by Destination," both available at www.bcstats.gov.bc.ca/data/bus_stat/trade.asp.

8 Rob Kozak, personal communication, February 2011.

TABLE 1: BC'S RAW LOG AND LUMBER EXPORTS TO CHINA

Year	Volume Lumber	Value Lumber	Volume Logs	Value Logs
2006	332,059 m^3	$65,267,218	93,555 m^3	$8,365,373
2007	639,230 m^3	$98,681,606	99,092 m^3	$10,710,677
2008	1,157,137 m^3	$177,366,504	199,463 m^3	$20,753,655
2009	2,507,763 m^3	$315,293,446	587,383 m^3	$37,548,046
2010	4,454,859 m^3	$667,689,971	1,136,901 m^3	$83,031,081
TOTAL	**9,091,048 m^3**	**$1,325,298,745**	**2,116,394 m^3**	**$160,408,832**

Note: 2011 should surpass 2010 in terms of total lumber and log sales to China. In the first four months of 2011, more than $2 billion cubic metres of BC lumber sold to China at a transaction price of more than $325 million and close to 900,000 cubic metres of logs sold at more than $83 million.

Source: BC Stats, "British Columbia Origin Log Exports" and "BC Exports of Softwood Lumber by Destination," both available at www.bcstats.gov.bc.ca/data/bus_stat/trade.asp.

Even if China's lumber demand grows, it will take enormous effort to close the gap with sales to the United States. In the first 11 months of 2010 as BC's trade delegation returned home from Beijing, provincial trade statistics revealed that BC lumber makers had sold $1.66 billion worth of lumber to US buyers, while selling $563 million worth of lumber products to China. But the US sales, it must be remembered, were a shadow of their former selves. When BC lumber sales to the US were at their peak just six years ago, they averaged $5 billion.[9]

The products shipped in growing numbers to China are overwhelmingly commodities, and many of them low-end commodities at that—raw logs or rough cut boards used for nothing more than forming concrete.

So if the measure of success is how much BC replaces lumber sales losses in the US with increased lumber sales in China, the province still has much work ahead of it. And the question remains: Ought that to be the goal?

One reason why *product diversification* may yield greater economic and environmental benefits than would *market diversification* is gleaned from data compiled by the provincial statistical agency, BC Stats, as well as data compiled by Natural Resources Canada, which oversees the Canadian Forest Service. In both cases, the ultimate source for the numbers is Statistics Canada's Labour Force Survey data.

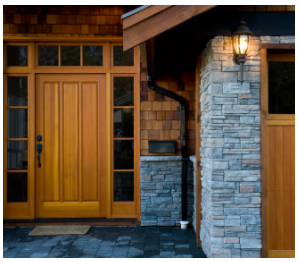
In its most recent *State of Canada's Forests* annual report for 2010, Natural Resources Canada presents employment and logging data by province. The statistics are somewhat out of synch. Logging data is presented for 2008 and employment data for 2009. However, with each province's data presented the same way, the report allows for comparisons between provincial jurisdictions.

In Ontario's case 58,700 forest industry jobs were created from a log harvest of 12.03 million cubic metres, or one full-time forest industry job for every 205 cubic metres. In Quebec, 79,700 jobs were generated from a log harvest of 23.71 million cubic metres, or one job for every 298 cubic metres. In BC, the direct forest industry job tally was roughly 52,000 from a log harvest of 61.80 million cubic metres, or one job for every 1,189 cubic metres.[10]

9 BC Stats, Softwood Lumber Exports to the USA by Province, www.bcstats.gov.bc.ca/data_bus_stat/busind/trade/SWLprov.asp.

10 Natural Resources Canada, *The State of Canada's Forests: Annual Report 2010*, 2010.

Not all provincial forests are the same, which has a bearing on outcomes and thus makes apples to apples comparisons difficult. Both Ontario and Quebec, for example, have a greater variety of hardwood trees than does BC and hardwoods are highly desired for flooring, cabinetry and furniture. But as Kozak's observation on Manitoba suggests, individual provinces can rise above limitations that are imposed on them by nature. And there's still the not inconsiderable issue of BC harvesting nearly three times more wood than Quebec and five times more than Ontario.



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What clearly separates Canada's two central provinces from its westernmost one is in the area of value-added or secondary forest product manufacturing. While BC, Ontario and Quebec have all been wracked by mill closures and massive layoffs in commodity sawmills and the pulp and paper industry, in Quebec and Ontario the output of value-added products has remained far higher than in the west. This has allowed those provinces to post more robust employment numbers despite much lower logging rates. The side beneficiary in this is the environment, because higher-value wood products are generally longer-lived, which translates into continued carbon storage.

According to BC Stats, in 2010 the output of wood products from Ontario's value-added industry totaled more than $928 million. In Quebec, that output was somewhat lower at more than $825 million. But in BC, the province considered to have the biggest, most valuable forest resource, the output from the province's value-added wood products industry was under $345 million.[11]

Among those to lament BC's underwhelming value-added performance is forest products market analyst Peter Woodbridge. Woodbridge, for one, is bullish on China. While noting that there is clearly an increase in raw logs shipped to the country as well as increases in low-grade commodity lumber and higher grade commodity lumber products, he sees opportunities to ship a far greater diversity of wood products to the country and believes those products could be made here. To do that requires understanding what is actually happening in China and then working hard to market our products and know-how. "We keep on sending to them the products we like to produce, as opposed to what they want," Woodbridge says, echoing Kozak's complacency critique.[12]

Woodbridge says that when one considers that there are currently about 7 million housing starts in China each year, that even if those housing starts are by and large high-rises, BC could be shipping far more high-value products. Included in the product mix could be dried hemlock flooring and cabinetry, higher-value hemlock door framing and all manner of custom-cut softwood pieces for furniture construction. The key to making the transition to producing far more secondary, higher-value products lies, however, in making investments here in BC, particularly investments in kilns, which dry wet wood species such as hemlock to a point where they can be worked with in ways that extract maximum value.

In a recent report prepared for the Business Council of BC, Woodbridge said the province also has "numerous market opportunities to process its solid sawn lumber, and a variety of other fibre forms (veneers, strands, tops, whole trees) into an array of higher valued

11 BC Stats, Exports of Selected Value Added Wood Products by province, 2010 ($Cdn), produced by Dan Schrier (Source: Statistics Canada).

12 Peter Woodbridge, personal communication, March 2011.

performance and structural products. It has the potential to move into a globally competitive position as a large scale, low unit cost exporter of building systems."[13]

Rather than "stick frame" construction—essentially the building of a house from scratch at the work site—finished wall panels, roof trusses and the like are manufactured in factory settings with sophisticated machinery that allows for speedy, standardized production. The finished pieces are then delivered to building sites where they are assembled faster than stick-frame construction, at less cost, with less waste and at no loss in building quality (see *Side-by-Side Building Contest* on page 8). Pacific Homes and Pacific Truss on Vancouver Island, along with Mitsui Homes in Langley, are examples of BC companies that are in this business.

Woodbridge and others believe that if and when the US housing market rebounds, shortages of skilled construction labour in the country could catalyze an expanded secondary manufacturing industry in BC. Irrespective of a rebound, house prices south of the border are expected to remain low for some time, which may act as a further incentive to homebuilders incorporating more ready-to-install components in their buildings because it will improve on presently negligible profit margins. Woodbridge says there was evidence of this transition prior to the US housing crash when some homebuilders began to invest directly in ready-to-install manufacturing facilities. With the housing industry having been hit by the shock of the downturn, however, such initiatives were scrapped, opening the door for other jurisdictions—including BC—to take advantage.[14]

Expanding BC's secondary wood products manufacturing industry, moreover, may be precisely what is needed to improve employment prospects in the province's forest industry. This is particularly true in the interior of the province where, as earlier noted, shortfalls in raw resources loom. We either continue with a commodity focus that ultimately means lumber from less trees, or we switch gears and maximize the value from each tree harvested—a strategy that would still see lumber produced, but lumber that is then recirculated to secondary mills that turn out an array of finished components.

According to BC Stats, in 2010 the output of wood products from Ontario's value-added industry totaled more than $928 million. But in BC, the province considered to have the biggest, most valuable forest resource, the output from the province's value-added wood products industry was under $345 million.

Another key to improving forest industry job prospects is to look anew at the "integrated" nature of our forest industry. Traditionally, the wood waste from sawmills has been used to power pulp and paper mills. This should continue, says the Forest Products Association of Canada. But the association believes that emerging bio-technologies could further diversify the products derived from wood waste—products to heat homes, operate vehicles, make solvents and a range of paper and engineered wood products.[15]

Key to the FPAC's vision is the continuance of an integrated industry with the "waste" from sawmills becoming the feedstock for pulp and paper mills, which are already at the forefront of using wood waste to generate energy and have the best prospects to integrate new bio-products into their traditional mills, although more research will be required to fully realize the diversified bio-products regime that FPAC and others envisage. FPAC believes such an approach is preferable to what some—including the BC government—have touted as an option: stand-alone bio-operations, such as wood pellet plants, which may

13 Peter Woodbridge, *Opportunity 2020—BC's Forest Industry*, A report for the Business Council of BC, October 2009.
14 Peter Woodbridge, personal communication, May 2011.
15 Forest Products Association of Canada. "Transforming Canada's Forest Products Industry: Clean energy, high employment, economic recovery." Background Paper. January 29, 2010.

Side-by-Side Building Contest

Building systems include wall panels and roof trusses that are made from lumber in factory settings. The completed pieces are then moved to construction sites where they are secured into place, forming the walls, floors and roofs of finished houses or multiple-dwelling buildings.

A recent project in Edmonton, Alberta highlighted the benefits of such construction. With so many people moving to the province to work in the tar sands industry, and with that industry acting as a magnet for tradespeople, there is a shortage of skilled labour for house construction.[a]

In a side-by-side comparison of two identical triplexes constructed in Edmonton in 2008, one built using traditional on-site stick construction and the other involving construction using pre-fabricated panels, the pre-fabricated building went up faster, with less on-site waste than did the building next door.

Research led by FP Innovations, Canada's largest forest research and development institute and its Forintek Division found the panelized construction took 395 hours versus 551 hours for traditional stick-frame, shortening the build-time by nearly 40 per cent. There was also 55 per cent less on-site lumber waste and 60 per cent less on-site oriented strand board (OSB) waste at the panelized construction site versus the stick-frame site.[b]

[a] Skilled labour often moves in response to declines in economic activity in one sector of the economy or in one geographical region to another; Alberta's tar sands industry being a classic example of both a region that has attracted huge pools of skilled labour at some times while shedding significant numbers of skilled labourers at others, all depending on the price of oil. Whether the advantages of using more ready-to-install components in home construction would prevail in markets where there was a large pool of cheap labour is not addressed in this paper as many variables would affect the decision to use one method over another, a significant one being house prices. For example, an abundance of cheap labour could signify a weak economy, which would likely be reflected in lower house prices. Lower house prices would likely translate into lower profit margins for home builders, who would then likely weigh the relative cost advantages of building homes with a greater number of purchased ready-to-install components versus hiring more workers to build from scratch.

[b] Statistics on the side-by-side construction comparison are contained in an informative on-line video at www.videos.lalibre.be/video/iLyROoafJePJ.html. The video does not address the important but complex question of whether or not increases in employment in one sector of the economy (the manufacture of ready-to-install building panels) would result in decreased employment in another sector, namely on-site home and building construction. However, with forest industry analysts noting a decline in the overall availability of skilled construction labour, increased panel production would likely be of net employment benefit.

take whole trees and turn them into compressed wood pellets that are transported halfway round the world to heat homes and businesses in Europe—a scenario that has been criticized by labour unions and environmentalists alike, and that even the provincial government itself has admitted may have limited economic prospects.[16]

FPAC believes over time that its "integrated" manufacturing vision would generate five times the jobs as "stand-alone" bio-energy operations such as wood pellet mills that converted whole trees to one end product.

BC's coast is logically at an advantage over the interior in pursuing both the integrated, bio-technologies future envisioned by FPAC and the diversified wood product future advocated by Woodbridge, Kozak and others, as it does not confront nearly as much the impending raw material shortages that the interior does. Although, as always, logging costs on the coast are consistently higher than in the interior of the province. Ironically, however, it is the coastal industry that is routinely passing up opportunities to diversify its product mixes by exporting the least-processed of all forest products—raw logs.

Between 2005 and 2010, the coastal forest industry exported 21.23 million cubic metres of raw logs to out-of-country buyers at a combined sales price of nearly $2.3 billion. The surge in exports has long been a concern to forest industry workers, and prompted the United Steelworkers to urge the provincial government in March 2011, to double the "fee in lieu" of manufacturing that logging companies currently pay the government when they choose to export logs. "Log exports might be making short-term profits for a handful of companies that export logs," said the union's wood council chair, Bob Matters. "But we risk destroying our domestic sawmills, pulp mills and other wood-manufacturing operations."[17]

Between 2005 and 2010, the coastal forest industry exported 21.23 million cubic metres of raw logs to out-of-country buyers at a combined sales price of nearly $2.3 billion.

The most commonly exported species was Douglas-fir—the same wood species used to generate all those secondary manufacturing jobs in Manitoba. The second-most common log exported from BC was hemlock, one of the most under-utilized of all of the province's wood types.

Had British Columbians processed those logs, an estimated 2,427 manufacturing jobs would have resulted. Instead, exports continue resulting in "shortages" of available logs domestically. That includes at sawmills like one in Ladysmith where in early March 2011, 30 workers were out of work—once again. The mill's start-up only months earlier, after a protracted shutdown of two years, was hailed at the time by then Forests Minister Pat Bell as a sign of a recovering coastal forest industry.[18] Next door to the idled mill, freshly out-of-work employees watched as work crews loaded raw logs onto ships bound for China.

16 Biocap Canada, *An Information Guide on Pursuing Biomass Energy Opportunities and Technologies in British Columbia: for First Nations, Small Communities, Municipalities and Industry*, prepared for BC Ministry of Energy, Mines and Petroleum Resources and BC Ministry of Forests and Range, February 25, 2008. The report notes that "a very significant resource of 100 million m^3 of pine beetle wood (40 million bdt) may be available for energy uses over the coming two decades. Challenges with this resource include longer term availability (decay and utilization assumptions), acquisition rights, and harvesting costs which can exceed $100/bdt (including road construction, replanting, etc.)."

17 United Steelworkers District 3, "Raise Fee on Log Exports to Create BC Jobs, Say Steelworkers," News Release, March 8, 2011.

18 Robert Barron, "Union, workers are frustrated as log shortage halts work," *The Daily News*, March 22, 2011.

"You can't say we're in a recovery on one hand while allowing the export of raw logs that is causing our mills to close again on the other," lamented Arnold Bercov, president of the Pulp, Paper and Woodworkers of Canada Local 8, who fought hard to get the Ladysmith mill re-opened, only to see it close again.[19]

For Bercov and others, a reinvigorated forest industry must be tied to maximizing returns from the trees we do log in our forests—bearing in mind that less, not more, will likely be logged in future years. Policies that promote such an outcome—linked with other policies that promote a greener industry in this era of climate change—anchor this report. Such policy changes will require a change in direction from the provincial government, which over the course of the past decade has made it far easier for forest companies to do less with more rather than more with less. Most notably, this was reflected with the decision by the province to end "appurtenancy" requirements, which compelled companies that had obtained Crown-granted logging rights to operate mills and process the wood.

ENERGY EFFICIENCY — BUILDING ON A COMMENDABLE RECORD

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The forest industry has a leg up on other industries in that the raw material it works with is a source of renewable energy. This is important because the industry is a major power consumer. To the extent that it generates more of its own power using wood waste, demand for power is reduced from unsustainable sources such as natural gas. Such environmental benefits are mirrored on the economic front. Less power consumption means lower costs.

Expanding the use of wood-based "bio-energy" is, however, contentious. Without careful planning a dramatic expansion in wood-derived energy can have negative consequences. The earth's overheating atmosphere does not particularly care whether heat-trapping gases originate in the burning of wood, coal, natural gas or oil. A tonne of CO_2 equivalent has the same impact whatever its source. So burning more wood to create energy will harm the earth's climate, although such harm will have to be considered in the broader context.[20]

Burning more wood to generate energy is also of concern for other reasons. It requires enormous amounts of wood to generate a single job in such things as wood pellet plants. A new pellet mill in the Burns Lake area, for example, will require 400,000 tonnes of wood to employ just 20 people.[21] That's one job for every 13,250 standard telephone pole's worth of wood—more than 13 times the wood needed, on average, to sustain one job in BC's forest industry.[22]

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19 Ibid.

20 For example, if the bio-energy source is a dead tree, a portion of that dead tree's carbon contents will enter the atmosphere as the tree decays. The release of carbon over time as a tree decays would then have to be weighed against the immediate release of carbon when a tree is converted into a bio-energy source.

21 BC Ministry of Forests and Range, "New Pellet Plant To Use Beetle Wood And Create Jobs," News Release, September 17, 2010.

22 One justification for such low job returns for volume of wood utilized is that much of the wood may come from dead and deteriorated pine trees that are ill-suited to conversion to other products, and therefore that this is employment that would otherwise go begging. The concern is what happens when this wood resource runs out. Would wood pellet producers then compete with other wood product manufacturers for a finite amount of raw material from healthy trees?

Where environmental and labour organizations have shown some willingness to come together on the issue of bio-energy is around limiting its usage to the so-called "waste" produced from the solid-wood side of the forest industry.[23]

Promoting a solid wood-first strategy has environmental benefits. The more long-lasting products derived from the trees that are logged, the greater the carbon storage in the forest product stream. Also, by utilizing as much wood fibre as possible in the greatest range of solid wood products it becomes easier to leave enough woody debris behind in forests that are logged to ensure healthier forest soils and biological diversity.

Promoting a solid wood-first strategy has environmental benefits. The more long-lasting products derived from the trees that are logged, the greater the carbon storage in the forest product stream.

There will, however, always be wood waste generated when round logs are turned into square or rectangular lumber and other solid-wood products. That waste stream has historically been linked to the pulp and paper sector, which has taken the wood chips and sawdust from lumber mills and used it to make paper products. The Forest Products Association of Canada, as part of its efforts to promote further use of the wood waste stream to make a range of bio-products, maintains that the best way to achieve that objective is to build on the evident successes to date. It notes that wood waste or "biomass" accounts for "60% of the sector's energy use while 87% of Canada's paper comes from recovered paper and sawmill residues." Canadian pulp and paper companies, moreover, "have raised their production levels by 8% while reducing absolute greenhouse gas emissions by 57% below 1990 levels—10 times Kyoto targets."

Furthermore, the industry continues to move in this direction with demonstrable gains in energy self-sufficiency, further reductions in overall greenhouse gas emissions, and cleaner, less polluted air in the communities in which it operates.

A good example of this is underway in Prince George where Canfor Pulp Limited is installing new equipment at its Northwood Pulp Mill.

Efforts underway by Canfor will see a new steam scrubber installed at the mill as well as significant upgrades to the mill's recovery boiler, upgrades that will increase the mill's internal production of electricity while reducing its natural gas usage.[24] Reduced dependence on purchases of gas will translate into lower operating costs and therefore improved profit margins.

Although the Northwood mill is 10 kilometres north of Prince George, its recovery boiler is the single largest source of pulp odour in town. The upgrades will cut odorous sulphur compounds by 70 per cent and reduce particulate emissions by 50 per cent. So in addition to the economic and climatic benefits associated with Canfor's latest upgrades will come improvements in air quality and the health and well-being of local residents.

Much like recent upgrades at pulp mills elsewhere in Canada, the latest changes at Canfor's mill build on earlier achievements. In the last 20 years, greenhouse gas emissions at the Northwood mill were reduced by 40 per cent as a result of various technical upgrades, which had the added benefit of improving the overall profitability of operations. With the latest upgrades complete, Canfor will bring its CO_2 emissions at Northwood down by

23 Ben Parfitt, *Managing BC's Forests for a Cooler Planet: Carbon Storage, Sustainable Jobs and Conservation*, Canadian Centre for Policy Alternatives, January 2010.

24 Pacific Carbon Trust and Canfor Pulp Limited Partnership, "Canfor Pulp, PCT Strike Carbon Offset Deal," News Release, June 16, 2010.

another 80,000 tonnes over the next three years, an achievement that it maintains will be "equivalent to taking 20,997 cars off of the road for one year, or saving 34,064,826 litres of gasoline."[25]

In conclusion, the Canfor project and others like it highlight the direction that FPAC believes a refocused forest industry should move in; one where the highest value is extracted from forest products at every step of the way from the "cornerstone" sawmills to pulp and paper mills and beyond to emerging bio-products' plants.

FORESTS, CARBON STORAGE AND THE EMERGING CONSERVATION ECONOMY

One tool to promote increased carbon storage in trees and therefore increased forest conservation may be to attach a monetary value to carbon. This may result in a range of environmental benefits including:

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- Protected carbon sinks where immense amounts of carbon are already stored, and where small increases in total carbon accumulations would continue over time as long as such forests did not succumb to fires or other natural disturbances;
- Protected watersheds and freshwater supplies; and
- Protected biological diversity and improved prospects for adaptation in response to climate change;

In addition to delivering these and other environmental benefits, such a tool may prove of economic value to dispersed rural communities (many of them First Nation communities) throughout BC.

It remains to be seen, however, what form such credits will take, whether the avoided logging of old-growth forests and/or delayed logging of second-growth forests can be monetized, whether such monetization will compare favourably with other forest management activities, including escalated reforestation activities, and whether, indeed, such projects actually deliver measurable increases in carbon storage.

David Rokoss, director of business development at Ecosystem Restoration Associates, a company that recently purchased 250,000 tonnes worth of forest-based carbon offsets from the Nature Conservancy of Canada (NCC), owner of 55,000 hectares of privately owned managed forest in BC's East Kootenay region, believes that at the present time the funds generated from forest-based carbon credits will, at best, provide landowners and perhaps local communities with "supplemental" income.[26] This will change, he believes, if and when offsetting greenhouse gas emissions becomes mandatory, as opposed to the voluntary markets that currently prevail. For that reason, and others, he believes that for communities hoping to pursue forest-related economic development opportunities in future years a mix of forest activities will be the likely outcome—a mix that includes

25 Ibid.
26 David Rokoss, personal communication, June 2011.

increased conservation and longer forest rotations made economically attractive through the growth in carbon markets, as well as some form of more traditional forest activities.

He also believes that the biggest likely initial growth in marketable carbon credits will be on private forestlands where there is greater certainty of ownership than is the case on Crown lands where questions remain over land-use designations and who will be able to claim credit—industry, government, First Nations, communities or some combination thereof—as well as who will bear responsibility for ensuring that carbon stores are maintained and not degraded.

Rokoss's belief that carbon credits will at least initially be pursued as supplemental income appears to be underscored in an historic agreement signed in December 2009 by the Haida Nation and BC government. The "reconciliation protocol" established a framework for both parties working together in a spirit of shared decision-making.[27] The agreement explicitly recognized that some forestlands on Haida Gwaii would be conserved and that there was an economic benefit that would be attached to the conservation through monetizing the value of the carbon storage potential of such forests. The agreement spelled out that any revenues associated with "future carbon offsets" would be shared between the Haida Nation and provincial government.

But the agreement also provided a range of options for future forest-related economic opportunities on the islands, including $10 million in funds from the provincial government that would assist the Haida Nation in purchasing forest tenures on the islands, presumably as a first step to the Haida Nation becoming more directly involved in forest industry operations themselves, albeit at a vastly reduced scale over the level of industry activities in decades past.

In closing, the growth in forest-based and forest products-based carbon credits may provide for future economic opportunities and assist in the further "greening" of BC's forest economy. But the jury remains out. Central to the success of an expanded forest-based carbon credit market in future years will be a credible accounting system that fully assesses the validity of forest-based credits and that ensures that the carbon storage associated with such credits is maintained over long periods of time. Whether this can be achieved remains to be seen and may have a significant influence on whether the market for such credits can grow.

Central to the success of an expanded forest-based carbon credit market in future years will be a credible accounting system that fully assesses the validity of forest-based credits.

27 Haida Nation and Province of British Columbia, Kunst'aa Guu—Kunst'aayah Reconciliation Protocol, December 11, 2009.

REFORESTATION: THE CORNERSTONE OF A GREEN FOREST ECONOMY

In 2009, then BC Premier Gordon Campbell and then Forests Minister Pat Bell released a document called *Generating More Value from our Forests*.[28] The report laid out many objectives that members of the public would have had little trouble supporting. For example, "maximizing the value" from the trees logged in the province, or "becoming a world leader in growing trees."

The report was decidedly thin, however, on the linkages between objectives. If maximizing the value of wood products is a goal, then we have to have healthy forests growing optimum numbers of trees; trees of the right type, planted in the right areas, and with an eye to our changing climate.

On-the-ground surveys of sites deemed previously to have been "successfully" restocked found that many planted trees had subsequently died and that many sites were underperforming in terms of healthy tree re-growth.

The report failed to provide any detail on the state of the province's reforested resource—a resource that appears to be in increasing trouble.

BC has in decades past demonstrated a commendable commitment to reforestation, underwriting the costs of planting hundreds of millions of trees through cost-shared reforestation agreements with the federal government. Such agreements also included funds for associated forest-tending efforts including tree-thinning, pruning and brushing programs.[29]

The programs, though, appear to have also had their problems. When forest scientists subsequently did randomly selected, on-the-ground surveys of sites deemed previously to have been "successfully" restocked they found that many planted trees had subsequently died and that many sites were underperforming in terms of healthy tree re-growth. The problems appear to be endemic and include both sites planted with public and with private funds.

Kozak's critique of the dangers of replication in forest products is also one that he applies to reforestation efforts, which, in the interior of the province where the bulk of the province's trees are found, have focused far too heavily on the planting of lodgepole pine seedlings. Lodgepole pine has become the species of choice for planting because it grows very well in open areas—which is precisely what most logged forests are. This is a key consideration when determining how to meet the provincial government's "free-to-grow" requirements.[30] But it is relatively speaking a low-value wood species. We are, Kozak fears, locking our future forest products and future forests into a low-value commodity stream.[31]

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28 Province of British Columbia, *Generating More Value from Our Forest: A Vision and Action Plan for Further Manufacturing*, March 24, 2009.

29 Ben Parfitt, *Battling the Beetle: Taking Action to Restore British Columbia's Interior Forests*, Canadian Centre for Policy Alternatives, July 2005. The report notes that between 1985-86 and 1997-98 cost-shared, federal-provincial reforestation spending averaged $164.7 million annually and resulted in the additional planting of 210.5 million trees annually. By 2004, provincial government reforestation funding had shrunk to just $3 million.

30 In 1986, forest companies in BC were required by law to successfully "reforest" any Crown forests they logged. This requirement included a stipulation that the planted trees reached "free-to-grow" or "free-growing" status, meaning that the trees grew to a height where they would successfully outcompete any other plant life. At this point, the company's obligations ended. As a result of this requirement, many companies came to rely on planting lodgepole pine trees, because the species seemed so ideally suited to speedily reaching a "free-growing" height.

31 Rob Kozak, personal communication, February 2011.

As researchers get a better handle on the success or lack thereof of previous reforestation efforts, three key issues of concern are emerging.

The first is that to make sound judgements on how healthy and bountiful our forests are we need to have sound inventories, or tree and plant counts. Critically important, we must be confident that our younger forests and forest plantations remain healthy as they age. This is an enormous task, requiring regular updating. It is a task that properly should be led by the provincial Forest Service, which has coordinated both public sector and private sector inventory efforts for years (private inventory experts—many previously employed in the public sector - have done a great deal of inventory work under contracts administered by the Forest Service) and has actively worked on the public's behalf in public forests for just under a century (the centenary is in 2012).

Critically important, we must be confident that our younger forests and forest plantations remain healthy as they age. This is an enormous task, requiring regular updating.

In 2006, the Association of BC Forest Professionals reported that its members—both professional foresters and technicians within and outside of government—were concerned over the declining state of inventory knowledge. The report, submitted to BC's chief forester, noted a drastic fall in annual provincial government budget allocations to inventory efforts from a high of $26 million in the years 1995–1997 to $6 million by the year 2000, and a corresponding decline in Forest Service inventory jobs from 188 in the early 1990s to less than 50 inventory jobs by 2004.[32] The cuts were decisive in explaining why by 2004 just 30 per cent of the province's 43 forest districts had been re-inventoried. Since the report's publication, provincial inventory staff have declined to 39 positions, including administrative support staff, and the annual budget allocation has dropped to just over $3 million.[33]

The decline in inventory budgets plays out against the backdrop of climate change—the second issue—which poses enormous challenges as temperature and precipitation patterns change, certain tree species will have more trouble growing where they currently are. The ubiquitous lodgepole pine, made even more ubiquitous by our planting efforts over the past decades, appears to be among the more vulnerable tree species in that regard. A recent study by scientists at the University of British Columbia and Oregon State University suggests that by 2080 lodgepole pine trees will likely only survive on 17 per cent of the sites where the trees are currently found in western North America.[34]

The third issue is that as government and academic researchers delve into the alleged health of the province's "successfully" reforested lands, they are finding that in many cases there are nowhere near the number of healthy trees growing as previously thought. Work led by Alex Woods, a forest pathologist with the Forest Service, found that numerous allegedly "free-growing" tree plantations were seriously under-stocked with healthy, living trees. Fully one third fell below minimum stocking targets. Many more fell well below optimum stocking levels.[35]

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32 Ian Moss, Peter Marshall and Valerie LeMay, *Assessment of the Status of Forest Inventories in British Columbia: A Summary Report*, Association of BC Forest Professionals, November 2006.

33 Ben Parfitt, *Axed: A Decade of Cuts to BC's Forest Service*, Canadian Centre for Policy Alternatives, December 2010.

34 Nicholas Coops and Richard Waring, "A process-based approach to estimate lodgepole pine (Pinus contorta Dougl.) distribution in the Pacific Northwest under climate change," *Climatic Change*, Volume 105, Numbers 1-2, 313-328.

35 Alex Woods, "Are managed stands in BC meeting expectations? If not, why not? And what are the implications?" A presentation to the Western International Forest Disease Work Conference, October 4–8, 2010, Valemount, BC.

As such research expands, it appears that two factors may explain the poor health of such lands. The first is that the "free-to-grow" requirement itself may have encouraged the over-planting of pine trees (fully 55 per cent of all trees planted in BC). The other is that pine trees may have been planted far too frequently on sites that they were ill-suited to, for example wetter sites, with the end result that trees die in unusually large numbers years after planting.[36]

Such findings suggest that more needs to be done to determine what trees are chosen for planting where, so that the tree-planting industry in the province plays the most effective role possible in setting the stage for healthier forests in future years. Because it is only with healthy forests that serious headway can be made to meet the first three objectives set out in this paper.

ECONOMIC AND EMPLOYMENT BENEFITS OF A GREENER, MORE CARBON-FOCUSED FORESTRY REGIME

More needs to be done to determine what trees are chosen for planting where, so that the tree-planting industry in the province plays the most effective role possible in setting the stage for healthier forests in future years.

The following modest estimates are based on what could reasonably be expected to occur were the forest industry and provincial government, as overseer of public forestlands, to more seriously commit to a greener forest management and forest product manufacturing regime.

They are based on a few basic principles that begin in the forest and extend out to the products derived from what trees are logged. In the forest itself, the commitment should be to encourage a healthy diversity of plant life in both conserved and managed forests. This is essential to protect biological diversity, which ensures greater forest health, and also to give our forests the best chance to adapt to a changing climate. It is also essential to ensure that forests continue to sequester maximum amounts of atmospheric carbon—carbon storage that may increasingly be monetized in emerging carbon markets.

In forests that are not conserved outright and where some level of logging will occur, the priorities (as previously outlined in *Managing BC's Forests for a Cooler Planet*) should be:

- Effective reforestation through natural seeding or the planting of seedlings that have been carefully selected to ensure that the right species are planted in the right number and variety, given climate change concerns;
- Longer "rotations" between logging cycles that allow trees to grow older and larger so that they store more carbon and accumulate more "mature" wood fibre that can then be turned into long-lasting, durable solid wood products that store carbon; and
- Maximum utilization of the usable wood from trees that are logged (with the caveat that some "woody debris" must be left behind after logging to ensure healthy forest soils and biological diversity).

36 Jean Mather, Suzanne Simard, Jean Heineman and Donald Sachs, "Decline of lodgepole pine in the southern interior of British Columbia," *The Forestry Chronicle*, Volume 86, Issue 4, 484-497, 2020.

In the forest product stream, the priorities should be to:

- Encourage maximum conversion of logs to solid wood products;
- Move the so-called "waste" (chips and sawdust) from diverse solid-wood manufacturing processes to a pulp and paper industry that anchors the emerging bio-energy industry; and
- Build the emerging bio-energy industry on wood waste, not whole trees.

Given that there is no healthy forest industry without healthy forests, and that the overwhelming area of forestland in BC is publicly owned, a properly staffed and funded provincial forest service is essential. The key priorities of a reinvigorated Forest Service should be to:

Given that there is no healthy forest industry without healthy forests, and that the overwhelming area of forestland in BC is publicly owned, a properly staffed and funded provincial forest service is essential.

- Ensure regularly updated forest inventories are conducted to assess the status of plant life in our forests;
- Conduct research into climate change and related forest management challenges; and
- Oversee provincial reforestation efforts.

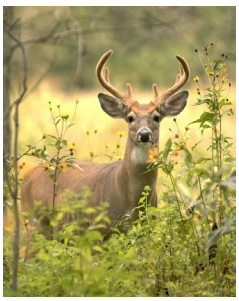
With these principles in mind, some conservatively estimated economic benefits of moving toward a greener, more carbon-focused forest management and forest product regime are:

- An additional 2,630 forest industry jobs processing logs that are currently exported from the province into solid wood, pulp and paper and bio-energy products here in BC. (This estimate is based on BC's currently underwhelming forest industry job generation and assumes one manufacturing job for every 1,345 cubic metres worth of logs.)
- An additional 2,400 forest industry jobs processing "usable" wood waste into forest products. (This estimate is based upon published data on usable wood waste at logging operations as reported by logging companies to the provincial Forest Service.)
- An additional 10,100 jobs (over time) with higher value forest product manufacturing. (This estimate sets as a modest target creating one full-time job in BC's forest industry for every 800 cubic metres worth of trees logged (one cubic metre equals one telephone pole). The modesty of this target is highlighted in tables contained in Natural Resources Canada's 2010 Annual Report, The State of Canada's Forests. The tables indicate that BC generated one full-time forest industry job, on average for every 1,189 cubic metres of wood. Ontario and Quebec respectively generated one full-time forest industry job on average for each 205 cubic metres and 298 cubic metres of wood.)
- An additional 5,200 seasonal jobs in tree-planting and associated tree nursery work to plant an additional 91 million seedlings per year. (This estimate is based on increased publicly funded reforestation efforts, the costs of which are $100 million per annum and cost-shared on a 50-50 basis between the federal and provincial governments.)

In addition to these estimated economic benefits, are likely to be increased sales of forest-derived carbon credits, examples of which are provided elsewhere in this paper.

Finally, the transition to a greener, carbon-friendly forest management regime requires an adequately staffed and funded provincial Forest Service. An immediate increase in Forest Service staff of approximately 200 positions (which would mean reinstating just 20 per cent of the slightly more than 1,000 Forest Service positions eliminated in the past decade) in the inventory and forest research departments would constitute a vital start to realizing this vision, but only a start. (In an earlier report, the author of this paper recommended the appointment of a formal commission of inquiry to review the impact of cuts to the Forest Service on provision of key public services and to make recommendations on a restructured and revitalized agency).[37]

CONCLUSIONS AND RECOMMENDATIONS



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A central challenge moving forward is that the industry—and numerous rural communities that depend disproportionately on a healthy forest industry for their economic well-being—will have less raw material to work with in future years, as a result of a looming "timber supply" crisis in the interior of the province linked to the mountain pine beetle outbreak and questionable reforestation efforts in years past.

It is essential that the province introduce new policies that encourage:

- Greater secondary forest products manufacturing;
- Maximum use of forest industry wood waste in a range of bio-products;
- Greater forest conservation (with carbon credits acting as an incentive to achieving such conservation); and
- More effective reforestation efforts.

37 Ben Parfitt, *Axed: A Decade of Cuts to BC's Forest Service*, Canadian Centre for Policy Alternatives, December 2010.

In conclusion, the following are seven suggested policy changes that ideally would form part of a mandate to a formal commission of inquiry into the state of BC's forests. Such an inquiry was advocated by the CCPA in December 2010.[38]

- End raw log exports from BC and introduce a sliding fee in lieu of further manufacturing that encourages maximum secondary wood products manufacturing in BC;
- Place BC's Forest Service in charge of coordinating all reforestation efforts on public lands and fund such efforts through a levy charged to all forest companies logging public forestlands;[39]
- Make research of climate change and its impacts on forests one of two top priorities for a revitalized, adequately staffed and funded provincial Forest Service, with the other top priority being expedited inventories that ensure that forest professionals have up-to-date information on the status of trees and other plants in publicly owned forests;
- Fund a new round of cost-shared, federal-provincial reforestation activities;
- Legislate minimum levels of investment in existing or new mills as a condition of logging tenures or a return of allocated timber to the Crown, pending an expedited forest tenure review that considers a full range of options to boost domestic lumber and secondary forest products manufacturing;
- Publish a clear set of rules outlining how carbon credits would be used to encourage both forest conservation and increased energy efficiencies in the forest industry; and
- Increase government-supported marketing efforts that promote higher-value, solid wood products.

Legislate minimum levels of investment in existing or new mills as a condition of logging tenures or a return of allocated timber to the Crown, pending an expedited forest tenure review that considers a full range of options to boost domestic lumber and secondary forest products manufacturing.

In order for such a transition to be realized, a strong overseeing and coordinating role must be played by a reinvigorated provincial Forest Service. The challenges posed to publicly owned forests by climate change demand it.

38 Ibid.

39 The provincial Forest Service already oversees reforestation efforts on Crown forestlands where timber is auctioned by BC Timber Sales. Under such sales, part of the money paid by the winning bidder to the provincial government is used to cover reforestation costs. Under this recommendation, all logging companies would pay a levy. This does not necessarily mean increased costs for the companies, which by law must reforest those lands that they log. The provincial government would then coordinate all reforestation efforts. This recommendation is made because of the evident problems that are emerging with poor tree health on many reforested sites, and the need for a central agency with a great deal of forest health expertise to take the broader view and coordinate efforts.

CLIMATE JUSTICE PROJECT

The Climate Justice Project is a multi-year initiative led by CCPA and the University of British Columbia in collaboration with a large team of academics and community groups from across BC. The project connects the two great "inconvenient truths" of our time: climate change and rising inequality. Its overarching aim is to develop a concrete policy strategy that would see BC meet its targets for reducing greenhouse gas emissions, while simultaneously ensuring that inequality is reduced, and that societal and industrial transitions are just and equitable.

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