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British Columbia's Forest Industry and the Regional Economies

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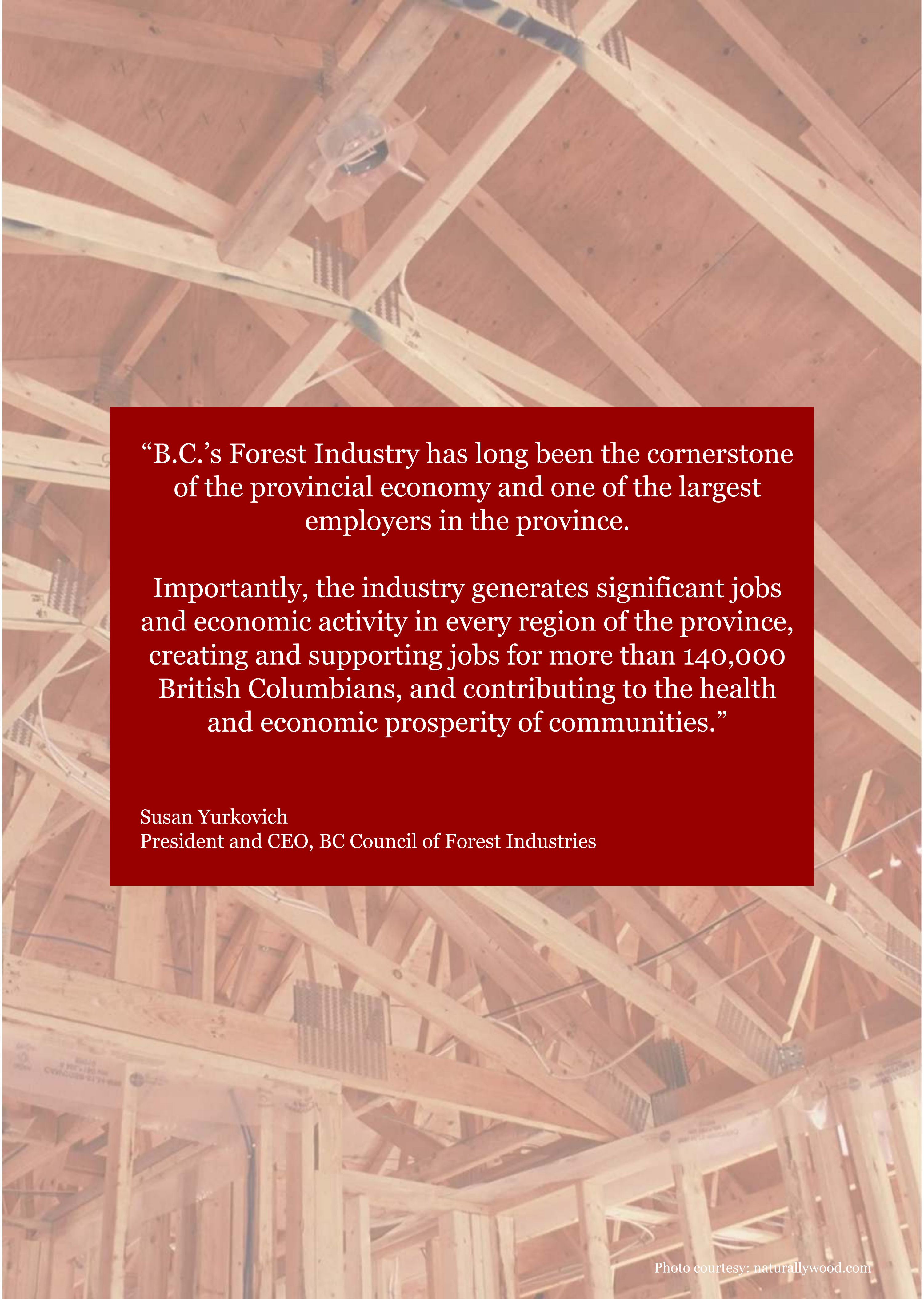

Photo courtesy: naturallywood.com

"B.C.'s Forest Industry has long been the cornerstone of the provincial economy and one of the largest employers in the province.

Importantly, the industry generates significant jobs and economic activity in every region of the province, creating and supporting jobs for more than 140,000 British Columbians, and contributing to the health and economic prosperity of communities."

Susan Yurkovich
President and CEO, BC Council of Forest Industries

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5,315 Indigenous people, making up 9%, are directly employed in the B.C. Forest Industry

Forestry and B.C. Regional Economies

NORTHEAST REGION
- One in five jobs in the region
- Two of the three OSB mills in B.C.

CARIBOO REGION
- 22% of jobs
- B.C.'s largest lumber producing region

NORTH COAST & NECHAKO REGION
- 19% of jobs
- More than 7,500 local jobs

THOMPSON-OKANAGAN REGION
- More than 20,000 jobs
- 10 plywood, veneer and panel mills

VANCOUVER ISLAND/ COAST REGION
- More than 21,000 jobs
- Produces the most pulp and paper of any region

MAINLAND/SOUTHWEST REGION
- More than 40% of the province's total forest industry jobs, including indirect and induced
- 45% of the forest industry's total contribution to provincial GDP

KOOTENAY REGION
- 10% of jobs
- Eight post and pole mills, the most of any region in B.C.

Executive summary

Forestry and B.C.'s Regional Economies

In 2017, PwC undertook a study ("2017 Study") for the BC Council of Forest Industries ("COFI") to assess the economic footprint of the B.C. Forest Industry's ongoing operations and capital spending in the province as a whole, based on 2016 data. (See page 6 for a definition of the "B.C. Forest Industry", also referred to as the "Forest Industry" for purposes of this report). The 2017 Study was published in September 2017, and provided the following highlights:

- The Forest Industry makes a significant contribution to the British Columbian economy, generating and supporting more than 140,000 jobs (direct, indirect and induced) in the province and a total labour income of $8.56 billion.
- The Forest Industry employs an equivalent of almost 60,000 direct jobs.
- Total contribution of the Forest Industry to the Gross Domestic Product ("GDP") in the province is almost $13 billion through direct, indirect, and induced impacts.

This Study uses the same data as the 2017 Study but takes a regional view to assess the economic footprint of the Forest Industry in regional economies of the province. BC Stats divides the province into seven development regions, and these regions are used as the basis of this Study.

Forestry is highly interdependent across B.C.

The supply chain of the B.C. Forest Industry is highly interdependent between all regions of the province. As an export dependent industry, forestry produces a diverse range of products, shipped to more than 100 countries around the world, while at the same time being economically relevant to each and every region of the province. As goods are manufactured, the materials from forestry - whether they are logs, chips, partially processed or finished goods - flow freely between regions of the province, generating economic footprint and jobs across B.C.

More than 8% of jobs in 5 regions of B.C. are dependent on forestry

As indicated above, in 2016 the B.C. Forest Industry generated and supported a total of 140,728 jobs, which is one in every 17 jobs in the province. At a regional level, the Forest Industry supports 8% to 22% of jobs in five of seven regions.

Key Findings

- ➔ The B.C. Forest Industry generates significant economic activity in **every region of the province**.
- ➔ In five of seven regions, the Forest Industry supports 8% to 22% of jobs.
- ➔ The Forest Industry is the major employer in many communities, generating **1 in 5 local jobs** in three regions alone: Cariboo (22%), Northeast (20%) and North Coast & Nechako (19%).
- ➔ More than **40%** of the province's total Forest Industry jobs are located in the Mainland/Southwest region.

The Forest Industry direct employment outside of the Mainland/Southwest region is significantly higher than Agriculture and Mining and Oil & Gas Extraction direct employment in those regions. This suggests that the Forest Industry plays a big role in supporting remote regions.

More than 5,300 Indigenous peoples are employed by the forest industry

The B.C. Forest Industry employs 5,315 Indigenous peoples directly, which accounts for about 9%, or 1 in 11 jobs in the forest industry. In comparison, Indigenous peoples account for about 5% of the total workforce in British Columbia. B.C.'s forest industry employs more Indigenous peoples than any other resource sector, and the forest industry continues to work with Indigenous peoples, the B.C. government and others to increase involvement in the forest sector through employment, contracting and business opportunities.

The Forest Industry generates significant economic activity in every region of B.C.

The B.C. Forest Industry contributes GDP and employment to the provincial economy, which in turn generates government revenue and labour income. The B.C. Forest Industry generated and supported a total of $12.9 billion to GDP in 2016, of which $5.3 billion was directly generated by forestry and is spread out among all seven regions, ranging in share from 8% to 23%. Indirect and induced GDP made up an additional $7.6 billion.

Introduction

PwC was retained by COFI to estimate the economic footprint of each of the seven development regions of British Columbia ("B.C." or the "province"), as defined by BC Stats, and to present our findings in this report ("Report"), along with case studies to highlight aspects of the B.C. Forest Industry in each of the regions.

The economic data for this Study is based on data collected for a study released in September 2017, also prepared by PwC ("2017 Study"). The 2017 Study assessed the 2016 economic footprint of the B.C. Forest Industry's ongoing operations and capital spending in the province as a whole, and outlined various other features benefiting the province. No additional data from COFI members has been collected for this Study.

PwC has relied on the information provided by participating B.C. companies regarding the operating and capital expenses of the companies' business operations in B.C. as well as the information presented in each of the spotlight pages of this Report.

For purposes of this Report, the B.C. Forest Industry includes both the Coast and Interior regions and is defined to include the following three industry sub-sectors of the North American Industry Classification System ("NAICS"):

- Forestry, Logging and Support (NAICS 113)
- Wood Product Manufacturing (NAICS 321)
- Paper Manufacturing (NAICS 322)

Throughout the Report, the term 'Forestry and Logging sub-sector' refers to only NAICS 113. 'B.C. Forest Industry', 'Forest Industry', or 'Forestry' refers to the economic activities of all three sub-sectors.

In the regional snapshots:

- Agriculture includes Agriculture (NAICS 111, 112, 115) and Food, Beverage and Tobacco Product Manufacturing (NAICS 311 and 312).
- Mining / Oil & Gas includes Mining, Oil & Gas Extraction and Petroleum and Coal Product, Chemical, and Plastics and Rubber Products manufacturing (NAICS 21, 324, 325 and 326).
- Employment data for sectors with <1,500 employees is suppressed, so not all comparisons are complete.

The fundamental philosophy behind economic impact analysis is that spending on goods and services has attendant impacts throughout the economy. For instance, wood product manufacturing will generate demand for the inputs to this process (such as tools and labour) that in turn generate additional demand that extends beyond the initial spending.

Our analysis permits the estimation of this cascading effect using the IMPLAN input-output model based on inter-industry relationships of the B.C. economy estimated by Statistics Canada.[1]

Based on our 2017 study, the provincial employment multiplier is calculated as 2.35.[2] The value of the estimated multiplier depends on specific sectors included in the Forest Industry as well as assumptions of the input-output model used to derive the economic footprint estimates, such as accounting for linkages between Forest Industry segments and the interpretation of induced economic impact. Induced effects are the increased sales within the region from household spending of income earned in the Forest Industry and supporting industries. In our model, we consider the entire employment generated by the spending of income earned in the Forest Industry and supporting industries as induced employment. Other models may only consider a portion of such employment when calculating the induced effects.

Unless otherwise noted, all dollar amounts in this Report are expressed in Canadian currency.

[1] IMPLAN is a widely used and accepted economic impact modeling software employed by governments, academia and business.
[2] The multiplier is defined as (direct+indirect+induced effects) / (direct effects), also referred to as 'Type II Multiplier'.

Methodology

For the purpose of this Report, economic factors were calculated for the following measures of economic activity:

- **Output** – the total gross value of goods and services produced, measured by the price paid to the producer.[3] Output double counts the value of intermediate inputs and so GDP is usually a preferable measure of economic activity.[4]
- **Value added or GDP** – the value added to the economy, or the output valued at basic prices less intermediate consumption[5] valued at purchaser's' prices. GDP includes only final goods to avoid double counting of products sold during a certain accounting period.
- **Employment** – the number of jobs created or supported.
- **Taxes on production and products** – the amount of tax revenues generated from taxes on products (e.g., trading profits, gas tax, sales taxes, and excise taxes) and taxes on production at the federal, provincial and municipal levels (e.g., property taxes).
- **Personal income tax** – the amount of provincial tax revenues generated from taxes on the income of employees and self-employed individuals.
- **Corporate income tax** – the amount of provincial tax revenues generated from taxes on the profits of corporations.

Economic impacts are typically estimated at the direct, indirect and induced levels:

- **Direct impacts** result from a company's spending on suppliers and employees.
- **Indirect impacts** arise from the activities of the firms providing inputs to a company's suppliers (in other words, the suppliers of its suppliers).
- **Induced impacts** are the result of consumer spending by employees of the businesses stimulated by direct and indirect expenditures.
- **The total economic impact** equals the sum of the direct, indirect, and induced economic impacts.

A complete explanation of the approach, methodology used in this Report is included as **Appendix B.**

[3] Note that for imported goods and services, only the margins realized above and beyond the initial payment to the foreign supplier have an effect on the Canadian economy.
[4] For example, when a consumer purchases a car, the value of the car is added to GDP, but the measure 'output' would include the value of the car, as well as the value of items that were purchased by the car manufacturer from other suppliers such as tires, steering wheel, and engine (i.e., intermediate inputs), thus double-counting these values.
[5] Defined as the value of goods and services used or transformed as inputs by a process of production.

Interdependency of the B.C. Forest Industry


Boards [1]

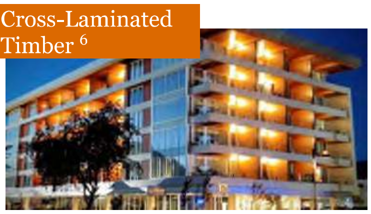

Dowel-Laminated Timber [2]


OSB [3]

Chips [4]


Log homes [3]


Paper [5]


Cross-Laminated Timber [6]


Pulp [7]


Decking [3]


Lumber [3]


Shingles [3]

Photo credits: 1 - Gorman Brothers, 2 - StructureCraft, 3 - naturallywood.com, 4 - PwC, 5 - Domtar, 6 - Structurlam, 7 - West Fraser

Across British Columbia, forest companies produce a range of products. There is a substantial interdependency between the sub-sectors of the B.C. Forest Industry, and any changes to one sub-sector could have implications for others. For example, significant interdependency exists between the harvesting sector and the manufacturing sector; the harvesting sector cannot operate without a market for the logs for further processing, and the manufacturing sector cannot employ people without access to appropriate fibre.

The regional industries of B.C. are also interdependent, with fibre moving between geographic regions at different stages of processing. For example, some logs are harvested in one area and the logs or chips are transported to mills for processing. Or lumber that is first processed in one region is shipped to a different region for further processing or consumption. Not only is there significant interdependency for solid wood, but also between solid wood and pulp and paper.


Photo courtesy: naturallywood.com

Although chips are considered a by-product of sawmills, the revenue from chip sales is a large component of a sawmill's financial operations, so without a healthy pulp and paper sector that purchases chips, earnings generated by sawmills would be reduced. Equally, pulp and paper mills need readily available, affordable access to chips for their raw input in order to be viable.

Until recently, coastal pulp mills have sourced about 25% of their fibre requirements (residual chips and sawdust) from Interior sawmills. The volume of chips sourced from the Interior has been declining over the past few years due to Allowable Annual Cut ("AAC") reductions, catastrophic wildfires and mill closures. The Interior chip supply is expected to decline further, creating a significant fibre shortage.

The Wood Product Manufacturing sector includes a significant volume of secondary manufacturing, also referred to as re-manufacturing or value added. Specifically, besides sawing logs into lumber products, this sub-sector also includes preserving wood products, improving the natural characteristics of the wood, making reconstituted wood panel products or engineered wood assemblies, and making other wood products such as millwork. All of these further processed products begin with logs and lumber, so are highly dependent on the sustainability of the primary sector.

Sustainable Forest Management

B.C. is a global leader in sustainable forest management, meeting the environmental, social and economic needs of current and future generations. Stringent forest laws, skilled forestry professionals, comprehensive monitoring, compliance and enforcement strengthen B.C.'s role in forest management and sustainability.

Forest lands across B.C. are largely located on Crown land. which makes up 95% of the provincial land base. The provincial government legislates and regulates forest practices and sets harvest levels on Crown land. Its activities include: collecting and maintaining a comprehensive forest inventory, projecting growth, conducting strategic analysis, developing policy initiatives, conducting Timber Supply Reviews, and setting timber harvest levels across the province given biological, economic and social objectives. In fact, a fraction of 1% of B.C.'s forests (approximately 200,000 hectares) is harvested annually. By law, these lands are reforested promptly, with three trees being planted for every tree harvested.

Photo courtesy: naturallywood.com

B.C. Forest land base in perspective

Cariboo Region

Almost ¼ of province's Forest Industry direct GDP

1 in 5 jobs directly attributable to the Forest Industry

Directly employs more than three times the region's Agriculture, Mining and Oil & Gas industries

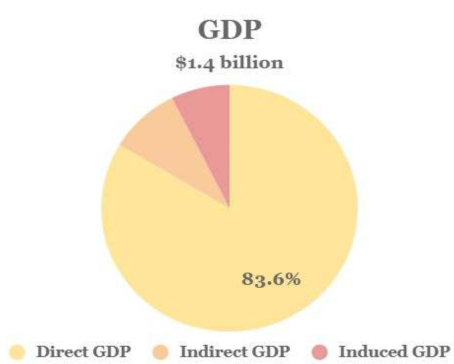
B.C.'s largest lumber producing region, with 30% of the province's lumber capacity

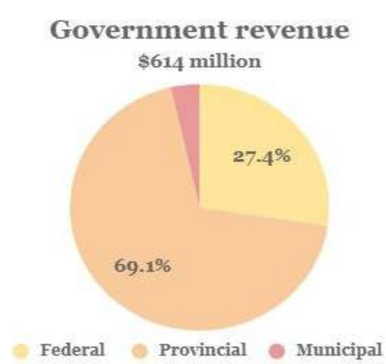
Importance of the Forest Industry in the Cariboo

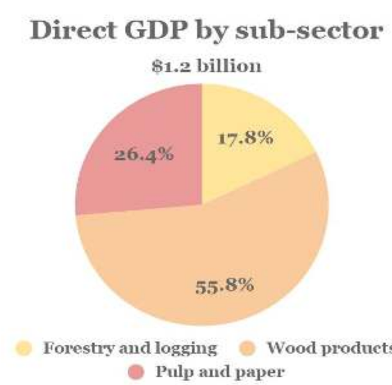
➔ **$1.4 billion** is the GDP generated and supported by the Cariboo Forest Industry.

➔ **17,170 total jobs**, including direct, indirect and induced jobs, are created and supported by the Cariboo Forest Industry, which is 22% of the entire Cariboo region workforce.

➔ **$1.1 billion** of labour income is generated and supported by the Cariboo Forest Industry.



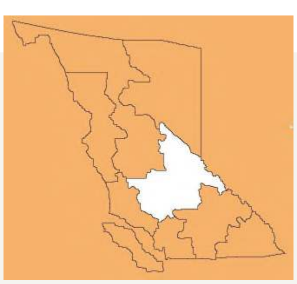




Major production facilities:
The Cariboo Forest Industry is dominated by softwood lumber. Wood product manufacturing accounts for 56% of the direct GDP of the region's Forest Industry. The region's Forest Industry accounts for 23% of the direct GDP of the provincial Forest Industry.

There are 14 large sawmills (> 40 million fbm); six plywood, veneer and panel mills; and seven pulp and paper facilities in the region.

Regional Snapshot: Cariboo



Region total:		**Direct resource industry jobs:**	
Population	156,494	Agriculture, with associated manufacturing	1,600
Jobs	78,800	Mining/Oil & gas, with associated manufacturing	2,500
		Forest Industry, with associated manufacturing	14,492

Spotlight: *Improving forest management with LiDAR*

Since B.C.'s first sawmill opened in 1847, the story of forestry across the province has been one of leadership and innovation. Through the use of new technology, the forest sector continues to advance practices that further improve the quality of information used by forestry professionals while also enhancing worker safety and productivity.

A recent advancement is the use of light detection and ranging ("LiDAR"), a remote sensing technology that can provide a model of the forest cover, understory vegetation, and ground surface.

West Fraser Timber Co. Ltd. ("West Fraser") uses LiDAR in its Quesnel area based tenure operations to get a better picture of the terrain below the trees. "We were an early adopter of the LiDAR technology in B.C. forestry," said West Fraser Quesnel Woods Manager Stuart Lebeck. "For us, it provided big improvements in understanding the underlying land so we can develop better locations for roads, identify potential safety issues before we arrive on site, improve our selection of areas to conserve or protect in harvest planning and support better seedling planting approaches to improve the forest regrowth. LiDAR gives us much better information more efficiently than we could develop through on-the-ground surveys."

LiDAR works by measuring the time it takes for laser impulses emitted from the device to be reflected to the sensor which is mounted to an airplane, developing a three-dimensional picture of the area below.

This picture of the terrain below the trees provides better information on the landscape, including steep terrain, areas of slope instability, waterways such as streams and lakes, and wildlife habitats. The technology has rapidly improved since West Fraser first began using it, and has enormous potential to be used to develop a complete forest inventory for the province.

LiDAR is particularly powerful in developing forest inventory where data is currently not readily accessible or easy to develop on a large scale. Newer versions of LiDAR can distinguish tree species, heights and approximate age class, and even some indicators of forest health more efficiently and accurately than current inventory measurement methods.

Gathering this data with LiDAR improves the accuracy and currency of B.C. forest health information, supporting government decisions about sustainable forest harvesting, improving wildlife management and improving safety on the ground through more accurate environmental data.

Forestry has been a driving force in the B.C. economy for well over 150 years. Applying technology such as LiDAR is another example of the evolution of this industry and B.C.'s global leadership in the sustainable management of our forests.

Photo courtesy: naturallywood.com

"For companies, LiDAR significantly improves safety plans for forest activities, it reduces planning costs and time needed in the field. LiDAR also improves fiber supply management by increasing the accuracy of knowledge about the size and species of trees arriving at mills, which helps to ensure every log is optimally utilized to produce a wide range of sustainable wood products."

Stuart Lebeck, Manager, West Fraser Timber, Quesnel Woods.

Thompson-Okanagan Region

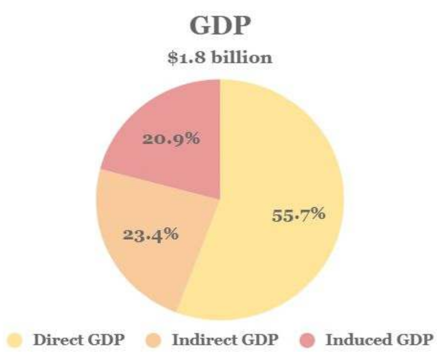
Wood product manufacturing accounts for over 70% of direct Forest Industry GDP

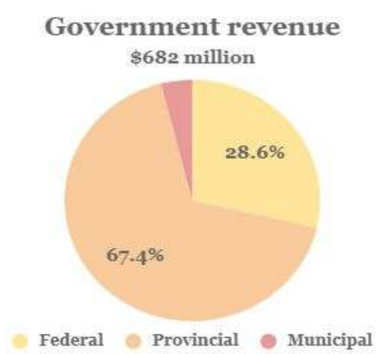
20,283 jobs created and supported by the Forest Industry

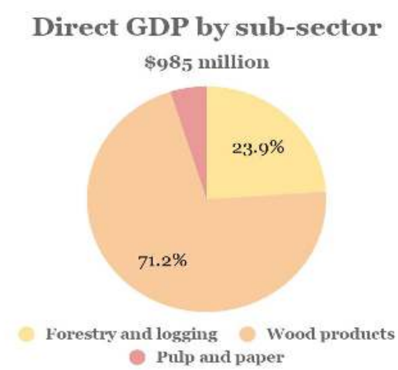
Home to 10 plywood, veneer, and panel mills, the most of any region in B.C.

Importance of the Forest Industry in the Thompson-Okanagan

- ➔ **$1.8 billion** is the GDP generated and supported by the Thompson-Okanagan Forest Industry.
- ➔ **20,283 total jobs**, including direct, indirect and induced jobs, are created and supported by the Thompson-Okanagan Forest Industry, which is 8.2% of the entire Thompson-Okanagan region workforce.
- ➔ **$1.3 billion** of labour income is generated and supported by the Thompson-Okanagan Forest Industry.

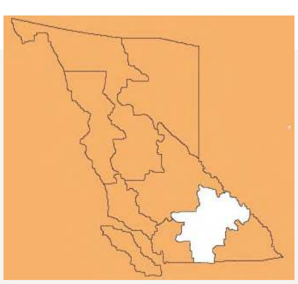






Major production facilities:
The Thompson-Okanagan region has the highest capacity of plywood, veneer and panel mills in the province as well as the highest capacity of post and pole mills. The wood product manufacturing sub-sector accounted for over 70% of the direct GDP of the Thompson-Okanagan region.

Regional Snapshot: Thompson-Okanagan



Region total:		**Direct resource industry jobs:**	
Population	546,287	Agriculture, with associated manufacturing	9,100
Jobs	248,300	Mining/Oil & gas, with associated manufacturing	7,400
		Forest Industry, with associated manufacturing	11,552

Spotlight: B.C.'s Forest Industry is locally grown

B.C.'s Forest Industry has long been the backbone of the economy in the province. In 1951, Gorman Bros. lumber was founded by two brothers and their spouses as a way of supplementing a fruit farming income that had been impacted by a harsh winter. Now in its third generation of management, the company maintains the family interest and the values that it was founded upon. "Many of our employees have second or even third generation family members working at our plants. The adage that we are one big family applies. The matriarch of the family, at 97 years old, still comes in on Fridays to join the staff for their coffee break!" In the nearly seven decades since they were first established, Gorman Group has grown to employ 1,200 people across an additional four communities.

Today, four of the five divisions are the largest economic driver and employer in the communities where they are located. Gorman Group high-value products showcase the natural beauty of wood in home finishing. Gorman Group produces one-inch boards used for the interior finishing and renovation markets, and produces cedar products used for applications such as siding and decking in the exterior home finishing and renovation market. Any by-products from the milling process are re-manufactured into other products, so virtually nothing goes to waste and the most value possible is generated. Today, Gorman Group products are in demand in 30 countries around the world.

"The founders believed strongly in treating others the way they would want to be treated. Creating a safe environment, both physically and psychologically, and trusting in people's abilities encouraged an entrepreneurial thinking which has led to a culture that is focused on generating and extracting value wherever possible."

Nick Arkle, Co - CEO, Gorman Group

Photo courtesy: Gorman Brothers

Vancouver Island/Coast Region

Forestry is the largest resource sector on Vancouver Island

21,310 jobs created and supported by the Forest Industry

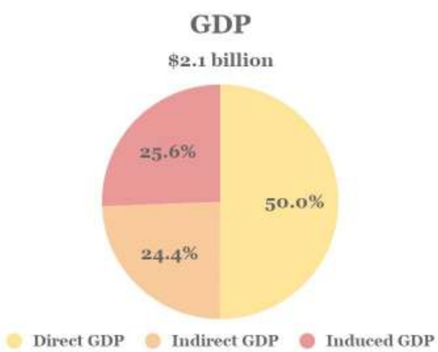
Highest pulp and paper capacity, at 39% of the province

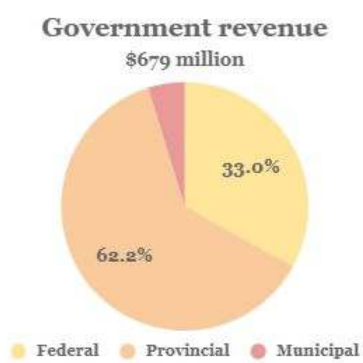
Importance of the Forest Industry to Vancouver Island/Coast

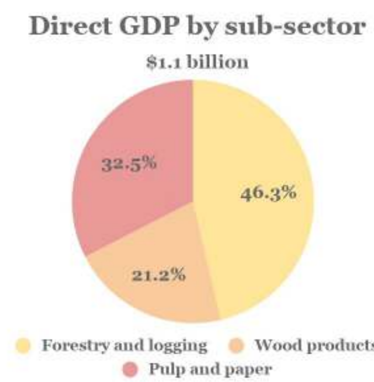
➔ **$2.1 billion** is the GDP generated and supported by the Vancouver Island/Coast Forest Industry, which is 16% of the provincial Forest Industry GDP.

➔ **21,310 total jobs**, including direct, indirect and induced jobs, are created and supported by the Vancouver Island/Coast Forest Industry, which is 6% of the entire Vancouver Island/Coast region workforce. Other than the Mainland/Southwest region, this is the only region where the Forest Industry supported more indirect and induced employment, than direct employment generated.

➔ **$1.4 billion** of labour income is generated and supported by the Vancouver Island/Coast Forest Industry.







Major production facilities:
Forestry and Logging is the major sub-sector in the region, accounting for nearly half of the region's direct GDP.

Vancouver Island/Coast pulp and paper mills have a total capacity of 2.5 million tonnes, which is the highest of all regions, and 39% of the total provincial pulp and paper capacity. Of the seven pulp and paper facilities in this region, four produce only market pulp and three others produce paper.

Regional Snapshot: Vancouver Island/Coast

Region total:		**Direct resource industry jobs:**	
Population	776,011	Agriculture, with associated manufacturing	7,700
Jobs	366,500	Mining/Oil & gas, with associated manufacturing	1,800
		Forest Industry, with associated manufacturing	9,621

Spotlight: *Leader in sustainable forest management*

B.C.'s sustainable forest management plays a role in how Canada will meet its carbon emissions targets for the long term, and contributes to climate change mitigation in a number of ways. As temperatures rise and the threat of wildfires and pest infestations increase, the B.C. government and the forest sector are working together to protect against such threats. One of the avenues being pursued includes seed innovation.

The Ministry of Forests, Lands, Natural Resource Operations and Rural Development manages a breeding program where trees are selected for their superior genetic characteristics, which can include pest resistance or drought resilience. These trees are then sent to participating industry groups who manage seed orchards. The sample is grafted onto a seedling stock and once it has taken root, it becomes a parent-tree ready for breeding and replicating its resilient genetic characteristics.

At Mosaic Forest Management's Mount Newton Seed Orchard in Saanichton, the focus is on producing conifer seeds with genetic characteristics selected for superior growth, form and pest resistance. The seedlings are then raised by private companies and replanted into harvested areas.

"Our Seed Orchard team works hard to increase the level of genetic gain of their seed every year, meaning that the seedlings planted on our land base will grow bigger and faster without sacrificing wood quality or stem form – all while making sure the trees will be resilient to climate change," says Domenico Iannidinardo, Vice President, Forest & Sustainability and Chief Forester, Mosaic Forest Management.


Photo courtesy: Mosaic Forest Management

To ensure a better chance of success, seed movement is restricted and managed by the B.C. government. The Forest Genetics Council of BC, a Crown agency, was established to coordinate genomics, research, genecology, tree breeding, seed orchards, cone and seed pest management and responses to climate change.

"As we look to the future of the forest industry in B.C., innovations such as seed adaptation and assisted migration, along with B.C.'s sustainable forest management system, will help to ensure that B.C. continues to have a vibrant forest sector for years to come."

Domenico Iannidinardo, Vice President, Forest & Sustainability and Chief Forester, Mosaic Forest Management


Photo courtesy: Mosaic Forest Management

Mainland/Southwest Region

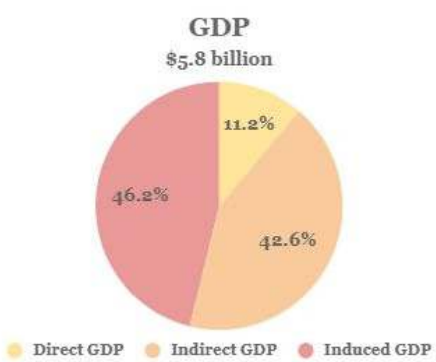
$5.8 billion GDP generated and supported by the Mainland/Southwest Forest Industry

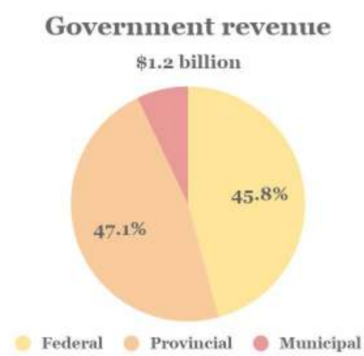
80% of the provincial Shake and Shingle production

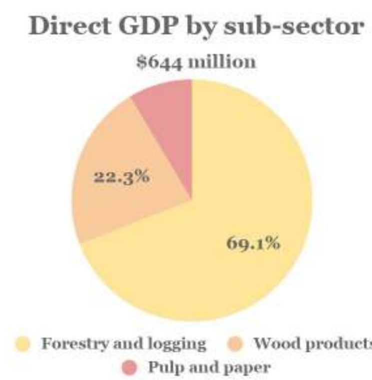
Home to over 40% of the total jobs generated and supported by the entire provincial Forest Industry including indirect and induced

Importance of the Forest Industry in the Mainland/Southwest

- **$5.8 billion** is the GDP generated and supported by the Mainland/Southwest Forest Industry.
- **59,533 total jobs**, including direct, indirect and induced jobs, are created and supported by the Mainland/Southwest Forest Industry, which is 4% of the entire Mainland/Southwest region workforce.
- **$3.4 billion** of labour income is generated and supported by the Mainland/Southwest Forest Industry.

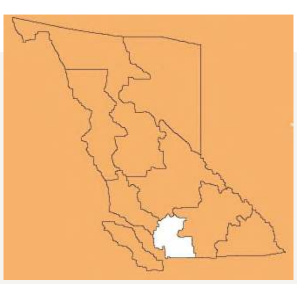






Major production facilities:
The wood product manufacturing sub-sector accounted for almost 70% of the direct GDP in the Mainland/Southwest region. This sub-sector includes facilities manufacturing products such as glulam, cross-laminated timber, mouldings and baseboards. The Mainland/Southwest region has a capacity of 1.5 million ft² of Shake and Shingle production, which is the highest in the province and 80% of the 2016 provincial total.

Regional Snapshot: Mainland/Southwest



Region total:		**Direct resource industry jobs:**	
Population	2,852,070	Agriculture, with associated manufacturing	39,000
Jobs	1,537,300	Mining/Oil & gas, with associated manufacturing	15,700
		Forest Industry, with associated manufacturing	6,636

Spotlight: *Exports and value-added application*

Forest product manufacturing generates jobs and export opportunities for B.C. communities

B.C. is known worldwide for the quality and variety of its forest products. With products ranging from lumber, finished building materials, engineered wood products and millwork to bioenergy products and pulp and paper, B.C. companies manufacture a wide array of forest products that meet an extensive range of needs.

On top of contributing to products used locally in B.C., these manufacturers also contribute to significant export opportunities for our province. 90% of forest products from B.C. are shipped throughout North America and internationally, which in 2017 represented 32% of the province's total exports ($14.1 billion in lumber, pulp and paper and other wood products). Diversifying markets to include overseas opportunities is key to ensuring a strong B.C. Forest Industry.

For B.C.'s value-added products, most exports are to the U.S. (94%). The proximity and transportation advantages, common language and similar business practices make the U.S. a key target for the small businesses that constitute most of the sector. The major overseas markets for value-added applications are Japan and the European Union at approximately 4% combined.

Every September, BC Wood hosts the Global Buyers Mission, a three-day information and networking event held in Whistler, B.C. It provides an opportunity for wood products companies from B.C. and Canada to build relationships with approximately 400 wood buyers from around the world, and to showcase their superior wood products.

Manufacturing takes place across B.C., benefiting both urban and small communities. Of the approximately 450 forest product manufacturers listed in the province's naturally:wood Supplier Directory, 55% are located in the Lower Mainland and the Fraser Valley, while the remaining 45% of manufacturers operate out of other regions of B.C.


Photo courtesy: naturallywood.com
Photographer: Katsuhisa Kida


Photo courtesy: naturallywood.com

Northeast Region

$579 million is the GDP generated and supported by the Northeast Forest Industry

20% of jobs in the Northeast region are created or supported by the Forest Industry

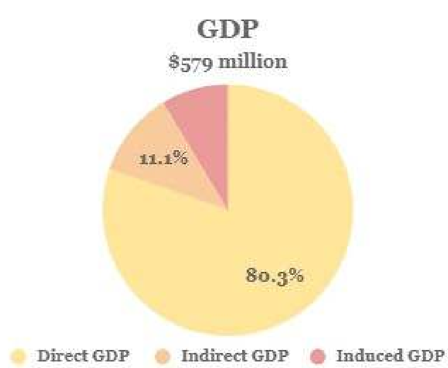
Two of the three OSB mills in B.C. are in the Northeast region

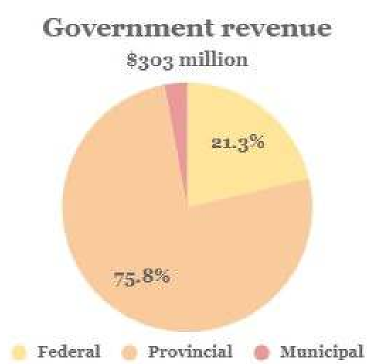
Importance of the Forest Industry in the Northeast

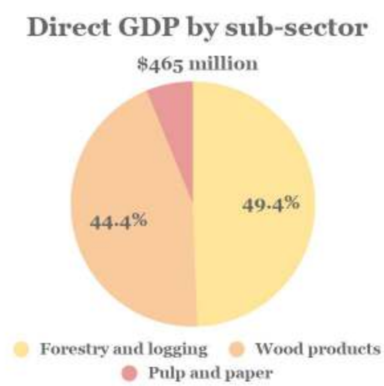
➔ **$579 million** is the GDP generated and supported by the Northeast Forest Industry.

➔ **7,702 total jobs**, including direct, indirect and induced jobs, are created and supported by the Northeast Forest Industry, which is 20% of the entire Northeast region workforce.

➔ **$422 million of labour income is generated and supported by the Northeast Forest Industry.**

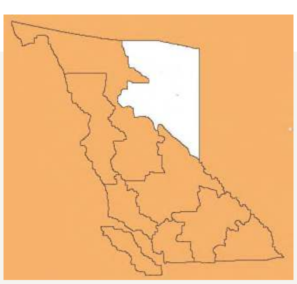






Major production facilities:
The Northeast Forest Industry is dominated by the Forestry and Logging sub-sector and the wood product manufacturing sub-sector, which together accounted for almost 94% of the direct GDP of the Northeast Forest Industry. The Northeast region has 63% of the provincial OSB capacity, spread between its two mills.

Regional Snapshot: Northeast



Region total:		Direct resource industry jobs:	
Population	68,353	Agriculture, with associated manufacturing	Not available
Jobs	39,100	Mining/Oil & gas, with associated manufacturing	4,800
		Forest Industry, with associated manufacturing	6,422

Spotlight: *New product manufactured here in B.C.*

B.C.'s Forest Industry is adapting, evolving, innovating and investing in our province. Louisiana-Pacific Corporation ("LP") recently spent over $150 million to convert its existing OSB plant in Dawson Creek to manufacture engineered wood siding called Smartside Lap Siding, and has become the first plant to produce this product in Canada.

This engineered wood siding has been treated to withstand impacts, freeze-thaw cycles, high humidity and fungal decay. Used on the exterior of homes, it showcases the natural beauty of wood sourced from sustainably managed forests.

This project will improve LP's competitiveness in the North American market and provide economic stability for the plant and the region by offering a diverse product. It will also create jobs for an additional 65-70 people, and generate approximately $5,750,000 in additional local salary annually. As a spin-off effect, more than 200 additional indirect jobs will be created in the Dawson Creek community and surrounding areas.

Construction on this project began in August, 2017 and production of the new product began early in 2019.

"Dawson Creek made sense to us on many fronts. We can quickly bring quality siding products to market using a facility that is already doing that with OSB products."

Neil Sherman, Executive Vice President, Louisiana-Pacific Corporation

Photo courtesy: Louisiana-Pacific

Photo courtesy: Louisiana-Pacific

Kootenay Region

10% of jobs created and supported by the Forest Industry

Forest Industry creates and supports the second largest number of jobs in the region, after Mining/Oil & Gas sector

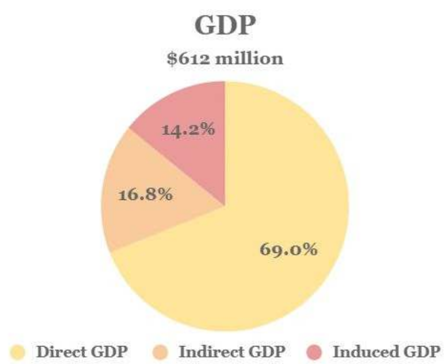
Eight post and pole mills - more than in any other region in B.C.

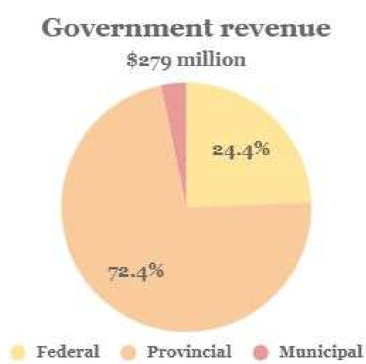
Importance of Forest Industry in the Kootenays

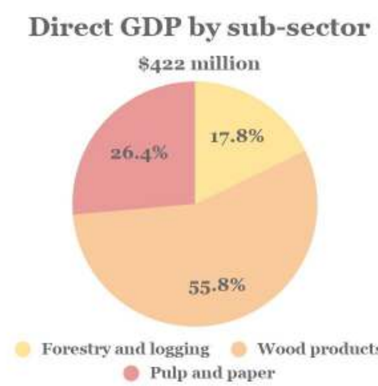
➔ **$612 million** is the GDP generated and supported by the Kootenay Forest Industry.

➔ **6,872 total jobs**, including direct, indirect and induced jobs, are created and supported by the Kootenay Forest Industry, which is 10% of the entire Kootenay region workforce.

➔ **$442 million** of labour income is generated and supported by the Kootenay Forest Industry.

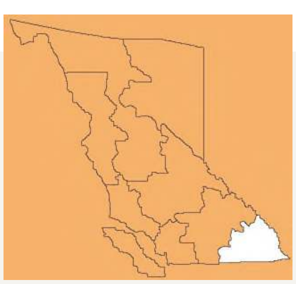






Major production facilities:
The wood product manufacturing sub-sector accounted for 46% of the direct GDP of the Kootenay Forest Industry. The Kootenay region has the province's second highest capacity of post and pole mills, spread across its eight mills.

Regional Snapshot: Kootenay



Region total:		Direct resource industry jobs:	
Population	151,403	Agriculture, with associated manufacturing	Not available
Jobs	67,400	Mining/Oil & gas, with associated manufacturing	6,200
		Forest Industry, with associated manufacturing	4,760

A first for B.C. and the world: Brock Commons Tallwood House sees wood reach new heights

Brock Commons Tallwood House is an innovative student residence at the University of British Columbia ("UBC"). At the time of completion in 2017, it was the tallest contemporary mass timber hybrid structure of its kind in the world, standing at 18 storeys.

By adding capacity for just over 400 residents, Brock Commons not only helps the university meet its mandate of increasing student housing on campus, it also demonstrates UBC's commitment to sustainability. The use of mass timber in place of more carbon intense building materials realized a carbon benefit equivalent to taking 511 cars off the road for a year. Prefabrication of the mass timber also reduced on-site waste by about two-thirds as well as decreasing traffic and transportation to and from the site. All of this was achieved while maintaining a perfect site safety record.

"Wood is increasingly recognized as an important, innovative and safe building material choice. This new tall wood building reflects UBC's leadership in sustainable construction and our commitment to providing our students with more on-campus housing," says Santa J. Ono, UBC's President.

The building clearly proved the case for tall wood and mass timber hybrid buildings as an alternative to traditional concrete-steel construction materials and building systems.

"A key achievement for the Brock Commons project is the design of an innovative mass timber structural system that is genuinely economically viable, repeatable and adaptable to other building typologies and uses. The project will positively impact the wood, development and building industries in British Columbia."

Russell Acton, Principal, Acton Ostry Architects Inc.

Building with local engineered wood benefits multiple B.C. regions

Although constructed in Vancouver, Brock Commons delivered economic benefits to multiple regions of B.C. where the wood was sourced, manufactured, prefabricated and then installed on site.

Penticton-based Structurlam manufactured the glue-laminated timber columns and the cross-laminated timber floors. The wood for these mass timber products was supplied by Canfor, Interfor and West Fraser and sourced from B.C. communities including Elko, Radium, Castlegar, Chase and Grand Forks.

The parallel strand lumber used in a number of the structural columns was supplied by Weyerhaeuser's Annacis Island (Delta) facility. Seagate Structures from Langley completed the wood installation.

Gaining international attention, Brock Commons Tallwood House is creating new market opportunities for B.C. wood products and building technologies.

North Coast & Nechako Region

Second highest capacity of provincial pellet production, spread over four pellet mills

Directly employs over 6,400 people, which is more than the entire manufacturing sector in the region

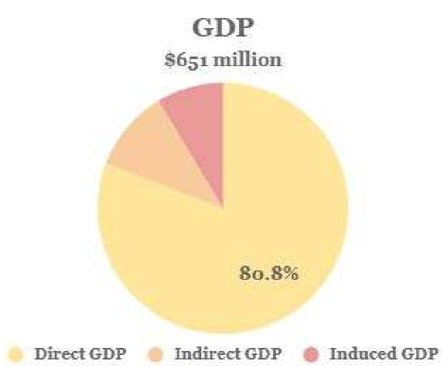
19% of region's jobs created or supported by the Forest Industry

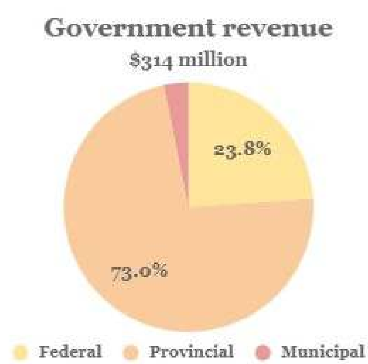
Importance of Forest Industry in the North Coast & Nechako

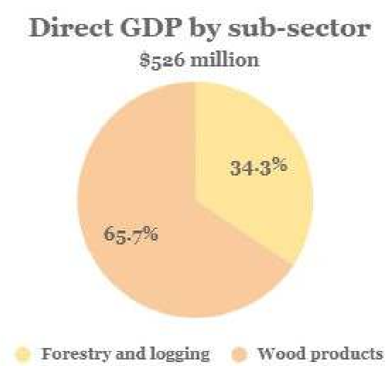
➔ **$651 million** is the GDP generated and supported by the North Coast & Nechako Forest Industry.

➔ **7,858 total jobs**, including direct, indirect and induced jobs, are created and supported by the North Coast & Nechako Forest Industry, which is 19% of the entire North Coast & Nechako region workforce.

➔ **$497 million** of labour income is generated and supported by the North Coast & Nechako Forest Industry.

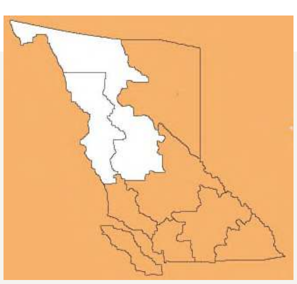






Major production facilities:
Wood product manufacturing is the major sub-sector of the North Coast & Nechako Forest Industry, and accounted for over 65% of the forest industry's direct GDP of the region. This region has the second highest capacity in the province for both sawmills and pellet mills.

Regional Snapshot: North Coast & Nechako



Region total:		**Direct resource industry jobs:**	
Population	94,136	Agriculture, with associated manufacturing	Not available
Jobs	42,100	Mining/Oil & gas, with associated manufacturing	Not available
		Forest Industry, with associated manufacturing	6,417

Spotlight: Partnering for a stronger future

In 2005, the Lax Kw'alaams First Nation purchased Tree Farm License ("TFL") No. 1, near Terrace, B.C. With an unemployment rate at around 80%, the Nation invested with the vision of generating a long-term source of revenue and jobs for the community. The band's company, Coast Tsimshian Resources ("CTR") has become very successful in the region.

"It was a risk for us; we made the move to purchase the TFL during a time of a lot of economic turmoil, globally and within our own community. But we were committed to building our own sustainable source of income to support the economic well being of our members."

Carl Sampson, Director of Business & Employment, Lax Kw'alaams Business Development Ltd.

A & A Trading Ltd., a B.C. based forestry company, is a partner of CTR, providing management and marketing services. "By combining the strengths of A & A Trading and CTR we bring added value to the Lax Kw'alaams forestry operation," said John Mohammed, President, A & A Trading Ltd. "Our focus is on CTR's success and we do this on the foundation of a respectful, transparent, and long-term relationship."

CTR has turned an economically challenged tenure into a profitable venture that provides direct benefits to the community. The CTR project is connected to a diverse customer base across the globe which supports revenues and ability to supply domestic manufacturers.

The company's annual revenues are between $12 and $26 million, and it employs 60 to 80 full-time workers in logging, trucking, and longshoring, as well as creating indirect jobs and economic spinoffs in the region.

Photo: Lax Kw'alaams Councillors look over the dryland sort while on an operations tour of the band-owned forest company, Coast Tsimshian Resources.

In fact, logs from CTR make up half of the supply shipped through Tidal Coast Terminal in Prince Rupert where more than one-third of employees are Indigenous.

Building on revenue from the forestry operations has created a strong backbone for the Lax Kw'alaams' economic interests, allowing them to diversify into other areas. The band's economic development arm owns a real estate holding company, has an equity position in a lumber transload facility, and has a water taxi business and a cedar mill. It also holds multiple joint ventures, including a helicopter charter business, and has opened a fish processing plant that employs 100 people.

Growing Indigenous participation

5,315 Indigenous peoples[6] are directly employed in the Forest Industry in B.C.

Indigenous peoples account for about 9% of the workforce in the Forest Industry

Indigenous employment is greater in the Forest Industry than in other natural resource sectors in B.C.

Indigenous employment

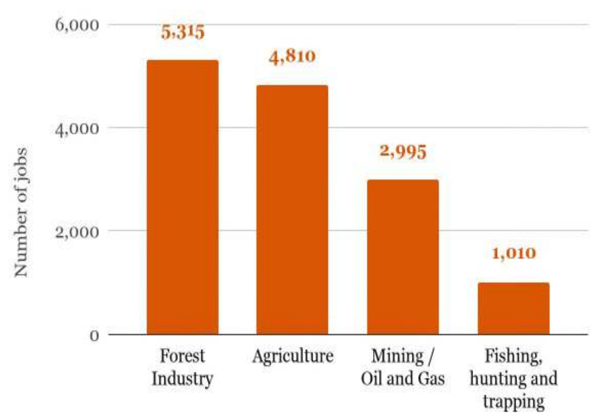
The Forest Industry employs 5,315 Indigenous peoples directly, which is about 9%, or 1 in 11 jobs in the Forest Industry[7]. In comparison, Indigenous peoples account for about 5% of the total workforce in British Columbia. The Industry continues to work with Indigenous peoples, the B.C. government and others to increase involvement in the forest sector through employment, contracting, joint ventures and business opportunities.

Indigenous direct employment in the B.C. Forest Industry

Of the 5,315 Indigenous peoples employed in the Forest Industry, approximately 47% are in the wood product manufacturing sector, 43% in the forestry and logging sector, and 10% in the paper manufacturing sector.

Indigenous direct employment in B.C. — natural resource industry comparisons

Forestry and logging, wood product manufacturing and paper manufacturing sub-sectors combined employ more Indigenous peoples than any other resource sector in B.C.



[6] Indigenous participation is defined as those who reported as 'aboriginal identity'. 'Aboriginal identity' includes persons who are First Nations (North American Indian), Métis or Inuk (Inuit) and/or those who are Registered or Treaty Indians (that is, registered under the Indian Act of Canada) and/or those who have membership in a First Nation or Indian band. Aboriginal peoples of Canada are defined in the Constitution Act, 1982, section 35 (2) as including the Indian, Inuit and Métis peoples of Canada.

[7] Data tables, 2016 Census, Statistics Canada

Spotlight: *Building collaborative relationships with First Nations*

The operating activities of the forest sector fall within the traditional territories of many First Nations in B.C., and the sector recognizes the deep connection that First Nations have with the land and forests that have sustained Aboriginal communities for hundreds of years. Building respectful and mutually beneficial relationships with First Nations is integral for the future of a sustainable industry in B.C. Through significant consultation, as well as other initiatives, the Forest Industry is taking steps to enhance and strengthen these relationships.

Contracting and B2B relationships

In addition to employment, Indigenous participation in the Forest Industry is strong in the contracting sector. COFI members have contracting relationships with Indigenous and First Nations companies around the province, with contract agreements totaling approximately $110 million in 2017. These agreements include activities such as logging, road construction, silviculture, firefighting, professional services, and cultural heritage services. Opportunities in the contracting sector continue to grow, and the Forest Industry is working on initiatives to increase the overall participation of Indigenous contractors.

In addition to contracting agreements, business-to-business ("B2B") relationships between COFI members and First Nations are significant, and include joint ventures, forest management agreements, purchase of wood, and marketing among others. These relationships totaled approximately $160 million in 2017.

Capacity payments, skills training and scholarships

Support for capacity building and funding towards skills training and scholarships support help build meaningful relationships and are foundational to training the next generation of Indigenous workers, managers and business owners in the Forest Industry. COFI members provide funding to First Nations and Indigenous peoples for a range of activities across the province, including youth programs, cultural activities, general assemblies, scholarships, skills training and education, with $4.7 million contributed in 2017.

Partnerships

COFI members partner with several First Nations across the province. Some recent examples of partnerships entered into in 2017 include:

➨ Canfor and Conifex have collaborative agreements with the Prince George Nechako Aboriginal Employment and Training Association ("PGNAETA"), committing to Aboriginal job seekers to improve the recruitment and retention process. In 2018, Canfor launched a work experience program in Prince George in collaboration with PGNAETA. The program provided participants with hands-on work experience and development opportunities. PGNAETA has recognized Canfor's interest in partnering with potential Aboriginal employees to enter the workforce in forestry-related disciplines with its first-of-its-kind Spirit of Unity Award in 2016 and its Leadership Excellence Award in 2017.

➨ Western Forest Products fostered a relationship with the Huu-ay-aht First Nations through the sale of three properties in 2017, including a dry land sort. Through a series of agreements, the parties established a long-term lease of the dry land sort, concluded an agreement to harvest 200,000 cubic metres of timber from Huu-ay-aht lands and created an employment and training agreement that seeks to increase the number of Huu-ay-aht citizens participating in the forest sector.

➨ In 2017, Interfor entered into an historic five-year agreement with the shíshálh Nation in Sechelt, B.C., that includes mutual commitments to annual forestry projects, joint decision-making and a process for ensuring that forestry operations are conducted in a manner that upholds shíshálh Nation laws.


Photo courtesy: Interfor

Photo courtesy: naturallywood.com

Appendices

Appendix A

Limitations

Data limitations: PwC has relied on the information provided by participating B.C. companies regarding the operating and capital expenses of the companies' business operations in B.C. as well as the information presented in each of the spotlight pages of this report. PwC has relied upon the completeness, accuracy, and fair presentation of all information and data obtained from participating B.C. companies, COFI, and the various data sources set out in **Appendix D**, which were not audited or otherwise verified. The findings in this report are conditional upon such completeness, accuracy, and fair presentation, which have not been verified independently by PwC. Accordingly, we provide no opinion, attestation or other form of assurance with respect to the results of this study.

Where the information or data provided is not sufficient to conduct the analysis that has been requested, we have made assumptions, as noted throughout the Report.

Receipt of new data or facts: PwC reserves the right at its discretion to withdraw or make revisions to this Report should we receive additional data or be made aware of facts existing at the date of the Report that were not known to us when we prepared this Report. The findings are as of July 2018 and PwC is under no obligation to advise any person of any change or matter brought to its attention after such date which would affect our findings.

Input-output analysis: Input-output analysis (a model used to estimate the economic footprint) does not address whether the inputs have been used in the most productive manner or whether the use of these inputs in this industry promotes economic growth by more than their use in another industry or economic activity. Nor does input-output analysis evaluate whether these inputs might be employed elsewhere in the economy if they were not employed in this industry at the time of the analysis. Input-output analysis calculates the direct, indirect and induced economic impacts that can reasonably be expected to affect the economy based on historical relationships within the economy. This analysis does not take into account fundamental shifts in the relationships within the economy that may have taken place since the estimation of inter-industry relationships by Statistics Canada, nor shifts that may take place in the future.

Location quotient: A location quotient is a statistical technique that measures a region's industrial specialization relative to a larger geographic unit. A location quotient is usually constructed from regional employment by sector/industry. This approach provides estimation of the economic footprint across regions based on the assumptions that labour productivity and production process in any given industry are homogeneous in these regions. Therefore, this approach is usually applied to a smaller geographic/administrative scale (e.g., within a province).

Use limitations: This Report has been prepared solely for the use and benefit of, and pursuant to a client relationship exclusively with, COFI. We understand that COFI intends to make our Report publicly available upon its submission. COFI can release this Report only in its entirety and any commentary or interpretation in relation to this Report that COFI intends to release to the public either requires PwC's written consent or has to be clearly identified as COFI's own interpretation of the Report. PwC accepts no duty of care, obligation or liability, if any, suffered by COFI or any third party as a result of an interpretation made by COFI of this Report.

Further, no other person or entity shall place any reliance upon the accuracy or completeness of the statements made herein. In no event shall PwC have any liability for damages, costs or losses suffered by reason of any reliance upon the contents of this Report by any person other than COFI.

This Report and related analysis must be considered as a whole: Selecting only portions of the analysis or the factors considered by us, without considering all factors and analysis together, could create a misleading view of our findings. The preparation of our analysis is a complex process and is not necessarily susceptible to partial analysis or summary description. Any attempt to do so could lead to undue emphasis on any particular factor or analysis.

Appendix B
Approach and methodology

Scope of Review

This Study was prepared using:

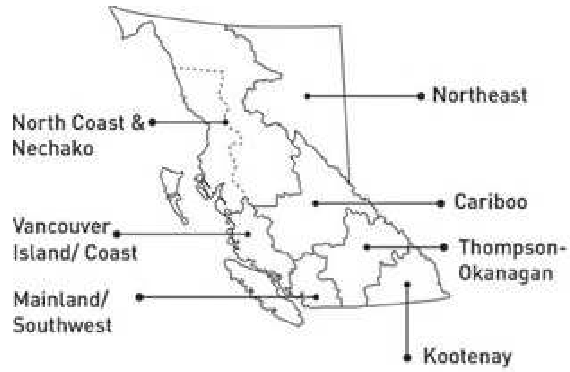
- Results of the 2017 Study, including economic footprint estimates of the B.C. Forest Industry and results of a business information survey sent to forest companies operating in B.C.,
- Secondary data from BC Stats and B.C. Ministry of Forest, Lands, Natural Resource Operations and Rural Development,
- Information provided by COFI, including discussions with staff and a number of case studies related to the B.C. Forest Industry, and
- PwC research.

A complete list of the documents and sources we have reviewed is provided in **Appendix D**.

Study Objectives and Methodology

The objective of this Study is to estimate a regional economic footprint of the B.C. Forest Industry using the same underlying core economic data from the 2017 Study. Specifically, for the purpose of this Report we have conducted an economic footprint assessment of the Forest Industry in each of the seven development regions of British Columbia:

- Cariboo
- Kootenay
- Mainland/Southwest
- North Coast & Nechako
- Northeast
- Thompson-Okanagan
- Vancouver Island/Coast



The fundamental philosophy behind economic impact analysis is that spending on goods and services has attendant impacts throughout the economy. For instance, wood product manufacturing will generate demand for the inputs to this process (such as tools and labour) that in turn generate additional demand that extends beyond the initial spending. Our analysis permits the estimation of this cascading effect using the IMPLAN input-output model based on inter-industry relationships of the B.C. economy estimated by Statistics Canada.

The input-output model used for the purpose of this Report estimates the relationship between a particular economic activity for a given good or service and the resulting impacts throughout the economy (including demand for other goods and services and tax revenues).

For the purpose of this Report, economic factors were calculated for the following measures of economic activity:

- **Output** – the total gross value of goods and services produced, measured by the price paid to the producer.[1] Output double counts the value of intermediate inputs and so GDP is usually a preferable measure of economic activity.[2]

[1] Note that for imported goods and services, only the margins realized above and beyond the initial payment to the foreign supplier have an effect on the Canadian economy.
[2] For example, when a consumer purchases a car, the value of the car is added to GDP, but the measure "output" would include the value of the car, as well as the value of items that were purchased by the car manufacturer from other suppliers such as tires, steering wheel, and engine (i.e., intermediate inputs), thus double-counting these values.

- **Value added or GDP** – the value added to the economy, or the output valued at basic prices less intermediate consumption[3] valued at purchasers' prices. GDP includes only final goods to avoid double counting of products sold during a certain accounting period.
- **Employment** – the number of jobs created or supported.
- **Taxes on production and products** – the amount of tax revenues generated from taxes on products (e.g., trading profits, gas tax, sales taxes, and excise taxes) and taxes on production at the federal, provincial and municipal levels (e.g., property taxes).
- **Personal income tax** – the amount of provincial tax revenues generated from taxes on the income of employees and self-employed individuals.
- **Corporate income tax** – the amount of provincial tax revenues generated from taxes on the profits of corporations.

Economic impacts are typically estimated at the direct, indirect and induced levels:

- **Direct impacts** result from a company's spending on suppliers and employees.
- **Indirect impacts** arise from the activities of the firms providing inputs to a company's suppliers (in other words, the suppliers of its suppliers).
- **Induced impacts** are the result of consumer spending by employees of the businesses stimulated by direct and indirect expenditures.
- The **total economic impact** equals the sum of the direct, indirect, and induced economic impacts.

We also estimated additional government revenue generated and facilitated by the B.C. Forest Industry in each development region, including:

- **Stumpage** – a fee that businesses or individuals pay when they harvest timber from Crown land in B.C.
- **Rent** – annual rent for tenures and permits that serves to assert the government's interest in its property and resources, and provides compensation for reserving them in favour of the tenure or permit holder.
- **Logging tax** – tax that applies to individuals or corporations that have income from logging operations on private or Crown land in B.C.
- **Fee in lieu of manufacture** – export fees paid to the B.C. government for timber exported.
- **Payments to BC Hydro** – sales of electricity to the B.C. Forest Industry.

In order to allocate an economic footprint that was originally estimated at a provincial level to each of the seven development regions of B.C., we have applied a location quotient to each industry affected by the B.C. Forest Industry. A location quotient is an analytical statistic that measures a region's (in this case, each of the seven development regions) industrial specialization relative to a larger geographic unit (B.C.). We compute the location quotient as an industry's share of a regional total for employment by economic area divided by the industry's share of the provincial total for employment in each industry affected.

Limitations of this study are listed in **Appendix A**.

Approach

As noted previously, the 2017 Study calculated the 2016 economic footprint of the B.C. forest sectors by using the IMPLAN input-output model based on inter-industry relationships of the B.C. economy estimated by Statistics Canada. Calculating a regional economic footprint below the provincial level requires the use of location quotients to account for regional differences of various types of economic activities. A location quotient is a statistical technique that measures a region's (in this case, each of the seven development regions of B.C.) industrial specialization relative to a larger geographic unit (B.C.). A common method to calculate a location quotient is to use regional employment by sector.

However, using regional employment by sector may not accurately measure the regional footprints for the following reasons:

1. Employment may not be a good proxy for economic activity.
2. Different sub-sectors across the supply chain have different levels of employment in different regions.

Therefore, we adopted a detailed bottom-up approach and constructed specific location quotients for each of the B.C. Forest Industry sub-sectors.

[3] Defined as the value of goods and services used or transformed as inputs by a process of production.

To this end, we collected data from the Harvest Billing System ("HBS") and the B.C. Forests Revenue Branch to calculate the value of logging activities. For wood product and paper manufacturing, we gathered output data of each mill in B.C. and prices of forest products [4] and aggregated the results to the regional level. In particular, the direct impacts of the B.C. Forest Industry sub-sectors were allocated to regions using the following location quotients:

- **Forestry, logging and support**: a location quotient constructed from the value of harvested logs in each development region.
- **Wood product manufacturing:** a location quotient constructed from the value of output of mills.
- **Paper manufacturing**: a location quotient constructed from the value of products from pulp and paper mills.

Indirect and induced impacts were calculated using a location quotient based on regional employment by industry. We also constructed other location quotients to allocate taxes and fees based on the B.C. industries that are part of the supply chain of the above sub-sectors:

- **Taxes on production and products, and corporate income taxes:** a location quotient constructed from regional GDP generated and facilitated by the B.C. Forest Industry.[5]
- **Personal income taxes**: a location quotient constructed from labour income generated and facilitated by the B.C. Forest Industry.
- **Logging tax:** a location quotient based on the value of logging products in each region.
- **Payment to BC Hydro**: a location quotient constructed from direct GDP of the B.C. Forest Industry by region.
- **Fee in lieu of manufacture**: a location quotient constructed from exported timber volume at the regional level.

[4] Weekly Prices of Forest Products (2018 June)
[5] The total of direct, indirect, and induced impacts on GDP

Appendix C
Economic data

Table 1: GDP of B.C. Forest Industry, 2016 ($ millions)

Region	Direct	Indirect	Induced	Total
Cariboo	1,211	131	107	**1,449**
Kootenay	422	103	87	**612**
Mainland/Southwest [1]	644	2,457	2,660	**5,761**
North Coast & Nechako	526	69	56	**651**
Northeast	465	64	50	**579**
Thompson-Okanagan	985	413	369	**1,767**
Vancouver Island/Coast	1,063	518	544	**2,124**
B.C. Total	**5,316**	**3,754**	**3,874**	**12,944**

Table 2: Employment of B.C. Forest Industry, 2016 (number of jobs)

Region	Direct	Indirect	Induced	Total
Cariboo	14,492	1,491	1,187	**17,170**
Kootenay	4,760	1,121	991	**6,872**
Mainland/Southwest [2]	6,636	26,859	26,038	**59,533**
North Coast & Nechako	6,417	779	663	**7,858**
Northeast	6,422	691	589	**7,702**
Thompson-Okanagan	11,552	4,673	4,058	**20,283**
Vancouver Island/Coast	9,621	5,859	5,830	**21,310**
B.C. Total	**59,900**	**41,471**	**39,357**	**140,728**

[1] The majority of B.C. employment of industries that provide inputs to the B.C. Forest Industry are located in the Mainland/Southwest. Thus, indirect and induced impacts are much larger relative to direct impacts for the Mainland/Southwest region.

[2] The majority of all B.C. employment is concentrated in Mainland/Southwest (65% of all employment in 2016 was in the Mainland/Southwest region according to BC Stats). Therefore, the majority of industries that provide inputs to the B.C. Forest Industry are located in the Mainland/Southwest region, which affects the indirect and induced employment in that region.

Table 3: Contribution to the Government Revenue of B.C. Forest Industry, 2016 ($ millions)

	Cariboo	Kootenay	Mainland/ Southwest	North Coast & Nechako	Northeast	Thompson-Okanagan	Vancouver Island/ Coast	B.C. Total
Federal Government								
Taxes on Production and Products [3]	37	16	147	17	15	45	54	330
Corporate Income Taxes [3]	24	10	95	11	10	29	35	213
Personal Income Taxes [3]	107	42	325	48	40	121	135	818
Total Federal Tax	**168**	**68**	**567**	**75**	**65**	**195**	**224**	**1,361**
Provincial Government								
Taxes on Products and Services [3]	59	25	236	27	24	72	87	530
Corporate Income Taxes [3]	12	5	49	6	5	15	18	110
Personal Income Taxes [3]	63	25	190	28	24	71	79	479
Stumpage [4]	141	94	25	102	116	182	86	745
Rent [5]	5	1	1	3	6	3	4	23
Logging Tax [6]	4	2	3	3	4	4	9	30
Payment to B.C. Hydro [7]	140	48	74	59	52	112	121	607
Fee-In-Lieu of Manufacture [8]	0	0	6	1	0	0	19	27
Total Provincial Tax	**424**	**202**	**584**	**229**	**230**	**460**	**422**	**2,551**
Municipal Governments	**22**	**9**	**88**	**10**	**9**	**27**	**32**	**198**
Regional Total	**614**	**279**	**1,239**	**314**	**303**	**682**	**679**	**4,110**

[3] Taxes on Production and Products, Corporate Income Taxes and Personal Income Taxes are derived from direct, indirect and induced impacts and therefore include taxes paid by industries providing inputs to the B.C. Forest Industry.

[4] Stumpage values were aggregated from timber supply area ("TSA") and tree farm licence ("TFL") to the regional level using data from the Harvest Billing System. Stumpage is different from the 2017 Study (from $747 to $745 million) since the government revises the numbers from time to time.

[5] Rent was calculated using the share of approximated rent revenue in each region, based on rent rates and the volume of TSA and TFL.

[6] Data was collected from the B.C. Ministry of Forests, Lands, Natural Resource Operations and Rural Development. In the 2017 Study, the actual logging tax was not available and we used a forecast of $38 million from the B.C. Budget (2017).

[7] Sales of electricity to B.C. Forest Industry. Based on BC Hydro 2016 Annual Report and 2013 Integrated Resource Plan.

[8] Export fees paid to the B.C. government for log exports. (Province of British Columbia, 2018).

Table 4: Output of B.C. Forest Industry's operating activities ($ millions)

Region	Direct	Indirect	Induced	Total
Cariboo	4,320	274	201	**4,795**
Kootenay	1,485	211	164	**1,860**
Mainland/Southwest [1]	2,270	4,842	4,661	**11,773**
North Coast & Nechako	1,829	141	105	**2,075**
Northeast	1,602	130	93	**1,824**
Thompson-Okanagan	3,461	817	671	**4,949**
Vancouver Island/Coast	3,714	1,010	961	**5,685**
B.C. Total	**18,680**	**7,425**	**6,856**	**32,961**

Table 5: Labour Income B.C. Forest Industry ($ millions)

Region	Direct	Indirect	Induced	Total
Cariboo	977	85	58	**1,120**
Kootenay	329	64	48	**442**
Mainland/Southwest	526	1,579	1,295	**3,401**
North Coast & Nechako	421	44	32	**497**
Northeast	354	40	28	**422**
Thompson-Okanagan	805	265	194	**1,264**
Vancouver Island/Coast	785	339	286	**1,410**
B.C. Total	**4,197**	**2,417**	**1,941**	**8,555**

Appendix D
References

Allowable Annual Cut - Timber Supply Areas. B.C. Ministry of Forests, Lands and Natural Resource Operations. Retrieved from https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/timber-supply-review-and-allowable-annual-cut/allowable-annual-cut-timber-supply-areas. Last accessed: July 2018

Annual Rent Billing Procedures (2015) B.C. Ministry of Forests, Lands and Natural Resource Operations. Retrieved from https://www2.gov.bc.ca/gov/content/industry/forestry/forest-tenures/forest-tenure-administration/annual-rent-fees. Last accessed: July 2018

B.C. Administrative Boundaries (2018, June) B.C. Data Catalogue. Retrieved from https://www2.gov.bc.ca/gov/content/data/geographic-data-services/land-use/administrative-boundaries. Last accessed: July 2018

B.C. Budget and Fiscal Plan. (2017). B.C. Ministry of Finance. Retrieved from http://bcbudget.gov.bc.ca/2017/bfp/2017_Budget_and_Fiscal_Plan.pdf. Last accessed: July 2018

B.C. Budget and Fiscal Plan. (2018). B.C. Ministry of Finance. Retrieved from http://bcbudget.gov.bc.ca/2018/bfp/2018_Budget_and_Fiscal_Plan.pdf. Last accessed: July 2018

B.C. Chamber of Commerce. (2016). *Future of the Forest Industry and its Importance to British Columbia's Economy*.

BC Hydro. (2013). *Integrated Resource Plan. Appendix 2A: 2012 Electric Load Forecast*.

BC Hydro. (2016). *2015/16 Annual Service Plan Report*.

B.C. Mill Survey (2016) Retrieved from https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/forest-industry-economics/fibre-mill-information. Last accessed: July 2018

BC Stats. (2018, June). *Labour Market Statistics - Province of British Columbia*. Retrieved from http://www2.gov.bc.ca/gov/content/data/statistics/employment-labour/labour-market-statistics. Last accessed: July 2018

Major Primary Timber Processing Facilities in B.C. (2016). Retrieved from https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/forest-industry-economics/fibre-mill-information. Last accessed: July 2018

Natural Resources Canada. (2018, June). *Overview of Canada's Forest Industry*. Retrieved from https://cfs.nrcan.gc.ca/statsprofile/overview/bc. Last accessed: July 2018

PwC (2017) British Columbia’s Forest Industry and the B.C. Economy in 2016

Statistics Canada. (2018, June). *CANSIM 282-0125* Employment by industry, annual, provinces and economic regions

Statistics Canada. (2018, June). *CANSIM 301-0009 Logging industries, principal statistics by NAICS* . *Retrieved from* https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=1610011. Last accessed: July 2018

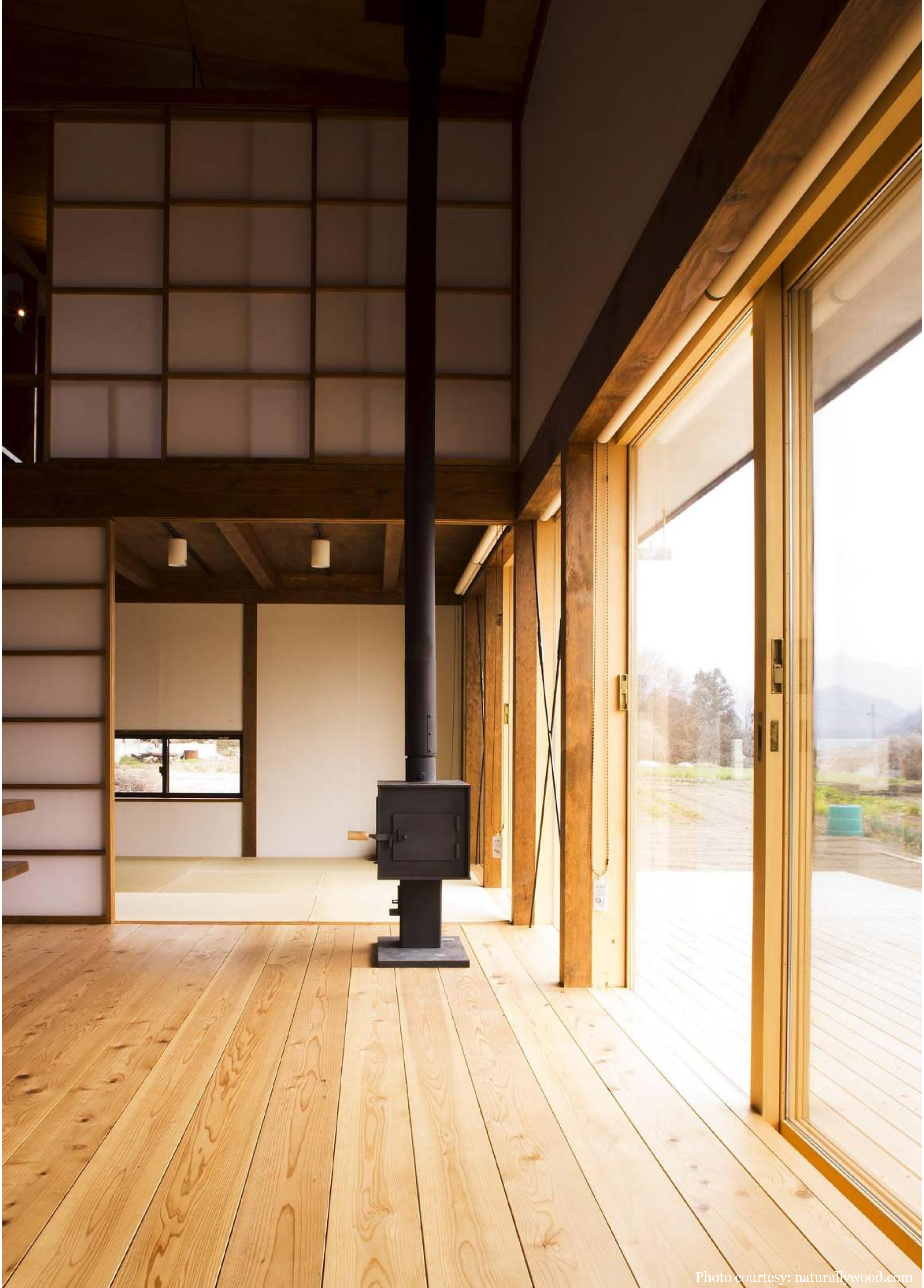
Timber Cruising Manual (2016) Forest Revenue Branch of B.C. Ministry of Forests, Lands and Natural Resource Operations. Retrieved from https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/timber-cruising/historical-timber-cruising-manuals. Last accessed: July 2018

Timber Pricing (2016) Forest Revenue Branch of B.C. Ministry of Forests, Lands and Natural Resource Operations. Retrieved from https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing. Last accessed: July 2018

Timber Scaling Manual (2018) B.C. Ministry of Forests, Lands and Natural Resource Operations. Retrieved from https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/timber-scaling/timber-scaling-manual. Last accessed: July 2018

Trade and Invest British Columbia. (2018). *Trade and Invest in BC | Forestry*. Retrieved from http://www.britishcolumbia.ca/invest/industry-sectors/forestry. Last accessed: July 2018

Weekly Prices of Forest Products (2016) B.C. Ministry of Forests, Lands and Natural Resource Operations. Retrieved from https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/forest-industry-economics/weekly-prices. Last accessed: July 2018



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