



# Economic Impacts of the Prince George Forest Industry

March 2018

Prepared for:



Prepared by:



**CONTENTS**

Contents.....i

Executive Summary ..... 2

1. Introduction..... 5

2. Profile of the Forest Industry in B.C. .... 7

3. The Forest Industry in the Prince George Area ..... 11

4. Economic Impact Methodology ..... 15

5. Economic Impacts of the Prince George Area Forest Industry..... 16

6. Industry Comparisons ..... 17

Appendix A: Data Sources..... 19

Appendix B: Approach to Economic Impact Estimates ..... 20

Appendix C: About MNP ..... 21

## EXECUTIVE SUMMARY

### The Forest Industry in Prince George<sup>1</sup>

The forest industry is a key component of the economy of the Prince George Area. There are more than 300 forestry related businesses operating in the Prince George Area that provide a wide range of services and products. Those businesses include primary manufacturers, secondary manufacturers, logging companies, forest nurseries, silviculture companies, and large vertically integrated forest companies.

### Report Highlights

- \$3.86 billion of total output was generated by the Prince George Area forest industry in 2016.
- \$1.53 billion of total GDP was generated by the Prince George Area forest industry in 2016.
- The Prince George forest industry supported 11,754 full-time equivalent jobs throughout B.C. in 2016. Approximately 9,000 (75 percent) were estimated to be in the Prince George Area.
- A substantial amount of the processing capacity of primary manufacturers is located in the Prince George Area. Lumber mills in the Prince George area account for approximately 12 percent of the total processing capacity of BC lumber mills and pulp mills account for 20 percent of the BC pulp and paper processing.<sup>2</sup>
- 300+ forestry related businesses operate in the Prince George Area. These businesses provide a wide range of products and service, and represent a strong and diverse supply chain for the forest industry and other related sectors of the local economy.
- The Prince George forest industry contributed approximately \$387 million in tax revenues to government, including \$347.5 million to provincial and federal governments, and \$39.4 million to municipal governments.

Other key features of the forest industry in the Prince George Area include:

- **Approximately 36 percent of B.C.'s timber supply is located in the Prince George Timber Supply Area.** There are approximately 22 million hectares of forested land available for timber harvesting in B.C.<sup>3</sup> Of this, approximately 8 million hectares are located in the Prince George Timber Supply Area.
- **The Prince George Area accounts for approximately 7 percent of forest industry manufacturing employment and 11 percent of forestry and logging employment in B.C.** Wood product and paper manufacturing in B.C employed approximately 40,500 in 2016.<sup>4</sup> Of those, approximately 2,800 were estimated to be employed in the Prince George Area. Forestry and logging employed

<sup>1</sup> In this report the Prince George Area is defined as the Prince George Natural Resource District. The economic impacts of the Prince George Area Forest Industry refer to the economic activity generated by the businesses located within the boundaries of the Prince George Natural Resource District and by suppliers to those businesses.

<sup>2</sup> Government of BC, "Major Primary Timber Processing Facilities in B.C., 2015". (Retrieved from: <https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/forest-industry-economics/fibre-mill-information>)

<sup>3</sup> Government of BC, "Prince George Timber Supply Area Timber Supply Analysis Discussion Paper." March 2016 (available here: <https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/timber-supply-review-and-allowable-annual-cut/timber-supply-areas/prince-george-tsa>)

<sup>4</sup> Statistics Canada, Labour Force Survey, Custom Tabulation. (Retrieved from BC Stats Labour Market Statistics)

approximately 19,400 people in B.C. in 2016.<sup>5</sup> Of those, approximately 2,200 people were estimated to be employed in the Prince George Area.

- **Forest industry manufacturers in the Prince George Area produce both commodity products and value-added goods.** While production of dimensional lumber, and pulp and paper accounts for the largest share of forest products produced in the Prince George Area value-added products, such as pellets, engineered products, millwork, and factory-built homes, are also being produced.
- **Forest products are B.C.'s largest commodity export and a significant amount of production takes place in the Prince George Area.** Most commodity products made in the Prince George Area are exported to the United States or Asia, while value-added products are sold throughout Canada and the northwestern United States.
- **The Prince George Area is an important transportation centre for the forest industry in northern B.C.** The CN rail intermodal terminal is one of only three such terminals in B.C.<sup>6</sup> Through this terminal forest products are shipped to B.C. ports for export. The presence of the terminal supports employment for the trucking industry and creates economic benefits through linkages with supplier industries.

### Estimated Economic Impacts

The forest industry in the Prince George Area generates positive economic impacts through expenditures on goods and services by the businesses that comprise the industry, the spending of suppliers to those businesses and the spending of staff employed at the businesses and suppliers. The economic impacts are realized at the direct, indirect, and induced levels.

- **Direct impacts** are due to changes to “front end” businesses that would initially receive operating revenue as a direct consequence of the operations and activities of a facility or industry.
- **Indirect impacts** arise from changes in activity for suppliers of the “front end” businesses.
- **Induced impacts** arise from shifts in spending on goods and services as a consequence of changes to the payroll of the directly and indirectly affected businesses.

Table A summarizes the estimated economic impacts of the Prince George Area forest industry in 2016. The Prince George Area forest industry was estimated to have generated approximately:

- \$3.863 billion in total economic output in B.C.
- \$1.528 billion in total GDP in B.C.
- \$387 million in total revenue for federal, provincial and municipal governments.
- 11,754 full-time equivalent (FTEs) of total employment in B.C.

The estimated contribution of each sub-sector to the total economic impacts were:

- Primary manufacturing was estimated to account for approximately 75 percent of total output, GDP, and government revenue, and approximately 70 percent of total employment.
- Forestry and logging was estimated to account for approximately 15 percent of total output, GDP and government revenue, and approximately 17 percent of total employment.
- Secondary manufacturing was estimated to account for between 6 percent and 7 percent of total output, GDP, and government revenue, and approximately 8 percent of total employment.
- Support activities for forestry and logging was estimated to account for the remaining impacts.

<sup>5</sup> Ibid

<sup>6</sup> CN, Intermodal Terminals. (Retrieved from: <https://www.cn.ca/en/our-services/maps-and-network/intermodal-terminals>)

**Table A: Estimated Economic Impacts of the Prince George Area Forest Industry in 2016**

	Primary Manufacturing <sup>7</sup>	Secondary Manufacturing <sup>8</sup>	Forestry and Logging <sup>9</sup>	Support activities for Forestry and Logging <sup>10</sup>	Total Prince George Area Forest Industry
<b>Direct Impacts</b>					
Output (in \$millions)	\$1,554.9	\$137.1	\$411.0	\$63.8	<b>\$2,166.8</b>
GDP (in \$millions)	\$432.2	\$48.1	\$142.6	\$33.8	<b>\$656.7</b>
Employment (FTEs)	2,380	445	1,442	726	<b>4,993</b>
Federal Tax (in \$millions)	\$55.9	\$6.1	\$20.1	\$4.8	<b>\$86.9</b>
Provincial Tax* (in \$millions)	\$39.3	\$3.6	\$14.1	\$3.3	<b>\$60.3</b>
Municipal Tax (in \$millions)	\$10.7	\$0.5	\$1.5	\$0.2	<b>\$12.9</b>
<b>Indirect and Induced Impacts</b>					
Output (in \$millions)	\$1,414.3	\$94.8	\$163.9	\$23.4	<b>\$1,696.4</b>
GDP (in \$millions)	\$718.2	\$53.5	\$85.9	\$14.0	<b>\$871.6</b>
Employment (FTEs)	5,612	504	519	126	<b>6,761</b>
Federal Tax (in \$millions)	\$93.3	\$6.9	\$11.0	\$1.8	<b>\$113.0</b>
Provincial Tax* (in \$millions)	\$71.9	\$5.4	\$8.6	\$1.4	<b>\$87.3</b>
Municipal Tax (in \$millions)	\$21.7	\$1.7	\$2.7	\$0.4	<b>\$26.5</b>
<b>Total Impacts</b>					
Output (in \$millions)	\$2,969.2	\$231.9	\$574.9	\$87.2	<b>\$3,863.2</b>
GDP (in \$millions)	\$1,150.4	\$101.6	\$228.5	\$47.8	<b>\$1,528.3</b>
Employment (FTEs)	7,992	949	1,961	852	<b>11,754</b>
Federal Tax (in \$millions)	\$149.2	\$13.0	\$31.1	\$6.6	<b>\$199.9</b>
Provincial Tax* (in \$millions)	\$111.2	\$9.0	\$22.7	\$4.7	<b>\$147.6</b>
Municipal Tax (in \$millions)	\$32.4	\$2.2	\$4.2	\$0.6	<b>\$39.4</b>

\*Please note that the provincial tax impacts do not include stumpage, fee-in-lieu of domestic manufacturing, timber sales, rentals and licences, or export fees.

<sup>7</sup> Includes sawmills, and pulp, paper, and paperboard mills.

<sup>8</sup> Includes pellet mills, engineered wood product manufacturers, wood furniture manufacturers and other wood product manufacturers.

<sup>9</sup> Includes logging contractors and forest nurseries.

<sup>10</sup> Includes silviculture, forest management, and other support activities for forestry and logging.

# 1. INTRODUCTION

## Background and Purpose

To gain a better understanding of the opportunities and challenges facing forest industry businesses in the Prince George Area, and to support efforts to expand value-added manufacturing and other forestry related activities in the region, the City of Prince George engaged MNP LLP to carry out an economic impact study of Prince George's forest industry in 2016.

## Scope

The scope of the study included:

- Describing the role Prince George's forest industry plays within the B.C. forest industry.
- Describing the role Prince George's forest industry plays in the local economy.
- Developing a value chain for Prince George's forest industry.
- Developing estimates of the economic impacts of Prince George's forest industry.

## Approach

To conduct the study, MNP carried out the following activities:

- Gathered existing information on forest industry operations in Prince George and the surrounding area through publicly available sources.
- Developed data collection instruments for use by staff from the City of Prince George to gather information from secondary wood manufacturers and other forest industry participants.
- Conducted interviews with representatives from primary wood manufacturers and logging companies in Prince George to gather information on the size of forest industry operations and the forest industry value chain.
- Developed a value chain that describes the linkages between the activities of forest industry businesses and other components of the Prince George economy.
- Developed estimates of the economic impacts of Prince George's forest industry.

## Data Sources

Information used in the study was gathered from publicly available sources, the City of Prince George, and through interviews with industry representatives. Interviews included representatives of primary manufacturers, secondary manufacturers, logging contractors, and businesses providing support services to the forest industry. A list of data sources consulted is provided in Appendix A.

## Study Area

For the purposes of this study, the economic impacts measure the activity created by businesses located within the boundaries of the Prince George Natural Resource District and suppliers to those businesses (see Figure 1). This area is defined as the Prince George Area.

**Figure 1: Prince George Natural Resource District**



Source: BC Ministry of Forests, Lands and Natural Resource Operations.

## Restrictions

We have relied upon the completeness, accuracy, and fair presentation of all information and data obtained from the City of Prince George and public sources, believed to be reliable. The accuracy and reliability of the findings and opinions expressed in the presentation are conditional upon the completeness, accuracy, and fair presentation of the information underlying them. As a result, we caution readers not to rely upon any findings or opinions expressed for business or investment decisions and disclaim any liability to any party who relies upon them as such.

This report is provided for information purposes and is intended for general guidance only. It should not be regarded as, or as a substitute for, personalized business or investment advice. Before taking any particular course of action, readers should contact their own professional advisor to discuss matters in the context of their particular situation.

## 2. PROFILE OF THE FOREST INDUSTRY IN B.C.

### The Role of the Prince George Area Forest Industry in B.C.'s Forest Industry

B.C.'s forest industry is a key component of the provincial economy and is important to the economic well-being of communities throughout the province. Table 1 shows total direct employment in the forest industry in B.C. Employment within the forest industry accounts for approximately 2.5 percent of total employment in the province and approximately 24 percent of manufacturing industry employment.

**Table 1: Forest Industry Direct Employment in B.C., 2016**

	Employment	Share of Total B.C. Direct Employment
Forestry and Logging	19,400	0.8%
Wood Product Manufacturing	32,000	1.3%
Paper Manufacturing (includes pulp)	8,500	0.4%
<b>Total</b>	<b>59,900</b>	<b>2.5%</b>

Source: Statistics Canada, Labour Force Survey, Custom Tabulation. (Retrieved from BC Stats Labour Market Statistics)

Table 2 shows the distribution of forest industry direct employment by Development Region. The Mainland/Southwest has the largest number of forest industry jobs, followed by the Cariboo region, Vancouver Island and Coast region, the Thompson/Okanagan region, the North Coast and Nechako regions, the Kootenay region and the Northeast region.

**Table 2: Forest Industry Direct Employment by Development Region, 2016**

	Vancouver Island and Coast	Mainland/Southwest	Thompson/Okanagan	Kootenay	Cariboo (including Prince George)	North Coast and Nechako	Northeast
Forestry and Logging	5,400	2,800	3,400	N/A*	4,100	1,500	N/A*
Wood Product Manufacturing	3,600	11,100	6,700	1,800	5,600	2,200	N/A*
Paper Manufacturing	1,900	2,400	N/A*	N/A*	2,500	N/A	N/A*
<b>Total</b>	<b>10,900</b>	<b>16,300</b>	<b>10,100</b>	<b>1,800</b>	<b>12,200</b>	<b>3,700</b>	<b>N/A*</b>

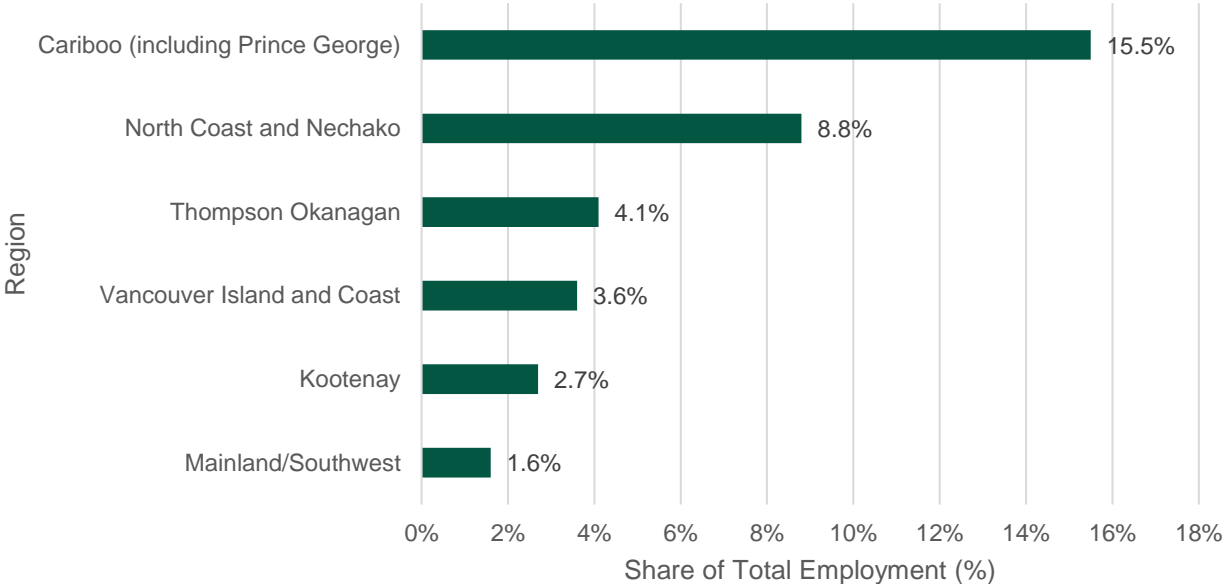
Source: Statistics Canada, Labour Force Survey, Custom Tabulation (Retrieved from BC Stats Labour Market Statistics)

\*Statistics Canada does not report employment numbers for industries with less than 1,500 persons.



Figure 2 shows the share of total employment the forest industry accounts for by Development Region. In the Cariboo and North Coast Nechako region the forest industry accounts for a relatively larger share of total employment than in other regions.

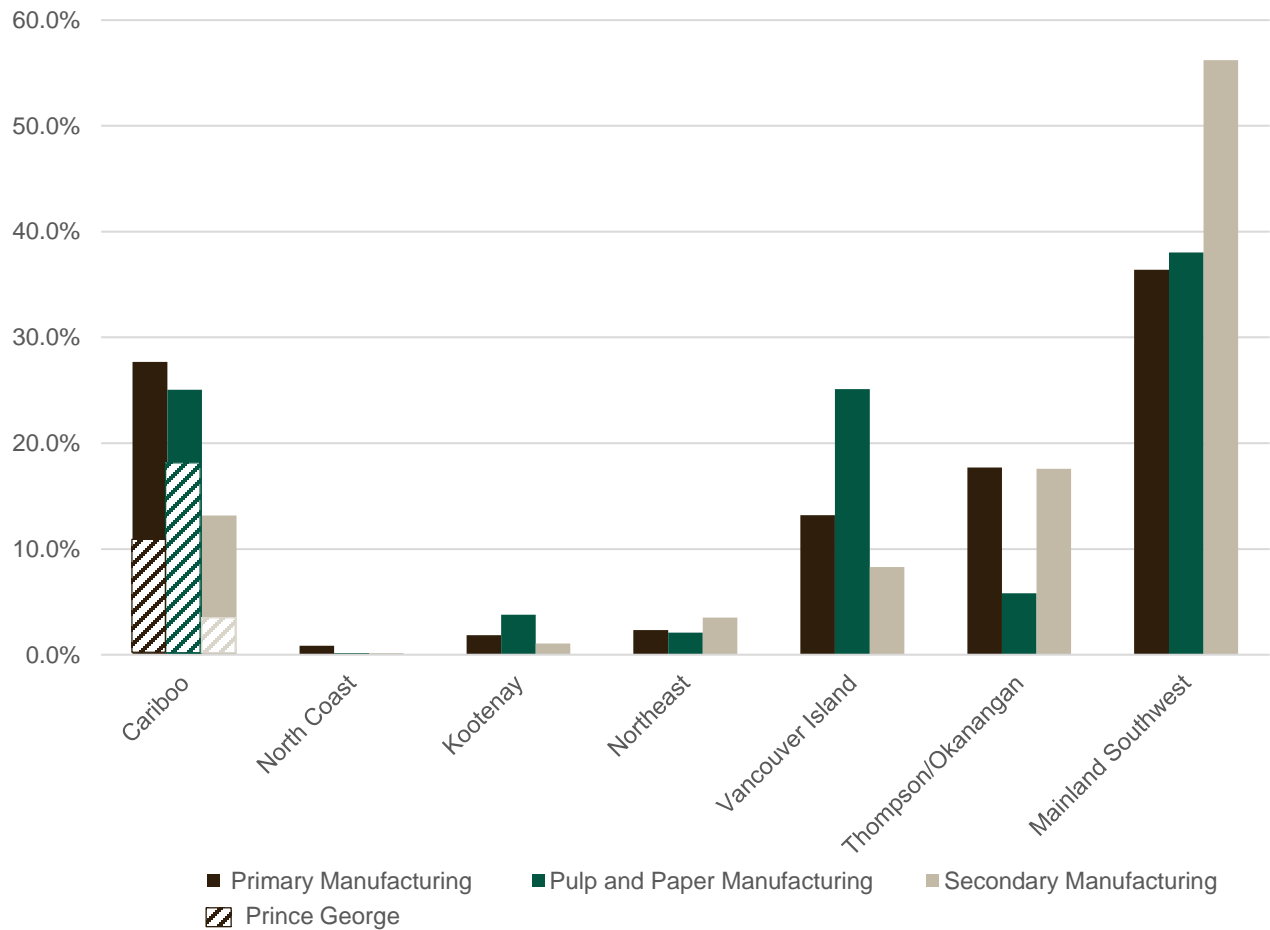
**Figure 2: Forest Industry Employment as a Share of Total Employment by Development Region\***



Source: Statistics Canada, Labour Force Survey, Custom Tabulation (Retrieved from BC Stats Labour Market Statistics)  
\* Data were not available for the Northeast region.

Figure 3 shows the distribution of forest sector manufacturing employment by region in B.C. Most manufacturing takes place in the Mainland/Southwest, Cariboo, Thompson/Okanagan and Vancouver Island regions. Within those regions there is significant variation in the share of employment attributable to each type of manufacturing. The Mainland/Southwest region accounts for the largest share of employment in all types of manufacturing with approximately 36 percent of primary manufacturing employment, 57 percent of secondary manufacturing employment and 38 percent of pulp and paper employment. The Cariboo region (including Prince George) has the next largest share of manufacturing employment, with approximately 27 percent of primary manufacturing employment, 14 percent of secondary manufacturing employment and 17 percent of pulp and paper manufacturing employment. The Thompson/Okanagan and Vancouver Island have similar shares of manufacturing employment; however, significantly more employment on Vancouver Island is related to pulp and paper manufacturing, than secondary manufacturing.

**Figure 3: Distribution of Forest Sector Manufacturing Employment by Sub-Sector and Region, 2016**



Source: Statistics Canada, 2016 Census

B.C.'s forests include a diverse range of species including Douglas-fir, Western Hemlock, Amabilis Fir, Western Red Cedar, Lodgepole Pine and Interior Spruce. Sought-after species such as Douglas-fir and Western Red Cedar are found in the Coastal regions (Mainland/Southwest and Vancouver Island and Coast). Those regions produce both dimensional lumber and high-value products such as millwork, flooring, furniture, log homes, cabinets, veneer, and musical instruments. In the interior the timber supply is primarily comprised of species of Lodgepole Pine, Interior Spruce, and Subalpine Fir which are typically used for structural building products.<sup>11</sup>

Forest products are B.C.'s largest commodity export, accounting for approximately 36 percent of total commodity exports.<sup>12</sup> Of those exports, softwood lumber is the largest component. Figure 4 shows softwood lumber production in B.C. by region between 2012 and 2016. Most softwood lumber production takes place in the interior regions. Since 2012 production in those regions has been increasing, while production in the coast region has been relatively stable.

<sup>11</sup> Naturally:Wood, Forest Products and Species, <https://www.naturallywood.com/forest-products-species/softwood-species>

<sup>12</sup> Government of BC, Trade Data, BC Origin Export to All Countries, <https://www2.gov.bc.ca/gov/content/data/statistics/business-industry-trade/trade/trade-data>

**Figure 4: BC Lumber Production by Region, 2012 to 2016**



Source: Statistics Canada, CANSIM Table 303-0064 Lumber production, shipments and stocks, by Canada and provinces, monthly (cubic metres x 1,000)

The Prince George Area is located in the Northern Interior region<sup>13</sup>, where almost half of B.C.’s softwood lumber production takes place.<sup>14</sup> Within the Northern Interior, the Prince George Area accounts for a significant amount of the overall production and is a transportation centre providing intermodal services<sup>15</sup> to support the forest industry.

Table 3 shows how the Prince George Area contributes to the overall forest industry in B.C. in terms of fibre resources and processing capacity. The Prince George Area is located within the Prince George Timber Supply Area (TSA). This TSA accounts for approximately 36.2 percent of the 22 million hectares of total forested land available for timber harvesting in B.C. The 2015 harvest from the Prince George TSA (the latest period for which data were available) was approximately 16.5 percent of B.C.’s total annual harvest. In terms of processing capacity, the Prince George Area accounts for 12 percent of the total lumber mill capacity and approximately 19.7 percent of the total pulp and paper processing capacity in B.C.

<sup>13</sup> The Northern Interior includes the North Coast and Nechako region, the Northeast region and parts of the Cariboo region. Quesnel and Williams Lake are included in the Southern Interior.

<sup>14</sup> Statistics Canada. Table 303-0064 - Lumber production, shipments and stocks, by Canada and provinces, monthly (cubic metres), (accessed: October 20, 2017)

<sup>15</sup> CN Intermodal Terminals, (<https://www.cn.ca/en/our-services/maps-and-network/intermodal-terminals>)

**Table 3: Forest Industry Operations in the Prince George Area**

	Prince George Area	Share of B.C. Total
<b>Prince George Timber Supply Area (Ha)*</b>	7,970,000 <sup>16</sup>	36.2%
<b>2015 Harvest Volume (m<sup>3</sup>) from the Prince George Timber Supply Area*</b>	11,221,017	16.5%
<b>Lumber Processing Capacity (Millions of Board Feet) in the Prince George Area</b>	1,558 <sup>17</sup>	12.0%
<b>Pulp and Paper Processing Capacity (Thousands of Tonnes) in the Prince George Area</b>	1,447 <sup>12</sup>	19.7%

Source: Government of B.C., Ministry of Farming, Natural Resources and Industry

\* The Prince George Area Timber Supply Area includes the Prince George Area and the Stuart Nechako Natural Resource District.

### 3. THE FOREST INDUSTRY IN THE PRINCE GEORGE AREA

The forest industry in the Prince George Area contains a network of businesses engaged in each stage of production and is a microcosm of B.C.'s forest industry. The industry's activities in the Prince George Area can be classified into four sub-sectors that are defined using the North American Industry Classification System (NAICS):

- Primary Manufacturing.** Primary manufacturing facilities convert whole logs into a number of lumber products or panels for structural, industrial, and appearance applications, as well as for remanufacturing into secondary components. Wood residuals, such as chips and hog fuel, are also produced as by-products of the primary manufacturing process, and are used by pulp and bioenergy operations.

In the Prince George Area this sub-sector includes sawmills and pulp and paper mills operated by both small-scale producers and large vertically integrated forest companies.

- Secondary Manufacturing.** Not all primary manufacturing products are shipped directly to market. Some are sent to secondary manufacturers<sup>18</sup> that produce semi-finished and finished products and components. These products include engineered wood, mouldings, window and door frames, cabinets, furniture components, pallets, wood chips, and pellets for bioenergy production. Log homes are also included as part of this sector.

In the Prince George Area this sub-sector includes pellet mills, engineered wood product manufacturers, chemically treated wood producers, factory-built home manufacturers, and millwork and cabinetry makers.

- Forestry and Logging.** This sub-sector is comprised of businesses that provide services related to timber harvesting, including contract and non-contract logging, and timber tract operations, as well as companies operating as forest nurseries that grow trees to be used in reforestation efforts.

<sup>16</sup> Government of BC, "Prince George Timber Supply Area Timber Supply Analysis Discussion Paper." March 2016 (available here: <https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/timber-supply-review-and-allowable-annual-cut/timber-supply-areas/prince-george-tsa>)

<sup>17</sup> Government of BC, "Major Primary Timber Processing Facilities in B.C., 2015". (Retrieved from: <https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/forest-industry-economics/fibre-mill-information>)

<sup>18</sup> This report defines secondary manufacturing as other wood product manufacturing [NAICS 3222], converted paper product manufacturing [NAICS 3219], wood kitchen cabinet and counter top manufacturing [NAICS 33711] and other wood household furniture manufacturing [NAICS 337123]

In the Prince George Area the forestry and logging sub-sector includes logging contractors, harvesting divisions of large integrated forest companies and forest nurseries.

- **Support Activities for Forestry and Logging.** This sub-sector is comprised of businesses that provide services in support of sustainable forest management, land ownership and tenure arrangements, forest inventory and valuations, planning and protection activities, road construction, maintenance and deactivation, transportation, and silviculture operations.

In the Prince George Area this sub-sector includes contractors, small consulting firms, silviculture companies, forest firefighting providers, training providers and construction companies.

Table 4 shows the number of forest industry businesses by sub-sector and employment size located in the Prince George Area. In total there are more than 300 forestry-related businesses in the Prince George Area. Most businesses in the forestry and logging, and the support activities for forestry and logging sub-sectors are small in scale and have fewer than 10 employees. Businesses engaged in primary manufacturing tend to be larger in scale, and account for the majority of businesses with more than 50 employees. Secondary manufacturers include small-scale businesses with fewer than 10 employees, mid-size businesses with between 10 and 50 employees, and larger scale businesses with more than 50 employees.

**Table 4: Number of Forest Industry Businesses by Sub-Sector and Number of Employees, 2016**

	Without Employees+	With Employees			Total
		Less than 10 Employees	10 to 50 Employees	More than 50 Employees	
<b>Forestry and Logging*</b>	107	49	19	1	176
<b>Support Activities for Forestry and Logging</b>	56	19	9	5	89
<b>Primary Manufacturing</b>	10	2	3	10	25
<b>Secondary Manufacturing</b>	8	7	6	2	23
<b>Total**</b>	<b>181</b>	<b>77</b>	<b>37</b>	<b>18</b>	<b>313</b>

Source: Statistics Canada, Business Register, June 2016

+Businesses without employees are those that do not have a payroll. This includes self-employed individuals and those businesses that use only sub-contractors.

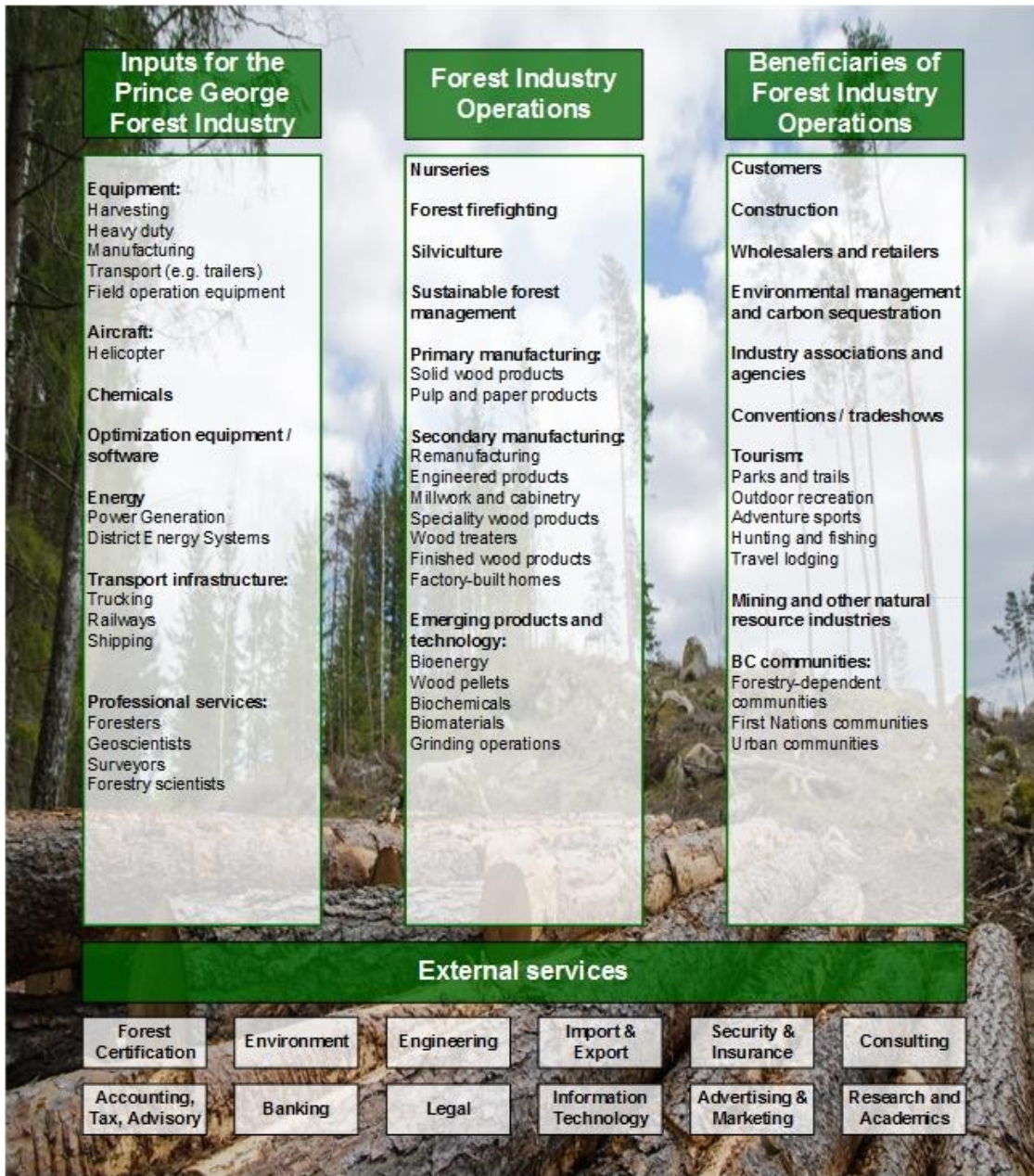
\*Businesses that have operations in more than one sub-sector have been included in the sectors that accounts for the largest share of their operations.

\*\*Estimates do not include forestry-related trucking businesses, fibre supply and wholesalers, and forestry innovation organizations.

### Forest Industry Value Chain

The Prince George Area forest industry generates economic impacts through its linkages with other industries. These linked industries include transportation, warehousing, engineering, road-building, and professional services, along with many others. The relationships between the industry’s core activities and its suppliers are shown in Figure 5. Businesses involved in the forest industry purchase supplies, raw materials, operating equipment, and other inputs from local suppliers as part of their operations.

Figure 5: Snapshot of the Industry and Supply Chain Network in the Prince George Area



According to industry representatives interviewed by MNP, businesses in the Prince George Area forest industry source the majority of their logs from the Prince George TSA, and many of their other inputs from local suppliers. Specialized parts or equipment may be ordered from other areas of the province or from suppliers outside of B.C.

Secondary manufacturing businesses reported lower levels of local purchases than businesses in other sub-sectors. Goods purchased locally by secondary manufacturers are primarily services such as couriers, repair and maintenance services and transportation. The degree to which secondary manufacturers reported purchasing wood inputs locally varied by the type of product required and its availability locally (e.g., hardwood

lumber is typically purchased from outside the Prince George Area while softwood lumber is more likely to be purchased from local suppliers).

Many of the products produced by primary manufacturers in the Prince George Area are commodity products, such as dimensional lumber and pulp and paper. These products are primarily exported to the United States and Asia. Smaller amounts of primary manufactured products are sold in B.C. and other parts of Canada.

The main markets for secondary manufacturers in the Prince George Area are B.C., western Canada, and the northwestern United States. Some products are also sold to overseas markets.

**Workforce**

The Prince George Area forest industry provides stable, long-term employment for both skilled and unskilled labour. Skilled employment opportunities include a wide range of tradespeople, technicians, professionals, managers, and administrative staff. Unskilled and semi-skilled opportunities include truck drivers, equipment operators and general labourers. The jobs supported include production workers, and professionals in occupations such as forest sciences, environmental management, field operations, engineering, transportation logistics, accounting, marketing, sales, and distribution. Table 5 provides an overview of the forest industry workforce in the Prince George Area.

**Table 5: Forest Industry Workforce in the Prince George Area**

Description	
<b>Transportation and Logistics</b>	<p>This group of occupations includes truck drivers, logging road maintenance vehicle and equipment operators, fleet operations planners, dispatchers, train operators, and heavy-duty mechanics.</p> <p>Most occupations in this group require trades certification, a college level diploma or higher, or specialized training in the relevant field (e.g. Class 1 drivers license).</p>
<b>Production Workers</b>	<p>This group of occupations includes general labourers, millwrights, logging equipment and other heavy equipment operators, professional foresters and forestry technicians, forest fire fighters, tree-planters, forest nursery staff, and other hands-on employees directly involved in production for logging, primary and secondary processing, and silviculture operations.</p> <p>Most occupations in this group require a high school diploma. In primary and secondary manufacturing, production staff typically begin as general labourers and move into more skilled positions as they gain experience. Technical positions typically require specialized training, a trades certification, or a college-level diploma or higher.</p>
<b>Sales and Administration</b>	<p>This group of occupations includes administrative support staff, accounting clerks, sales managers, lumber and log traders and brokers, and customer service representatives.</p> <p>The education and training requirements for these occupations vary from a high school diploma to a Bachelor's degree.</p>
<b>Management</b>	<p>This group of occupations includes strategic planning, marketing, finance, and general management.</p> <p>Education requirements are typically a Bachelor's degree or above and significant experience in the relevant field. In some cases, professional certification is required.</p>
<b>Forestry Professionals</b>	<p>This group of occupations includes scientists from all disciplines, engineers, archeologists, GIS specialists, and other technical backgrounds involved in creating innovative new wood products and processing techniques, as well as improving forest ecosystem health.</p> <p>Minimum education requirements are a Bachelor's degree, with many positions requiring a higher-level graduate degree.</p>

According to forest industry representatives interviewed by MNP, recruiting and retaining staff is an ongoing challenge. Specific categories of positions that are difficult to fill are those requiring skilled tradespeople, professionals, and truck drivers.

## 4. ECONOMIC IMPACT METHODOLOGY

### Modelling Approach

To estimate the economic impacts of the Prince George Area forest industry, MNP employed an input-output methodology that uses economic multipliers published by Statistics Canada. Input-output modeling is a widely-used and widely-accepted approach, making it recognizable by many different stakeholders and audiences. The structure of the approach also facilitates easy comparisons between reported results for different projects and facilities.

In general, economic impacts are viewed as being restricted to quantitative, well-established measures of economic activity. The most commonly used of these measures are output, GDP, employment, and government tax revenue:

- **Output** is the total gross value of goods and services produced by a given company or industry, measured by the price paid to the producer. This is the broadest measure of economic activity.
- **Gross Domestic Product (“GDP”)**, or value added, refers to the additional value of a good or service over the cost of inputs used to produce it from the previous stage of production. Thus, GDP is equal to net output, or the difference between revenues and expenses on intermediate inputs. It is the incremental value created through labour or mechanical processing. Total GDP is a more meaningful measure of economic impact than output, as it avoids double counting during each round of production.
- **Employment** is the number of additional jobs created. Employment is measured in terms of full-time equivalents (FTEs). One FTE is equivalent to one person-year of employment.
- **Government Tax Revenues** are the total amount of tax revenues generated for different levels of government. Tax revenues include taxes on products (e.g. GST), taxes on production (e.g. licence fees, capital taxes, or property taxes), and income taxes. Please note that because tax revenues can regularly change due to modifications in tax policy, the tax revenue impacts in this report are estimates only and should be viewed as approximate in nature.

Economic impacts may be estimated at the direct, indirect, and induced levels.

- **Direct impacts** are due to changes to “front end” businesses that would initially receive operating revenue as a direct consequence of the operations and activities of a facility or industry.
- **Indirect impacts** arise from changes in activity for suppliers of the “front end” businesses.
- **Induced impacts** arise from shifts in spending on goods and services as a consequence of changes to the payroll of the directly and indirectly affected businesses.

Appendix B provides a high-level description of the approach used to develop the economic impact estimates.



## 5. ECONOMIC IMPACTS OF THE PRINCE GEORGE AREA FOREST INDUSTRY

The forest industry in the Prince George Area generates positive economic impacts through expenditures on goods and services by the businesses that comprise the industry, the spending of suppliers to those businesses and the spending of staff employed at the businesses and suppliers. Table 6 summarizes the estimated annual economic impacts of the Prince George Area forest industry in 2016.

**Table 6: Estimated Economic Impacts of the Prince George Area Forest Industry in 2016**

	Primary Manufacturing <sup>19</sup>	Secondary Manufacturing <sup>20</sup>	Forestry and Logging <sup>21</sup>	Support Activities for Forestry and Logging <sup>22</sup>	Total Prince George Area Forest Industry
<b>Direct Impacts</b>					
Output (in \$millions)	\$1,554.9	\$137.1	\$411.0	\$63.8	<b>\$2,166.8</b>
GDP (in \$millions)	\$432.2	\$48.1	\$142.6	\$33.8	<b>\$656.7</b>
Employment (FTEs)	2,380	445	1,442	726	<b>4,993</b>
Federal Tax (in \$millions)	\$55.9	\$6.1	\$20.1	\$4.8	<b>\$86.9</b>
Provincial Tax* (in \$millions)	\$39.3	\$3.6	\$14.1	\$3.3	<b>\$60.3</b>
Municipal Tax (in \$millions)	\$10.7	\$0.5	\$1.5	\$0.2	<b>\$12.9</b>
<b>Indirect and Induced Impacts</b>					
Output (in \$millions)	\$1,414.3	\$94.8	\$163.9	\$23.4	<b>\$1,696.4</b>
GDP (in \$millions)	\$718.2	\$53.5	\$85.9	\$14.0	<b>\$871.6</b>
Employment (FTEs)	5,612	504	519	126	<b>6,761</b>
Federal Tax (in \$millions)	\$93.3	\$6.9	\$11.0	\$1.8	<b>\$113.0</b>
Provincial Tax* (in \$millions)	\$71.9	\$5.4	\$8.6	\$1.4	<b>\$87.3</b>
Municipal Tax (in \$millions)	\$21.7	\$1.7	\$2.7	\$0.4	<b>\$26.5</b>
<b>Total Impacts</b>					
Output (in \$millions)	\$2,969.2	\$231.9	\$574.9	\$87.2	<b>\$3,863.2</b>
GDP (in \$millions)	\$1,150.4	\$101.6	\$228.5	\$47.8	<b>\$1,528.3</b>
Employment (FTEs)	7,992	949	1,961	852	<b>11,754</b>
Federal Tax (in \$millions)	\$149.2	\$13.0	\$31.1	\$6.6	<b>\$199.9</b>
Provincial Tax* (in \$millions)	\$111.2	\$9.0	\$22.7	\$4.7	<b>\$147.6</b>
Municipal Tax (in \$millions)	\$32.4	\$2.2	\$4.2	\$0.6	<b>\$39.4</b>

\*Please note that the provincial tax impacts do not include stumpage, fee-in-lieu of domestic manufacturing, timber sales, rentals and licences, or export fees.

<sup>19</sup> Includes sawmills, and pulp, paper, and paperboard mills.

<sup>20</sup> Includes pellet mills, engineered wood product manufacturers, wood furniture manufacturers and other wood product manufacturers.

<sup>21</sup> Includes logging contractors and forest nurseries.

<sup>22</sup> Includes silviculture, forest management, and other support activities for forestry and logging.

As can be seen from Table 6, in 2016, the Prince George Area forest industry was estimated to have generated approximately:

- \$3.863 billion in total economic output in B.C.
- \$1.528 billion in total GDP in B.C.
- \$385 million in total revenue for federal, provincial and municipal governments.
- 11,754 full time equivalent (FTEs) of total employment in B.C.

The estimated contribution of each sub-sector to the total economic impacts are described below:

- Primary manufacturing was estimated to account for approximately 75 percent of total output, GDP, and government revenue, and approximately 70 percent of total employment.
- Forestry and logging was estimated to account for approximately 15 percent of total output, GDP and government revenue, and approximately 17 percent of total employment.
- Secondary manufacturing was estimated to account for between 6 percent and 7 percent of total output, GDP, and government revenue, and approximately 8 percent of total employment.
- Support activities for forestry and logging was estimated to account for the remaining impacts.
- To understand the contribution that the Prince George Area forest industry makes to the provincial forest industry we compared estimated direct employment to total provincial employment (see Table 1) for each sub-sector. Based on that comparison, the Prince George Area was estimated to account for approximately 7 percent of forest industry manufacturing employment and 11 percent of forestry and logging employment in B.C.

## 6. INDUSTRY COMPARISONS

To provide perspective on the relative size of the economic impacts generated by the Prince George Area forest industry, it is useful to provide a comparison with other industries in B.C. Four examples of such industries are aquaculture, home construction, high-end film and television productions, and tourism.

- **Aquaculture** – The total contribution to provincial GDP in 2016 attributable to the Prince George Area forest industry (\$1.528 billion) is almost three times the GDP contribution of the B.C. salmon farming industry in 2016 (\$558 million).<sup>23</sup>
- **Home Construction** – The total employment supported by the Prince George Area forest industry in 2016 was equivalent to the direct and indirect employment supported by the construction of approximately 5,200<sup>24</sup> new homes in BC (equivalent to 12 percent<sup>25</sup> of total new home starts in B.C. in 2016).
- **High-End Film and Television Production** – The total employment supported by the Prince George Area forest industry in 2016 was equivalent to the employment supported by the production of between six and ten high-end television series or large budget motion pictures.<sup>26</sup>

<sup>23</sup> BC Salmon Farmers Association, Update of the Economic Impact Study of the BC Farm-Raised Salmon Industry, available here: [http://bcsalmonfarmers.ca/wp-content/uploads/2015/01/BCSFA\\_Econ\\_ImpactStudy-SEP2017.pdf](http://bcsalmonfarmers.ca/wp-content/uploads/2015/01/BCSFA_Econ_ImpactStudy-SEP2017.pdf)

<sup>24</sup> Will Dunning Inc., "Economic and Fiscal Impacts of Residential Construction – 2016," [http://www.chba.ca/CHBA/Housing\\_in\\_Canada/Information\\_and\\_Statistics/impacts/1%20British%20Columbia%20Economic%20Impacts%20of%20New%20Home%20Construction%202016.pdf](http://www.chba.ca/CHBA/Housing_in_Canada/Information_and_Statistics/impacts/1%20British%20Columbia%20Economic%20Impacts%20of%20New%20Home%20Construction%202016.pdf)

<sup>25</sup> Canada Mortgage and Housing Corporation, Prepared by BC Stats, February 2017, "Housing Starts, Urban Areas and Communities".

<sup>26</sup> Based on Motion Picture Association – Canada, Economic Impacts of *Tomorrowland*, available here: <http://www.mpa-canada.org/wp-content/uploads/2015/05/MNP-Analysis-For-May-21-2015-Release.pdf/>

- **Tourism** – The total employment supported by the Prince George Area forest industry in 2016 was roughly equivalent to the employment supported by the total spending of European tourists to B.C. in 2016.

## APPENDIX A: DATA SOURCES

### Secondary Research - Sources Consulted

#### Industry Research:

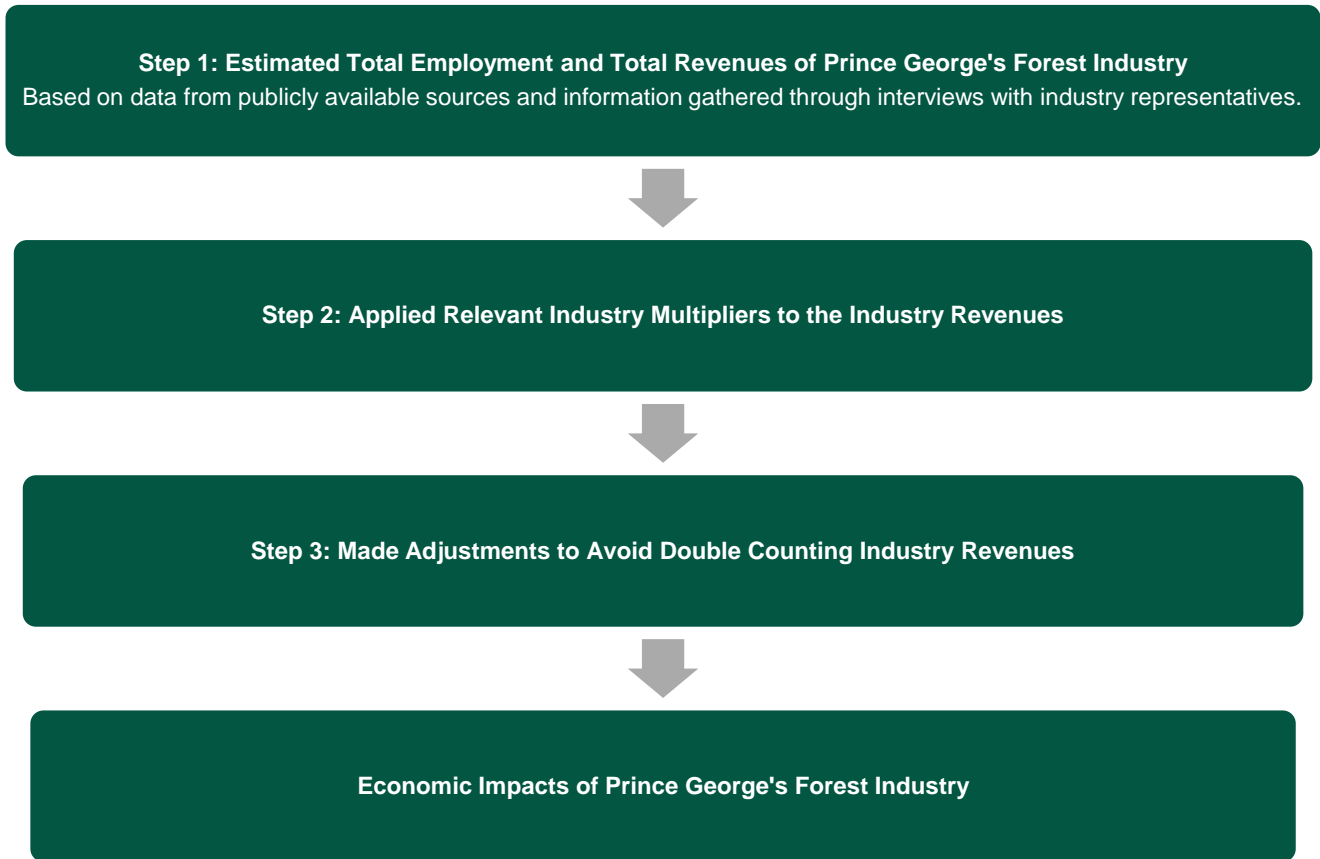
- Naturally: wood, Sustainable Forest Management in British Columbia, [https://www.naturallywood.com/sites/default/files/documents/resources/sustainable\\_forest\\_management\\_-\\_web.pdf](https://www.naturallywood.com/sites/default/files/documents/resources/sustainable_forest_management_-_web.pdf)
- Natural Resources Canada, State of Canadas Forests 2017, <http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/38871.pdf>
- Government of British Columbia, Prince George Timber Supply Area Rationale for Allowable Annual Cut (AAC) Determination, [https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/stewardship/forest-analysis-inventory/tsr-annual-allowable-cut/prince\\_george\\_tsa\\_rationale\\_2017.pdf](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/stewardship/forest-analysis-inventory/tsr-annual-allowable-cut/prince_george_tsa_rationale_2017.pdf)
- Government of British Columbia, <https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/timber-supply-review-and-allowable-annual-cut/timber-supply-areas/prince-george-tsa>
- Government of British Columbia, Prince George TSA Discussion Paper, [https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/stewardship/forest-analysis-inventory/tsr-annual-allowable-cut/prince\\_george\\_tsa\\_discussion\\_paper.pdf](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/stewardship/forest-analysis-inventory/tsr-annual-allowable-cut/prince_george_tsa_discussion_paper.pdf)
- Government of British Columbia, Major Primary Timber Processing Facilities in B.C. 2015, <https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/forest-industry-economics/fibre-mill-information>
- Statistics Canada, Business Patterns Database, June 2016. Location counts by CSD and NAICS code.
- Statistics Canada, National Household Survey, 2011. Class of Worker by NAICS code for the Employed Labour Force Aged 15 Years and Over, in Private Households of Canada, Provinces, Territories, Census Metropolitan Areas and Census Agglomerations.
- BC Stats, Custom tabulation of Statistics Canada's Labour Force Survey data, 2016. Annual employment by region and NAICS code.

#### Industry Comparisons:

- BC Salmon Farmers Association, Economic Impact Study of the Farm-Raised Salmon Industry in BC, [https://bcsalmonfarmers.ca/wp-content/uploads/2015/01/1\\_BCSFA\\_2014\\_EconImpactStudy.pdf](https://bcsalmonfarmers.ca/wp-content/uploads/2015/01/1_BCSFA_2014_EconImpactStudy.pdf).
- Will Dunning Inc., Economic and Fiscal Impacts of Residential Construction – 2016, [http://www.chba.ca/CHBA/Housing\\_in\\_Canada/Information\\_and\\_Statistics/impacts/1%20British%20Columbia%20Economic%20Impacts%20of%20New%20Home%20Construction%202016.pdf](http://www.chba.ca/CHBA/Housing_in_Canada/Information_and_Statistics/impacts/1%20British%20Columbia%20Economic%20Impacts%20of%20New%20Home%20Construction%202016.pdf)
- Motion Picture Association – Canada, Economic Impacts of Tomorrowland, <http://www.mpa-canada.org/wp-content/uploads/2015/05/MNP-Analysis-For-May-21-2015-Release.pdf/>

## APPENDIX B: APPROACH TO ECONOMIC IMPACT ESTIMATES

MNP’s approach to economic impact modelling is based on published Statistics Canada multipliers and input-output modelling. A step-by-step overview of our approach to estimating the economic impacts of Prince George’s forest industry is provided below:



### Adjustments to Avoid Double Counting

The forest industry is comprised of sub-sectors that are vertically integrated, with some sub-sectors supplying other sub-sectors in the industry. For example, the forestry and logging sub-sector is one of the suppliers to the primary manufacturing sub-sector. As a result, some of the direct impacts generated by forestry and logging would be considered indirect impacts generated by primary manufacturing.

To avoid double counting adjustments were made to account for relationships between sub-sectors. For each sub-sector of the forest industry, MNP estimated the share of the sub-sector’s revenue generated from sales to other sub-sectors in Prince George’s forest industry.<sup>27</sup> Those estimates were then used to make adjustments to the estimates of indirect and induced impacts to ensure that impacts were not being counted twice.

---

<sup>27</sup> The share of revenue generated from sales to other forest industry sub-sectors was estimated using information obtained from interviews with industry participants.

## APPENDIX C: ABOUT MNP

MNP is the fastest growing major chartered accountancy and business advisory firm in Canada. Founded in 1958, MNP has grown to more than 60 offices and 4,000 team members across Canada. In British Columbia, MNP has more than 800 staff located in 19 offices throughout the province. The map below shows our office locations.

MNP provides a wide range of accounting, finance and business advisory services to clients. These include:

- Assurance
- Taxation
- Corporate Finance
- Mergers and Acquisitions
- Enterprise Risk Services
- Forensic Accounting
- Consulting
- Insolvency and Corporate Recovery
- Succession
- Valuations and Litigation Support



### About MNP’s Economics and Research Practice

Economic and industry studies are carried out by MNP’s Economics and Research practice. Based in Vancouver, the Economics and Research practice consists of a team of professionals that has a successful track record of assisting clients with a wide variety of financial and economic impact studies. Our work has encompassed a wide range of programs, industries, company operations and policy initiatives, and has helped clients with decision-making, communication of economic and financial contributions, documentation of the value of initiatives and activities, and development of public policy.

MNP’s Economics and Research practice has in-depth experience in assessing the economic and community impacts of industries, projects and developments. We have completed these studies for a wide range of industries including agriculture, aquaculture construction, arts, entertainment and culture, energy, forestry, transportation and tourism. For more information please contact us at [economics@mnp.ca](mailto:economics@mnp.ca)