Fall 2017

LABOUR MARKET PROFILE:

Forestry

Executive Summary

Canadian forests are the foundation of our natural heritage, our national identity, and economy. With the third-largest forested area in the world[i], Canada represents 9% of world's forests and 24% of the world's boreal forests, with approximately 348 million hectares of sustainable forests.

Accounting for 55 million hectares of public forest land, British Columbia (BC) is a world leader in sustainable forest management, is home to more than 7,000 sector-related businesses, and employs 66,918 people across the province.[1] The forestry sector in BC is one of the world's largest exporters of wood products contributing to 36% of BC's total exports for 2015 and accounting for $12.9 billion in revenue (up 29% from 2011).[1]

This profile examines the forestry sector in the province, and explores its contributions to the Columbia Basin-Boundary region. This report looks specifically at the following indicators:

- Forest sector establishments;
- Economic contributions; and
- Employment within the forestry sector.

The following page presents relevant sector highlights.

This document was updated November 3, 2017.

[i] Russia accounts for 22%, Brazil 12%, Canada 9%, USA 8%, China 5%, and the rest of the world accounts for 46% of the world's forests.[6]

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COLUMBIA BASIN RDI RURAL DEVELOPMENT INSTITUTE
Social Sciences and Humanities Research Council of Canada
Conseil de recherches en sciences humaines du Canada
Canada
Kootenay Workforce Development

Forest sector establishments

The Columbia Basin-Boundary region is home to approximately 246 forestry related businesses.[2] Additionally, it is estimated that 22 primary forest products manufacturing facilities (10% of provincial establishments) are located in the Columbia Basin-Boundary region.[3] Cranbrook has the most forestry related businesses in the region, followed by Nelson, Golden, and Nakusp.

Economic contributions

As an economic contributor, in 2016 the sector contributed $218,755 million to the total BC Gross Domestic Product (GDP), accounting for 3.4% of the total provincial GDP.[4] Forest sector exports in 2016 totalled $39,011 million.[4]

Forestry in BC is comprised of 55 million hectares of public forest land, 52 million hectares of which is certified.[15] The Interior produces more than 80% of BC's softwood lumber, accounts for half of the province's pulp and paper production, and 74% of BC's timber harvest volumes.[5]

Employment within the forestry sector

Forestry makes a significant contribution to British Columbia's economy and employs approximately 66,918[ii] people province-wide (up 0.6% from 2014 and 18% from 2009)[5] and accounts for 2.8% of the total employment in BC in more than 7,000 forestry-related businesses in over 140 rural communities.[1]

A total of 134,700 job openings are expected in BC's South East region, which includes the Columbia Basin-Boundary, by 2025.[iii,6] Three in ten openings in the forestry sector are due to economic growth and the remainder (70%) are required to replace retiring workers. This is in keeping with the forecast provincially across all sectors which anticipates that by 2025, 69% of all job openings will be due to retirements and deaths.[6]

Silviculture and forestry workers (National Occupation Classification - NOC code 8422) are in the top 10 occupations forecasted to expand the fastest in the South East region at a rate of 2.8%, and is the only forestry related occupation listed in the top 10.[6]

Projected job openings in the Kootenay Development Region are highest for transport truck drivers, heavy equipment operators (except crane), and heavy-duty equipment mechanics. Occupations in the forestry sector with the highest, sustained demand in the South East Region between 2015 and 2025, include transport truck drivers, heavy equipment operators (except crane), construction managers, and heavy-duty equipment mechanics.

[ii] Includes private and public sector employees.

[iii] The South East region includes the Thompson-Okanagan and the Kootenay Development Regions. Note that while the Kootenay Development Region does not match the Columbia Basin-Boundary region it covers the majority of the region except for Valemount which is located in the Cariboo Development Region.

Introduction

This report is part of a Social Sciences and Humanities Research Council of Canada (SSHRC) funded project entitled, *Regional Workforce Development in Rural BC*. The purpose of this profile is to identify current forestry sector market trends and issues, including current and projected labour market needs to help workforce development partners within the Columbia Basin-Boundary region understand and respond to changing labour market demands. This forest sector labour market profile identifies characteristics that comprise the BC forest sector, including performance in terms of production, and contribution to the regional economy.

The guiding research questions include:

1. What is known about the forest sector within the Columbia Basin-Boundary region and how does the region compare provincially and nationally?
2. What are the current and projected labour market needs for the Columbia Basin-Boundary region?

Methodology

The Forestry Labour Market Profile was prepared by reviewing the following sources (see **Appendix A: References and Resources**):

- Industry research of publically available studies and reports;
- Industry data and statistics collected from publically available sources such as Statistics Canada, BC Stats, Natural Resources Canada, The Ministry of Forests, Lands and Natural Resource Operations, as well as other relevant industry associations;
- Secondary research documents, such as forestry plans, situation analyses and various regional economic studies; and
- Labour Force Survey purchased through Statistics Canada.

Data related specifically to the labour market for the forestry industry was selected, as well as economic data that illustrates the status of the labour market. Additional information on a sector in the Columbia Basin-Boundary region may be available as part of the State of the Basin report prepared by the Columbia Basin Rural Development Institute.

Statistics are not frequently reported for the Columbia Basin-Boundary region making it challenging in some instances to report on statistics for the Columbia Basin-Boundary in its entirety. For instance some data is collected at a Development Region level and the Columbia Basin-Boundary covers three Development Regions: Revelstoke and Golden in the Thompson-Okanagan region, Valemount in the Cariboo region, and the entirety of the Kootenay Development Region (see **Figure 1**). In other instances, data is reported for the South East region, including the Thompson-Okanagan and Kootenay Development Regions, but excludes Valemount.

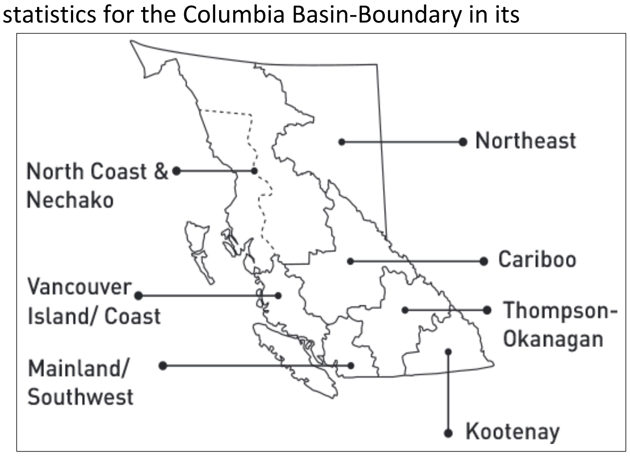


Figure 1: BC Development Regions as defined by Work BC[i,7]

This report was researched and prepared between January 2, 2017—May 31, 2017.

The Columbia Basin-Boundary

Located in the southeast corner of British Columbia, the Columbia Basin-Boundary region (see **Figure 2**) includes the Regional Districts of East Kootenay, Central Kootenay, Kootenay Boundary, in addition to Revelstoke, Golden, Valemount and Columbia Shuswap Regional District Areas A and B. With an approximate land area of 83,171 square kilometres, the region accounts for 9% of the size of British Columbia, and is abundant with valleys and mountain ranges including the Purcells, Selkirks and Monashees.

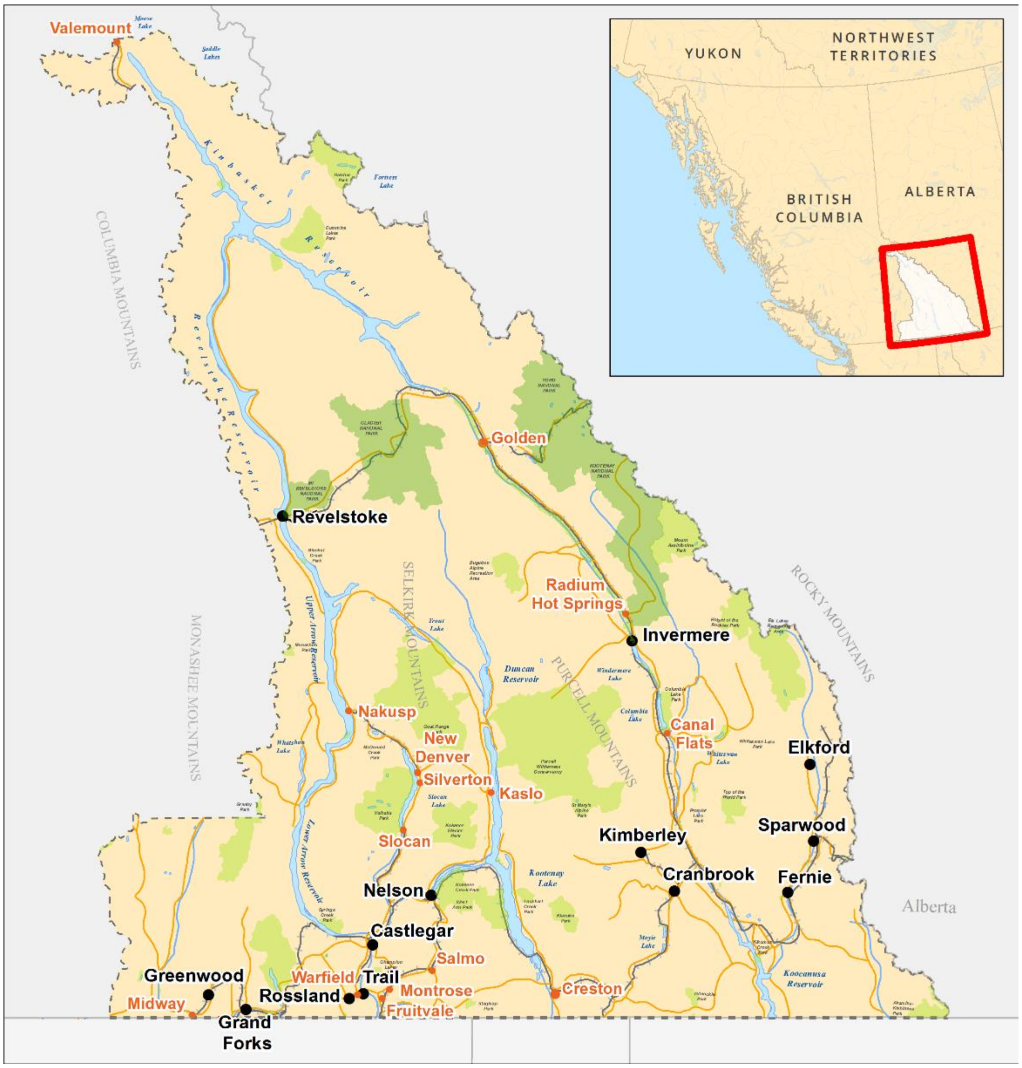


Figure 2: The Columbia Basin-Boundary Region[8]

With a regional population of 162,900, it accounts for 3.5% of the provincial population.[9] The overall population is aging and while different communities have different population projections the overall regional population projection is steady with no large gains or losses.[9]

The economy is primarily resource-based with forestry and mining as key economic drivers. The region's hydro-electric power generation accounts for approximately 44% of electricity generated in the province and the region is home to British Columbia's largest coal fields.[10] The Columbia Basin-Boundary region is also amenity-rich, supporting a vibrant tourism industry.

The labour market in the Kootenay Development Region is currently strong with the second highest job growth of the seven development regions reported between 2010-2015 (3.5%).[10] However, while 54.2% of residents have some post-secondary education, only 5.1% have a university certificate, diploma, or degree above a bachelor's degree, and 9.9% have a university bachelor's degree.[11] These are both lower than BC and Canada, where in BC 8.1% have a university certificate, diploma, or degree above a bachelor's degree, and 14.0% have a university bachelor's degree. For Canada, it is 7.5% and 13.3% respectively.[11] It is important to note that provincially more than 78% of all future job openings will require post-secondary education, including 36% that will require a bachelor's, graduate or first professional degree and/or significant work experience.[6] The unemployment rate in the Kootenay Development Region in March of 2017 is 6.4%.[12]

Characteristics of the Forestry Sector

Forestry in Canada

Canadian forests are the foundation of our natural heritage, our national identity and economy. With the third-largest forested area in the world[iv], Canadian forests are a key contributor to the Canadian economy. Canada represents 9% of world's forests and 24% of the world's boreal forests: approximately 348 million hectares of sustainable forests.

The forest industry is an export-oriented manufacturing sector, accounting for almost 7% of all Canadian exports in 2015 ($32.7 billion).[13] Traditional forest products form the backbone of the Canadian forest sector and Canada is the world's largest producer of newsprint and northern bleached softwood kraft pulp and one of the world's largest producers of softwood lumber.[14]

As shown in **Figure 3**, the forest sector contributed 22.1 billion (1.2%)[13] to Canada's gross domestic product (GDP) in 2015, and generated 201,645[v13] jobs nationally. Although it contributes less to the total GDP than other resource sectors do, the forest sector creates more jobs and contributes more to the balance of trade for every dollar of value added than do the minerals and metals or the energy sectors.[13]

[iv] Russia accounts for 22%, Brazil 12%, Canada 9%, USA 8%, China 5%, and the rest of the world accounts for 46% of the world's forests.[6]

[v] 9,500 of these jobs were located in Indigenous communities.

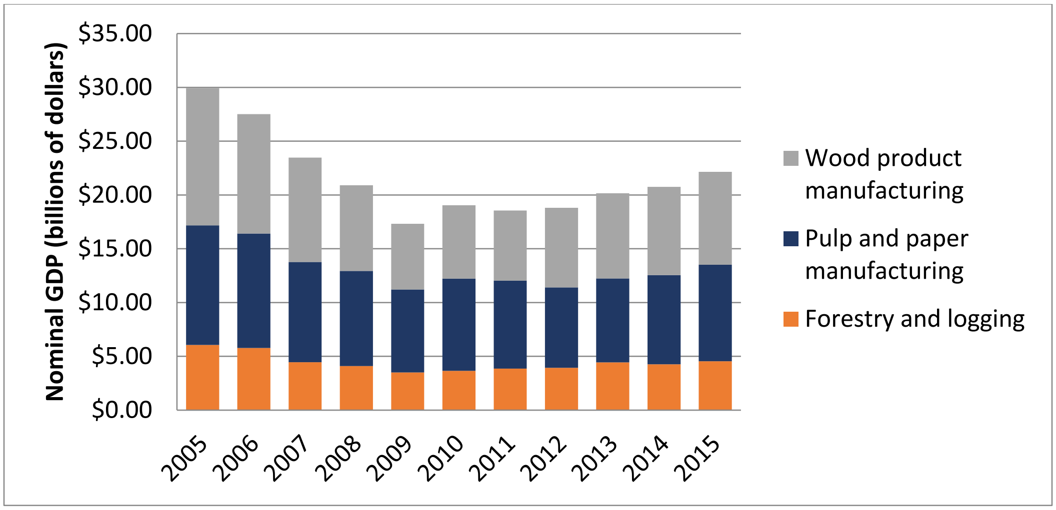


Figure 3: Canadian forest industry's GDP, 2005-2015[13]

Forestry in BC

Forestry in BC is comprised of 55 million hectares of public forest land, 52 million hectares of which is certified.[15] The forest sector has long been a cornerstone of economic activity and continues to be the foundation of BC's economy. The sector consists of a number of separate, but inter-connected activities such as planning, planting, and forest management; road-building and harvesting; wood product manufacturing (primary and secondary); pulp, paper and bio-refining; and forest product marketing.[4]

The forest sector in BC is primarily comprised of small businesses in forestry and logging operations, many of which are independent contractors with a small number of employees. Independent operators typically contract their services to forest tenure holders, mostly for the purpose of harvesting timber and hauling logs for processing and manufacturing. Much of the work is specialized, mostly seasonal, and takes place on variable work sites, contributing to a degree of irregular and part-time work. In contrast, regular and full-time employment is much higher among forest product manufacturers, as these businesses are operated year-round in permanent locations.

An important feature of BC's forest sector is that it is integrated. The logging and harvesting industry and forestry management (replanting and managing forests) feeds into the lumber and other wood products industries. At the same time, the by-products from wood manufacturing (as well as lower-quality logs) provide fibre for BC's pulp and paper industry (see **Figure 4**).

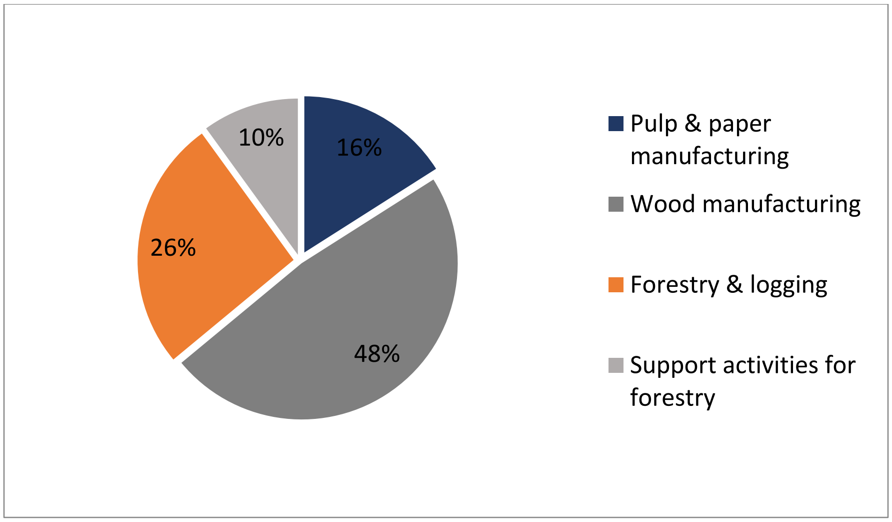


Figure 4: BC forest sector by industry[16]

Additionally, the sector is made up of various public and private entities, including forestry and logging companies, manufacturers of wood and paper products, suppliers of commercial equipment and professional services, regulatory agencies, land use planners, forestry schools and colleges, research institutes, and other non-government organizations.

The BC forest industry is divided into two main regions: the Coast and the Interior—each unique in terms of growing conditions, climate, topography, timber species, and industrial operations. The Coastal region encompasses the regions of Vancouver Island and Coast, Lower Mainland, and Southwest and North Coasts. These regions produce high-quality products of large diameter logs from Douglas-fir, Hemlock, and Western Red Cedar. Fibre costs are high in the Coast region, and the industry focuses on making products that maximize values.

The Interior region primarily produces products from smaller diameter logs from Spruce, Pine, and Fir and includes the Nechako, Northeast, Cariboo, Thompson-Okanagan, and Kootenay Development Regions. The Interior produces more than 80% of BC's softwood lumber, accounts for half of the province's pulp and paper production, and 74% of BC's timber harvest volumes (see **Figure 5**).[5]

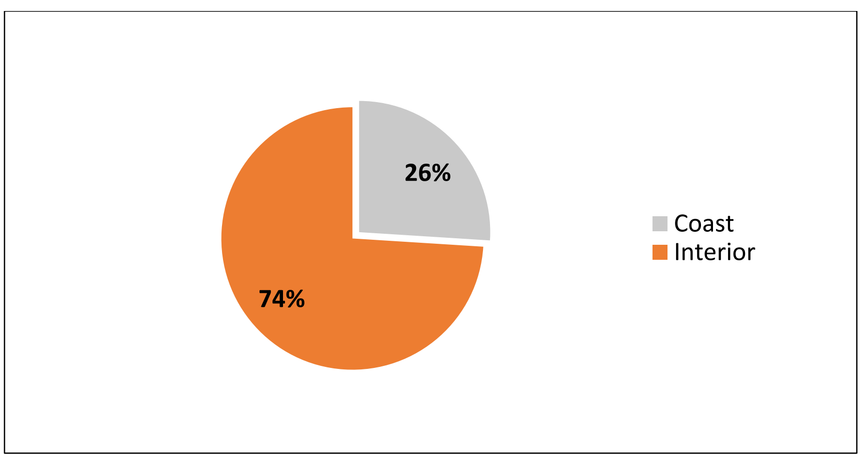


Figure 5: BC forest harvest volumes: Coast & Interior regions, 2015[5]

Forestry makes a significant contribution to British Columbia's economy. The sector employs approximately 66,918[vi] people province-wide (up 0.6% from 2014 and 18% from 2009)[5] and accounts for 2.8% of total employment in BC (see **Table 1**) in more than 7,000 forestry-related businesses in over 140 rural communities.[1]

	Employment 2016		Employment Growth (Average Annual Rate)		Job Openings 2015 - 2025	
	Number of workers	Share of BC	2016-2020	2020-2025	Number of job openings (10yr sum)	Share of BC
Forestry & logging	11,971	0.5%	1.10%	0.30%	2,294	0.20%
Wood product manufacturing	36,038	1.5%	-1.0%	-1.6%	6,178	0.7%
Paper manufacturing	9,216	0.4%	-1.6%	-3.4%	927	0.1%
Support forestry activities	9,693	0.4%	0.6%	-0.2%	3,091	0.3%
Total	66,918	2.8%	-0.9%	-5.2%	10,196	1.3%
BC all industries	2,332,051	100%	1.20%	1.20%	933,618	100%

Table 1: Industry employment & job openings in BC, 2015-2025[vii, 17]

As shown in **Figure 6**, the agriculture, forestry, fishing, and hunting goods producing industry is fourth largest contributor to the provincial GDP. The *BC Jobs Plan: 5-Year Update* reports forest products account for 36% of BC's total exports for 2015, accounting for $12.9 billion in revenue in 2015 (up 29% from 2011).[1]

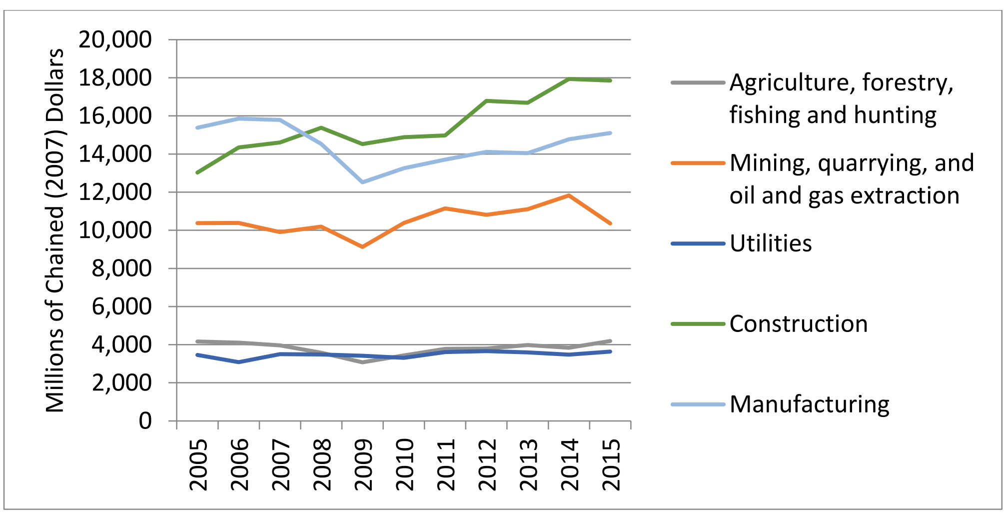


Figure 6: BC GDP by goods producing industry - NAICS aggregations, 2005-2015[18]

[vi] Includes private and public sector employees.
[vii] Does not include indirect employment statistics.

As an economic contributor, in 2015 the sector contributed $7,190 million to the total BC GDP (up 2.9% from 2014)[4] (see **Table 2**).

Forest Sector	2011 ($)	2012 ($)	2013 ($)	2014 ($)	2015 ($)
Forestry & logging	1,787.60	1,833.40	2,008.30	1,819.30	1,906.80
Support activities for forestry	586.8	577.3	615	630.7	696.2
Wood product manufacturing	2,773.50	2,971.00	3,147.60	3,246.30	3,397.10
Pulp, paper & paperboard mills	1,179.20	1,053.90	1,005.70	1,101.20	1,089.80
Converted paper product mfg.	95.30	106.90	98.50	96.50	100.60
Total Forest Sector	**6,422.40**	**6,542.50**	**6,875.10**	**6,894.00**	**7,190.50**
Total BC GDP	**188,788.90**	**193,667.20**	**197,400.90**	**203,067.30**	**209,110.30**

Table 2: Forest sector gross & total BC domestic product in millions of chained[viii] 2007 dollars, 2011-2015[19]

Regarding BC forest product exports and balance of trade, BC is in a surplus. The United States of America (USA) was BC's largest market in 2015 valued at $6.1 billion (+10.8% increase from 2014). Exports to China were valued at $3.7 billion (-1.6% from 2014) (see **Figure 7**).[20]

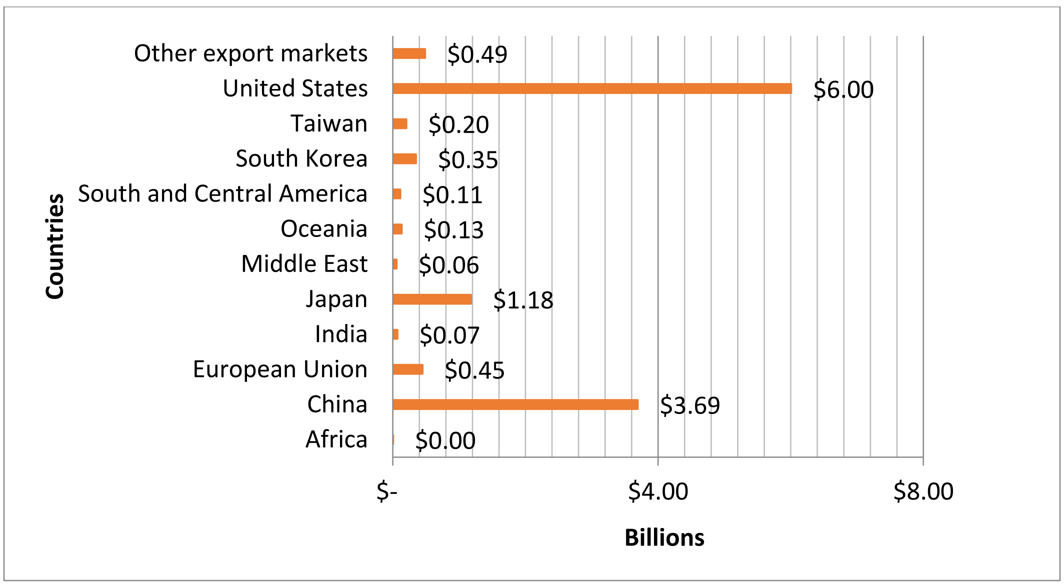


Figure 7: Total exports of primary wood products, pulp & paper, & wood-fabricated materials 2015 [ix,20]

The ongoing softwood lumber trade dispute with the USA will impact the forestry industry in BC. The impacts remain to be seen as forestry companies respond and adjust to duties imposed by the U.S.[21]

Forestry Sector Classifications: NAICS

[viii] Chained dollars is a methodology implemented by Statistics Canada which takes into account fluctuations in relative prices and the composition of output over time. In "Canadian Industry Statistics", Gross Domestic Product at basic prices by industry is presented in chained dollars.[33]

[ix] Note: Figure 5 represents the 'balance of trade' as the difference between the value of the goods and services that a country exports domestically and the value of the goods and services that it imports. If a country's exports exceed its imports, it has a trade surplus. If its imports exceed exports, the country has a trade deficit.

The North American Industry Classification System (NAICS[x]) defines the "forest industry" to include companies operating in forestry and logging (NAICS code 113), support activities for forestry NAICS code (115), wood products manufacturing (NAICS code 321), and pulp and paper manufacturing (NAICS code 322). The practical reality is that in BC these four industries are interrelated and make up what is known as the "forest products cluster". Refer to **Appendix B** for a detailed list of NAICS codes relating to the forest sector.

Forest Sector Composition

The BC forest industry can be categorized into six main sectors. These include primary manufacturing, secondary manufacturing, fibre supply and wholesale, silviculture, forest innovation, and forest management.

Primary manufacturing facts in BC[22]

- Estimated revenue of $10.8 billion
- Employment created 82,843 FTEs
- Largest manufacturing sector in the province
- Largest producer of softwood lumber products in Canada

1. Primary manufacturing sector

The primary manufacturing sector is the forest industry's largest sector and produces a broad range of products including commodity products (dimensional lumber, panels, pulp and paper), speciality products, and niche products. The Interior accounts for approximately 70% of revenues from the primary manufacturing sector.[22]

Primary manufacturing facilities convert whole logs into lumber products. Wood residuals, such as chips and hog fuel are by-products of the manufacturing process and are used by pulp and bioenergy operations. Primary manufacturers process about 91% of all logs harvested, and accounted for 30% of total BC exports in 2013.[22] Since manufacturing is capital intensive, most facilities are operated by large companies.

2. Secondary manufacturers

Secondary manufacturers produce semi-finished and finished products and components. These include engineered wood, mouldings, window and door frames, cabinets, furniture components, log pallets, and log homes. Total sector revenue is estimated to have been $2 billion in 2013. Of this revenue, approximately 66% was generated on the Coast and 34% in the Interior.[22] There were approximately 1,284 secondary manufacturing businesses in BC at the end of 2013.[4]

3. Fibre supply and wholesale sector

The fibre supply and wholesale sector is comprised of wholesalers and brokers that trade logs, wood chips and wood products both domestically and internationally. In 2013 there were 493 lumber, plywood, and millwork wholesalers operating in BC.[23] The sector is estimated at $463 million and of this revenue; approximately 56% was generated from the Interior and 44% from the Coast region.[22]

4. Silviculture

[x] The North American Industry Classification System (NAICS) is an industry classification system composed of sectors (two-digit codes), subsectors (three-digit codes), industry groups (four-digit codes), industries (five-digit codes) and country specific industries (six-digit codes)

Silviculture involves tending to forest stands and regeneration. These two activities include products and services supplied by seed orchards and forest nurseries, site preparation, planting, vegetation management, spacing, pruning, fertilization, brushing, commercial thinning, and site rehabilitation activities. Almost 50% of all silviculture expenditures in Canada occur in BC.[22]

The demand in the silviculture sector is strong in BC, as millions of hectares of pine beetle diseased timber and wildfire mitigation is required. As of 2013 there was an estimated 292 firms operating in BC and of the $100 million in revenues, the Interior generated 85% with 15% generated from the Coast region.[22]

5. Forest Innovation Sector

The forest innovation sector is focused on finding ways of extracting maximum value from the forest resource. This generally includes research into new and more effective silviculture methods, forest management and next generation manufactured products. The Forest Products Association of Canada has partnered with FPInnovations and Natural Resources Canada to create a blueprint to help guide the Canadian forest industry toward innovation and new forest products. They have identified a potential global bio-based market of $200 billion, and a potential biochemical market of $62 billion[24] and are researching the next generation of engineered wood products, new building techniques, biochemical and wood-based bioenergy products. It is estimated that universities and research organizations received more than $124 million in research funding in 2013.[22]

6. Forest Management Sector

The forest management sector is comprised of companies that produce services to support sustainable forest management, land ownership and tenure arrangements, forest inventory and valuations, planning and protection activities, road construction, maintenance and deactivation, and timber harvesting. The Interior accounts for 61% of revenues from the forest management sector.[22]

Forest Sector Trends & Outlook in the Columbia Basin–Boundary Region

The following indicators will be examined within the Columbia Basin-Boundary region:

- Forest sector establishments;
- Economic contributions; and
- Employment within the forestry sector.

These indicators are presented in detail below, including a description of what is measured and its importance, as well as current data and trends where available.

Forest sector establishments

In 2015 a list of mills in BC was compiled by the Ministry of Forests, Lands and Natural Resource Operations and estimates 22 primary forest products manufacturing facilities (10% of provincial establishments) to be located in the Columbia Basin-Boundary region (see **Table 3**) and 215 in the province.[3] A decrease is observed provincially from 247 in 2014 to 215 as reported in 2015.[22]

Primary Forest Products Manufacturing Facilities	Number in BC	Number in the Columbia Basin-Boundary
Lumber	59	7
Veneer, Plywood, OSB & Other Panel Mills	26	3
Pulp & paper	23	2
Chip mills	20	0
Shake & shingle mills	32	2
Types of Pole Mills	18	6
Pellet	14	0
Log Homes	23	2
Total	215	22

Table 3: List of primary forest products manufacturing facilities in BC[3]

In 2015, there were 7,000 forestry-related businesses provincially in over 140 rural communities.[1] While calculating the exact number of businesses within the Columbia Basin-Boundary region is difficult, we know that in 2016/2017 there are 246[2] establishments registered with the BC Forest Safety Council directly in the region (see **Figure 8**).[xi]

Cranbrook has the most businesses in the region with 34 establishments (14%) registered with the BC Forest Safety Council (see **Figure 8)**. Nelson is home to 31 businesses (13%), Golden has 28 (11%) and Nakusp has 20 (8%).

Overall, forest sector-related businesses registered with the BC Forest Safety Council are well represented throughout the Columbia Basin-Boundary indicating that this sector is an important economic driver.

[xi] While all businesses within BC are required to register with the BC Forest Safety Council in order to bid on Provincial contracts, there may be some forestry-related businesses that have not registered with the BC Forest Safety Council and are therefore not captured in this data.

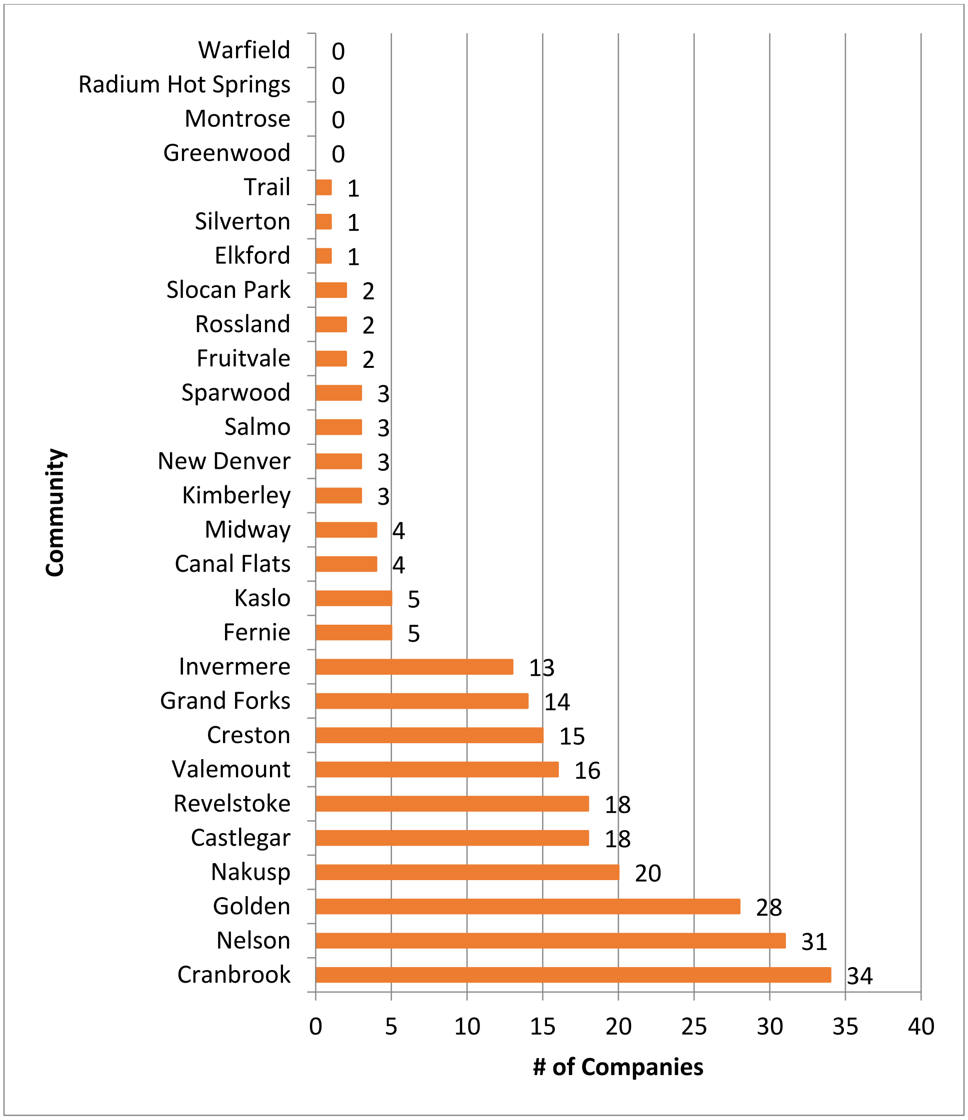


Figure 8: Number of forestry-related businesses registered with the BC Forest Safety Council in the Columbia Basin-Boundary, 2016/2017.[2]

Economic contribution

While it is difficult to accurately determine the overall economic contributions of the Columbia Basin-Boundary to the provincial GDP, examining regional wood and pulp productions, and harvest volumes, can provide insight into the sector's economic impacts.

Wood and pulp production

As noted in the *BC Forest Industry Impact Study* (2015) the total wood and pulp manufacturing sector revenue was estimated at $10.8 billion in 2013 and accounted for 27% of all manufacturing sales in BC.[22] It is estimated that approximately 70% of the revenue was generated in the Interior region.[22]

Harvest volumes

There is variation from year to year due to variable lumber prices or shutdowns related to high fire hazard. Harvest volumes saw a low of 4,675,927.99 cubic meters in 2012 to a high of 5,336,968.5 cubic meters in 2013. The government legislated Annual Allowable Cut determines the volume of trees that tenure holders are permitted to harvest.

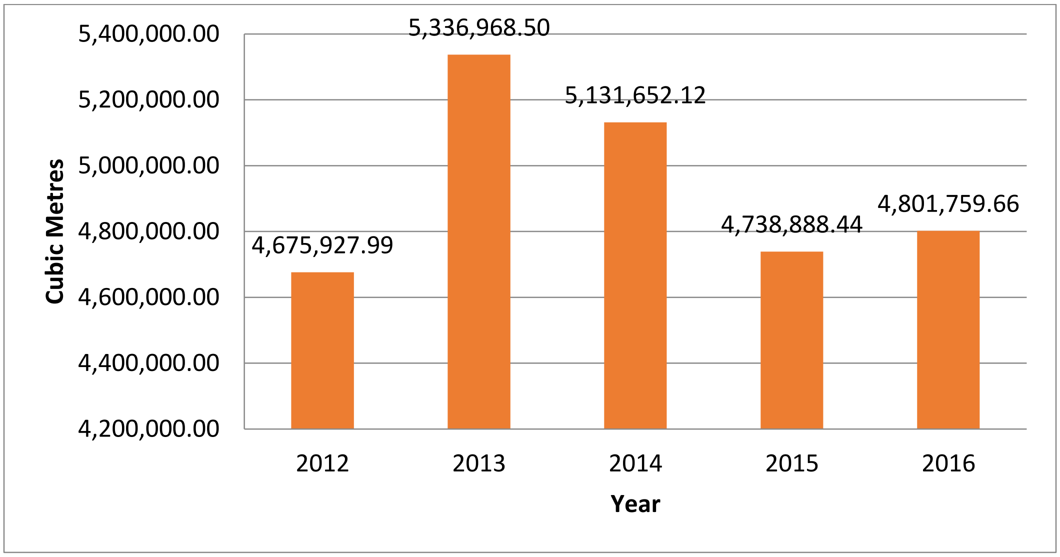
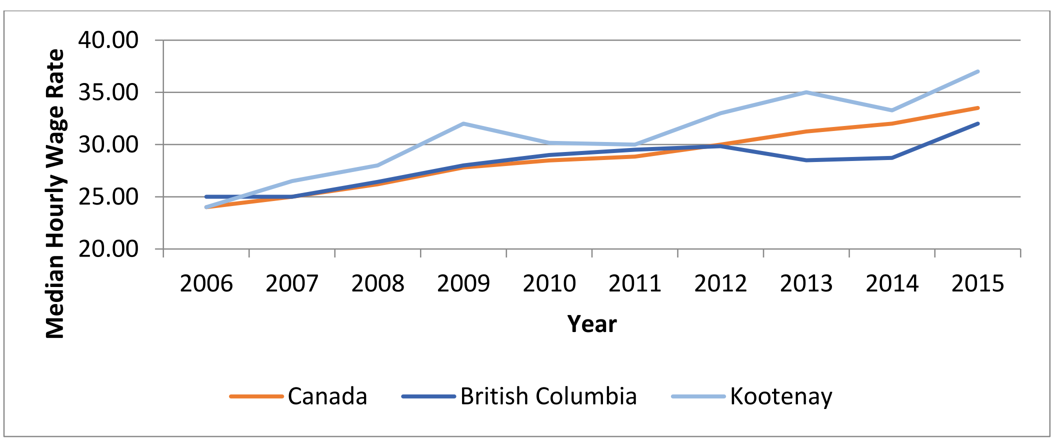


Figure 9: Total volume cut in cubic metres on crown land in the Kootenay-Boundary Natural Resource Region, 2012-2016[xii,25]

Median hourly rate

Figure 10 illustrates a steady increase in the median hourly wage rate in the forest, fishing, mining, quarrying, oil and gas sectors. In 2015, the Kootenay Development Region exceeded both the federal and provincial averages for the first time over a 10 year period with a median hourly rate of $37.00. As this data includes fishing, mining, quarrying, and the oil and gas sectors it is not clear how this rate reflects the hourly rate for the forestry sector only.



[xii] The Kootenay-Boundary Natural Resource Region includes the Selkirk Forest District, Arrow-Boundary Forest District, Columbia Forest District, Kootenay Lake Forest district and the Rocky Mountain Forest District, and appears to cover much of the area of the Columbia Basin-Boundary, with the exclusion of Valemount.[34]

Figure 10: Median hourly wage rate, total employed in the forest, fishing, mining, quarrying, oil & gas sectors, 2006 - 2015[26]

Employment participation

Since the 1980's the province's economy has grown and diversified and overall employment in the BC forest industry has declined (see **Figure 11**). Although provincial dependence on the industry has decreased, many small and rural communities are still heavily dependent on the industry. More than 40% of BC's regional economies are estimated to be dependent on harvesting and processing of forest products.[22]

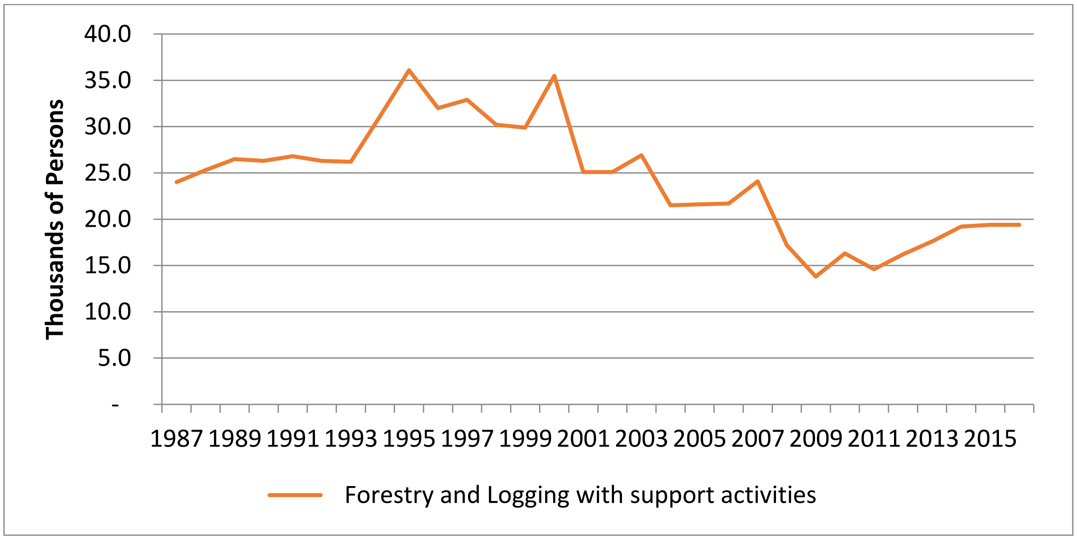


Figure 11: British Columbia employment by detailed industry, annual averages, 1987 – 2016[27]

It was not possible to isolate the data for the number of employees for the forestry sector, however data for the forest, fishing, mining, quarrying, oil and gas sectors combined is provided. **Figure 12** indicates that the total number of employees has been on a steady increase in these sectors between 2006 and 2015. The total number of employees in the Kootenay Development Region has nearly tripled over that 10 year period for a total of 6,600 employees in 2015.

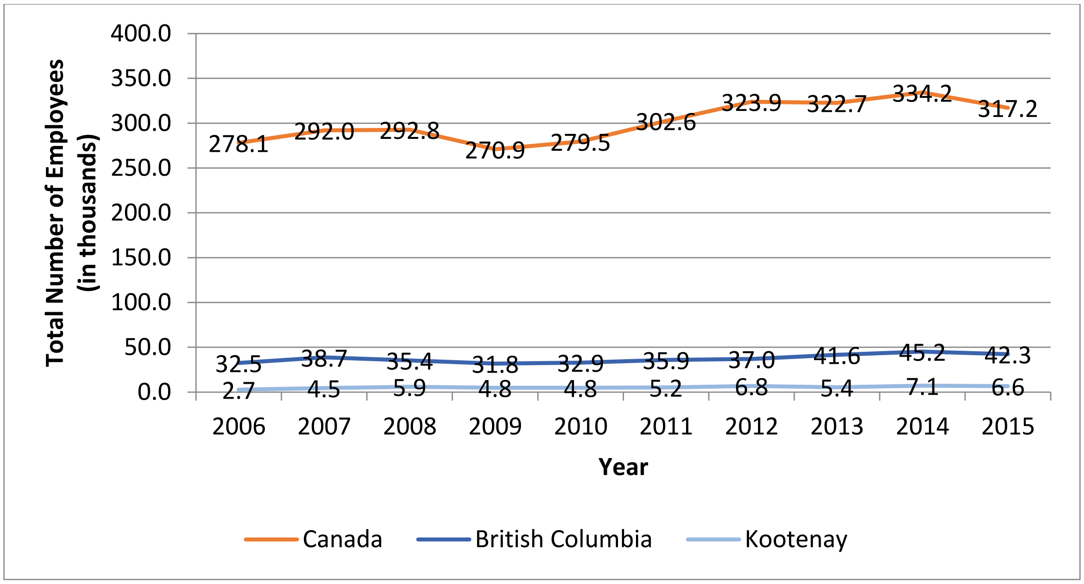


Figure 12: Total number of employees in the forest, fishing, mining, quarrying, oil and gas sectors, 2006 - 2015[26]

Employment forecast

A total of 134,700 job openings are expected in the South East region by 2025 across all industries.[xiii,6] Three in ten openings are due to economic growth and the rest are to replace retired workers. Employment demand in the region is forecast to increase each year by 1.1 % on average, the same rate as the provincial average.[6]

As shown in **Figure 13**, in BC the forestry and logging subsector will see the highest average annual growth rate of employment between 2016 and 2025 at a rate of 1.2%, while the paper manufacturing subsector will see a decline of -2.6%. In the Kootenay Development Region, the support activities for forestry and agriculture will see the highest rates of growth at 2.1%. Similar to the provincial situation, the paper manufacturing subsector will see a decline of-1.1%.

[xiii] The South East region includes Thompson-Okanagan and Kootenay Census Economic Regions. Note that while this area does not match the Columbia Basin-Boundary region it covers the majority of region except for Valemount located in the Cariboo Census Economic Region.

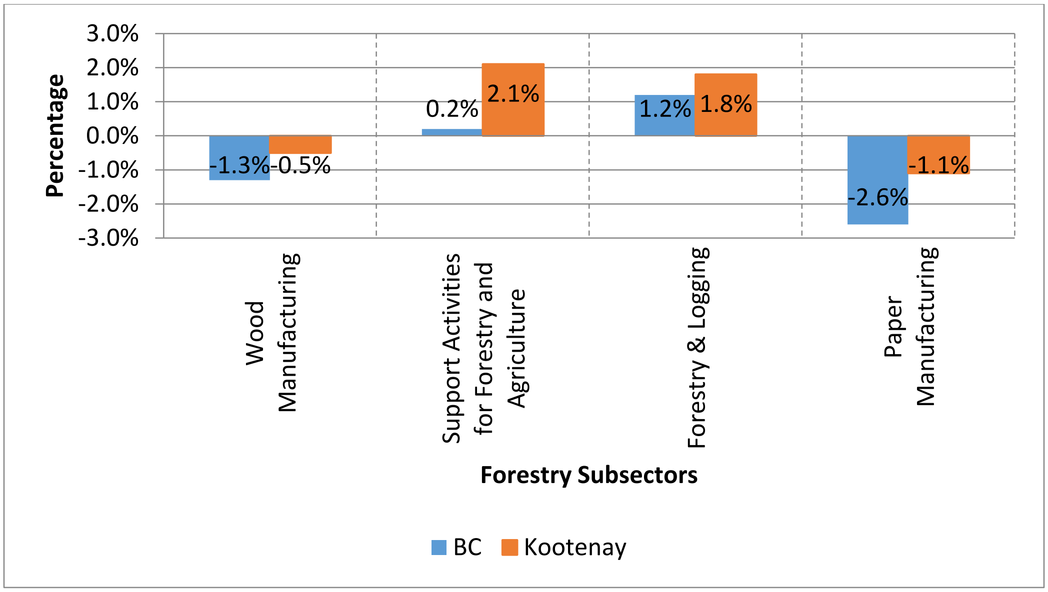


Figure 13: Average annual growth rate of employment, forestry subsectors, 2016 - 2025[17]

Within the Kootenay Development Region approximately 1,650 job openings are estimated by 2025 in the Forestry sector.[17] As shown in **Figure 14**, the 'Support Activities for Forestry and Agriculture' subsector will see the most number of job openings between 2015 and 2025 with 578 positions. This accounts for 19% of all jobs in the 'Support Activities for Forestry and Agriculture' subsector in the province (3,091 provincially). The support activities for forestry and agriculture subsector expects below average growth, with above average replacement demand. It is important to note that this subsector includes some aspects of agriculture; therefore, not all 578 positions will be directly related to forestry.

The wood manufacturing subsector (476), forestry and logging (343), and paper manufacturing (253) are all subsectors which will see higher number of job openings in the region. Interestingly, 27% of all provincial job openings in the paper manufacturing subsector will occur in the Kootenay Development Region. The paper manufacturing subsector is expected to continue in a slow decline due to timber supply limitations, productivity improvements, the decline in paper consumption, and stronger competition from international paper producers.

The forestry and logging subsector's overall industry employment provincially is forecast to decline, with a forecasted average annual demand growth of -0.3% between 2015 and 2015.[28] The decline is attributed to the mountain pine beetle infestation and resulting negative impact on future supplies, the industry also faces continued consolidation, and productivity improvements. In spite of these factors, the Kootenay Development Region remains stable.

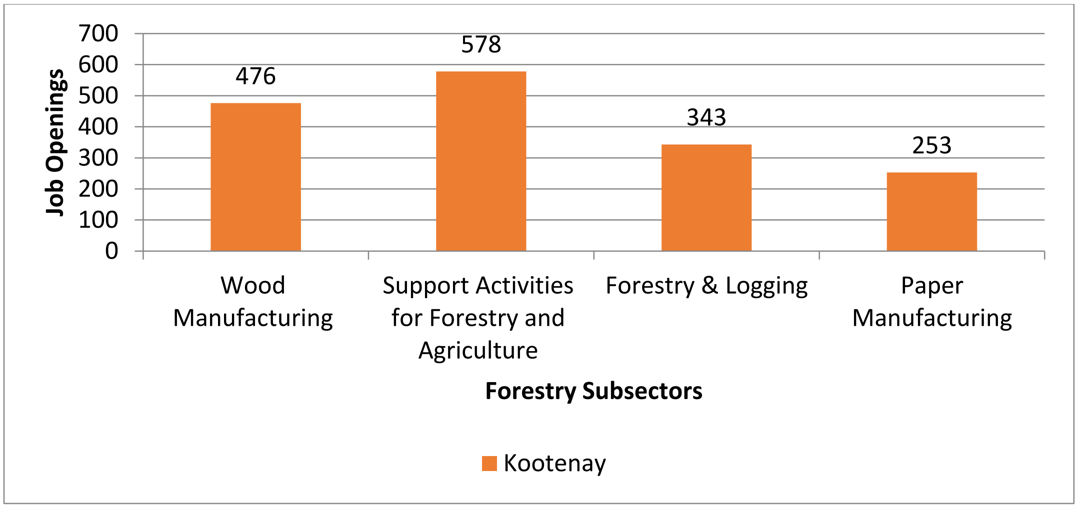


Figure 14: Industry job openings, Kootenay Development Region, 2015-2025[17]

Occupational forecast[xiv]

Silviculture and forestry workers (NOC code 8422) is in the top 10 occupations forecast to expand the fastest in the South East region at a rate of 2.8%, and is the only forestry related occupation listed in the top 10.[6]

Labour demand-supply projection

The labour force supply less demand[xv] (see **Table 4**) looks at the occupations related to the forestry sector in the South East region and examines the supply of workers against the demand for workers. Labour force demand is an estimate of the number of workers needed (employment) as well as the number of workers that are normally unemployed (due to transitioning between jobs, responding to seasonal fluctuations, or lack of skills match). Labour force supply represents the possible labour force, including supply from new entrants and from migrants.

Labour supply projections assume that the relative attractiveness of occupations in the forestry sector will not change as the forecast progresses. This means that basic job responsibilities, wages relative to other sectors and, if applicable, access to education or training programs will all remain constant over the forecast horizon. While this may not necessarily prove to be true, it provides a reasonable starting point, given that the forest sector will have to compete with other sectors of the economy for available workers.[29]

As shown in **Table 4**, transport truck drivers, heavy equipment operators (except crane), construction managers, and heavy-duty equipment mechanics are the occupations with the highest, sustained demand in the forestry sector until 2025 in the South East Region.

[xiv] Labour demand and labour supply projections were calculated by identifying the four major industry groupings of the forest sector. The North American Industry Classification System (NAICS) defines the “forest industry” to include companies operating in forestry and logging (113), support activities for forestry (115), wood products manufacturing (321), and pulp and paper manufacturing (322). The occupations (National Occupation Classification or NOC codes) have been selected for analysis, as they best represent the core occupations within the forest sector. See Appendix B for a list of NAICS and NOC codes.

[xv] Labour Force Supply Less Demand: The difference between the Labour Force Supply and Labour Force Demand. If this value is positive, then Labour Force Supply is greater than Labour Force Demand.

Labour Force Supply Less Demand – South East Region												
Forestry	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
0811 Managers in natural resources production and fishing	0	-5	-3	-6	-6	-8	-7	-5	-3	-3	-3	-49
2122 Forestry professionals	12	-2	-5	-8	-8	-10	-9	-7	-4	-4	-4	-49
2223 Forestry technologists and technicians	26	-5	-9	-13	-13	-16	-13	-10	-6	-6	-6	-71
2224 Conservation and fishery officers	3	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-7
8211 Supervisors, logging and forestry	1	-5	-2	-4	-4	-5	-5	-3	-2	-2	-2	-33
8422 Silviculture and forestry workers	12	-5	-3	-4	-4	-5	-4	-3	-2	-2	-2	-22
Road Building	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
0711 Construction managers	9	2	-16	-22	-22	-29	-24	-21	-14	-13	-12	-162
7302 Contractors and supervisors, heavy equipment operator crews	-6	-1	-8	-12	-13	-16	-14	-11	-7	-6	-6	-100
7372 Drillers and blasters - surface mining, quarrying and construction	-1	0	-1	-2	-2	-3	-2	-2	-1	-1	-1	-16

Labour Force Supply Less Demand – South East Region												
7521 Heavy equipment operators (except crane)	1	7	-23	-43	-43	-56	-46	-37	-24	-23	-20	-307
Logging	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
2272 Air traffic controllers and related occupations	0	-2	-2	-2	-2	-2	-2	-2	-1	-1	-1	-17
2273 Deck officers, water transport	1	0	0	0	0	0	0	0	0	0	0	1
7511 Transport truck drivers	-287	64	-10	-69	-82	-100	-95	-73	-46	-46	-44	-788
8241 Logging machinery operators	3	-20	-5	-9	-9	-14	-12	-9	-5	-5	-4	-89
8616 Logging and forestry labourers	16	-8	-5	-7	-6	-8	-7	-5	-3	-3	-3	-39
Multi-Phase Operators	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**
7301 Contractors and supervisors, mechanic trades	1	-1	-4	-5	-4	-5	-5	-4	-3	-3	-3	-36
7312 Heavy-duty equipment mechanics	-6	2	-13	-24	-24	-29	-25	-19	-12	-12	-11	-173
Pulp & Paper Manufacturing	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total**

Labour Force Supply Less Demand – South East Region

2233 Industrial engineering and manufacturing technologists and technicians	1	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-8
7311 Construction millwrights and industrial mechanics	-5	1	-10	-19	-19	-22	-19	-14	-8	-8	-7	-130
9215 Supervisors, forest products processing	-2	-1	-3	-5	-4	-5	-4	-2	-1	-1	-1	-29
9432 Pulp mill machine operators	0	0	-2	-4	-4	-4	-3	-2	-1	0	-1	-21

Table 4: Labour force supply less Demand, South East Region[30]

Labour demand due to growth & attrition

Table 5 presents the estimated total number of job openings for the Kootenay Development Region between 2017 and 2025 due to expansion and replacement. Note that the Kootenay Development Region represents a slightly smaller geographic area than the Columbia Basin-Boundary region in so far as it excludes Valemount, Revelstoke and Golden. Provincially, by 2025 it is expected that 69% of job openings will be due to retirements and deaths.[6] In the Kootenay Development Region, the top occupations expected to generate the largest number of new openings (full year job openings) between the years 2017 – 2025 include: transport truck drivers, heavy equipment operators (except crane), and heavy-duty equipment mechanics.

Kootenay Development Region	TOTAL job openings (2017-2025)
0811 Managers in natural resources production and fishing	78
2122 Forestry professionals	65
2223 Forestry technologists and technicians	134
2224 Conservation and fishery officers	10
8211 Supervisors, logging and forestry	48
8422 Silviculture and forestry workers	46
0711 Construction managers	169
7302 Contractors and supervisors, heavy equipment operator crews	183
7372 Drillers and blasters - surface mining, quarrying and construction	24
7521 Heavy equipment operators (except crane)	426
2273 Deck officers, water transport	9
7511 Transport truck drivers	728
8211 Supervisors, logging and forestry	48
8241 Logging machinery operators	64
8616 Logging and forestry labourers	56
7301 Contractors and supervisors, mechanic trades	23
7312 Heavy-duty equipment mechanics	344
7311 Construction millwrights and industrial mechanics	173
9215 Supervisors, forest products processing	82
9432 Pulp mill machine operators	49
8421 Chain saw and skidder operators	28
2271 Air pilots, flight engineers and flying instructors	35

Table 5: Summary of potential job openings due to growth & attrition (in full-year jobs) by industry & occupation in forestry-related industries (2017-2025), Kootenay Development Region[31]

Conclusion

The purpose of this report was to identify current forestry sector market trends and issues, including current and projected labour market needs to help workforce development partners within the Columbia Basin-Boundary region understand and respond to changing labour market demands.

Within the Columbia Basin-Boundary region approximately 1,650 job openings are estimated by 2025 in forestry and logging (343), support activities for forestry (578), wood products manufacturing (476), and pulp and paper manufacturing (253).

Job openings for specific occupations relating to the forestry sector are highest for transport truck drivers, heavy equipment operators (except crane), construction managers (road building), construction millwrights and industrial mechanics and forestry technologists and technicians.

It is expected all sectors relating to forestry will be limited in growth and expansion through to 2025 as annual harvest reductions are forecasted to decline due to the mountain pine beetle infestation's negative impact on future timber supplies. Other factors influencing the forestry sector include timber supply limitations, productivity improvements, the decline in paper consumption, stronger competition from international paper producers, and trade restrictions to the US market due to the softwood lumber trade dispute.

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Appendix B - BC Forest Sector NAICS & NOC Codes

BC Forest Sector NAICS Codes

The following lists the broadly defined industrial groups within the forestry sector as defined by NAICS.[32]

Forest Industry (Direct)	Industries (NAICS)	Description
Forestry & Logging	Forestry & Logging (113) - Logging (113311) - Contract Logging (113312) - Timber Tracts (1131)	Establishments primarily engaged in cutting, hauling and transporting timber (within logging limits). <u>113—Forestry and logging</u>: This sector comprises establishments primarily engaged in growing and harvesting timber on a long production cycle (of ten years or more). Long production cycles use different production processes than short production cycles, which require more horticultural interventions prior to harvest, resulting in processes more similar to those found in the Crop production subsector. Consequently, Christmas tree production and other production involving production cycles of less than ten years are classified to the crop production subsector. Industries in this subsector specialize in different stages of the production cycle. Reforestation requires production of seedlings in specialized nurseries. Timber production requires natural forests or suitable areas of land that are available for a long duration. The maturation time for timber depends upon the species of tree, the climatic conditions of the region, and the intended purpose of the timber. The harvesting of timber, except when done on an extremely small scale, requires specialized machinery unique to the industry. The gathering of forest products, such as gums, barks, balsam needles and Spanish moss, are also included in this subsector.
Support Activities for Forestry	Support Activities for Forestry & Agriculture (115) - Support Activities for Forestry (1153)	Establishments primarily engaged in performing support activities related to timber harvesting, hauling and forest resource management. 115—Support activities for agriculture and forestry: This sector is comprised of establishments primarily engaged in

Forest Industry (Direct)	Industries (NAICS)	Description
		providing support services that are essential to agriculture and forestry production.
Forest Products Manufacturing	Wood Product Manufacturing (321) - Sawmills & Wood Preservation (3211) - Veneer, Plywood & Engineered Wood (3212) - Other Wood Products (3219)	Establishments engaged in manufacturing solid wood products, including lumber, veneer, and plywood, as well as millwork, wood doors and windows, mobile homes and prefabricated wood manufacturing. 321—Wood product manufacturing: Is comprised primarily of establishments engaged in manufacturing products from wood. The three industry groups in this subsector comprise establishments engaged in sawing logs in lumber and similar products, or preserving these products; making products that improve the natural characteristics of wood, by making veneers, plywood, reconstituted wood panel products or engineered wood assemblies; and making a diverse range of wood products, such as millwork.
	Paper Manufacturing (322) - Pulp, Paper & Paper Board Mills (3221) - Converted Paper Products Manufacturers (3222)	Establishments engaged in manufacturing pulp and paper products, as well as manufactured paper products from purchased paper and paperboard. 322—Paper manufacturing: This industry is comprised of establishments primarily engaged in manufacturing pulp, paper, and paper products. The manufacture of pulp involves separating the cellulose fibres from other impurities in wood, used paper or other fibre sources.
Forest Sector (Indirect)	Industries (NAICS)	Description
Forest Products Transportation	Forest Products Trucking – Local (484223)	Establishments primarily engaged in local trucking of forest products, including logs and wood chips, for processing and manufacturing.
Logging Road Construction	Heavy & Civil Engineering Construction (237)	Establishments primarily engaged in constructing heavy and civil engineering works.

Forest Industry (Direct)	Industries (NAICS)	Description
Commercial Equipment Suppliers	Construction and forestry machinery, equipment and supplies (417210) Construction, transportation, mining, and forestry machinery and equipment rental and leasing (53241)	Establishments that supply commercial equipment or rent/lease equipment (without operator).
Repair & Maintenance	Commercial and industrial machinery and equipment repair and maintenance (8113)	Establishments that maintain and repair construction and forestry machinery and equipment.
Professional & Business Services	Professional, Scientific & Technical (541) Business to Business, electronic markets (419) Insurance Carriers & Related (524)	Establishments primarily engaged in activities in which human capital is the major input. Establishments that provide financial and other business services.
Regulatory & Training	Provincial Government (912) Federal Government (911) Aboriginal Public Administration (914) Education & Training (6112, 6113, 6115)	Agencies involved in the regulation of the forest resource and provision of public and private training services.

BC Forest Sector Priority National Occupation Classification (NOC) Codes

Production Phase	Priority Occupation (26)	Code	NOC Occupation (26)
Forestry	• Manager, Forestry Operations • Forestry Professional (e.g., registered professional forester) • Forestry Technologist & Technician (e.g., cruiser, surveyor, resource officer, fire suppression) • Conservation & fishery officer • Supervisor, Forestry (e.g., forestry operations) • Forestry Worker (e.g., forest firefighter, burner, spacer, silviculture)	0811 2122 2223 2224 8211 8422	• Primary Production Manager • Forestry Professional • Forestry T & T • Conservation • Supervisor, Forestry & Logging • Silviculture & Forestry Worker

Production Phase	Priority Occupation (26)	Code	NOC Occupation (26)
Road Building	• Construction Manager (e.g., project manager) • Supervisor, Heavy Equipment Operators • Drillers & Blasters • Heavy Equipment Operator (e.g., backhoe, dozer, excavator, grader)	0711 7302 7372 7521	• Construction Manager • Supervisor, HEO • Drillers & Blasters • Heavy Equipment Operator
Logging	•Manager, Logging Operations • Supervisor, Logging (e.g., logging crew boss, yard supervisor, boom master, quality control) • Supervisor, Falling • Logging Machinery Operator (e.g., skidder, feller buncher, loader, processor, tower crane, yarder) • Hand Faller • Ground Worker (i.e., bucker) • Logging Worker (chaser, choker setter, landing worker) • Boom Man • Helicopter Pilot • Tugboat Captain (e.g., boom boat operator) • Logging Truck Drivers	0811 8211 8211 8241 8421 8421 8616 8616 2271 2273 7511	• Primary Production Manager • Supervisor, Forestry & Logging • Supervisor, Forestry & Logging • Logging Machinery Operator • Chainsaw & Skidder Operator • Chainsaw & Skidder Operator • Logging & Forestry Labourer • Logging & Forestry Labourer • Helicopter Pilot • Tugboat Captain • Truck Driver
Multi-Phase Operators	• Master Mechanic (e.g., Supervisor, Mechanic Trades) • Heavy Duty Mechanic	7301 7312	• Master Mechanic • Heavy Duty Mechanic
Pulp & Paper Manufacturing	• Industrial Engineering and Manufacturing Technologists & Technicians • Supervisor, Forest Products Processing • Pulp Mill Machine Operator • Maintenance Mechanic (e.g., Millwright)	2233 9215 9432 7311	• Ind. Eng. and Mfg T & T • Supervisor, Forest Products Processing • Pulp Mill Machine Operator • Millwright