



Natural Resources
Canada

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Forest Fact Book 2018–2019





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Preface

The purpose of the *Forest Fact Book* is to provide key information related to Canada's forest industry and forest products in a format that is easy to consult.

The data and information in this edition cover the 2017 calendar year except where noted otherwise. Historical trend information is also included when possible. Extraction dates for data are available in the "Sources" chapter. All data are subject to revisions by statistical sources. In some instances, more than one source may be available and discrepancies in numbers may occur because of conceptual or methodological differences. In addition, some numbers may not add correctly because of rounding.

Data from Statistics Canada's new Natural Resources Satellite Account (NRSA) are a key source of information on the economic contribution of the forest sector in Canada and will be included in future releases of the *Forest Fact Book*. The NRSA is the result of collaboration between Natural Resources Canada (NRCan) and Statistics Canada.

This publication was assembled by the Canadian Forest Service of NRCan.

Contents

Canada's forests by the numbers

1

Forest Industry – National Picture

3

Market Dynamics	3
Market Structure	4
Production	5
Exports	6
Export Markets	7
Gross Domestic Product	8
Employment	9
Financial Performance	10
Forest Industry Carbon Emissions	11

Forest Industry – Regional Picture

12

Regional Market Dynamics	12
Regional Exports	13
Regional Employment	15

Forest Products

16

Global Quick Facts (2017)	16
Canada's Position in the World	17
Softwood Lumber	19
Wood Pulp	23
Newsprint	27
Printing and Writing Paper	30
Structural Wood Panels	33

Bioenergy and Bioproducts

37

Bioenergy	37
Wood Pellets	39
Bioproducts	41

Sources

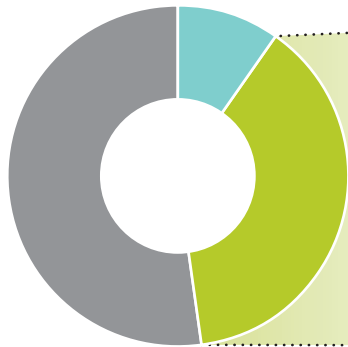
43

Canada's forests by the numbers	43
Forest Industry – National Picture	43
Forest Industry – Regional Picture	45
Forest Products	45
Bioenergy and Bioproducts	47

Canada's forests by the numbers

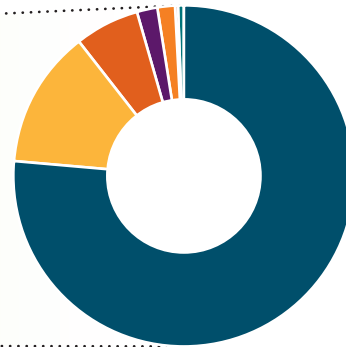
CANADA HAS: 347,069,000 HECTARES OF FOREST LAND

How much of Canada is forest?



■ Freshwater area **9%**
■ Forest area **35%**
■ Non forest land **56%**

Who owns Canada's forests?



■ Provincial **76.6%** ■ Federal **1.6%**
■ Territorial **12.9%** ■ Municipal **0.3%**
■ Private **6.2%** ■ Other **0.4%**
■ Indigenous **2.0%**

What's the leading cause of disturbance in Canada's forests?



Area impacted by insects (2016): **15,489,117 ha**
(4.5%)



Area burned by fire (2017): **3,371,833 ha**
(**<1%**)



Area harvested (2016): **766,659 ha**
(**<0.5%**)



Area deforested (2016): **37,000 ha**
(**0.01%**)

Canada's forest land (2015)
347,069,000 ha



The forest industry contributed **\$24.6 BILLION** (1.6%) to Canada's gross domestic product (GDP). (2017)

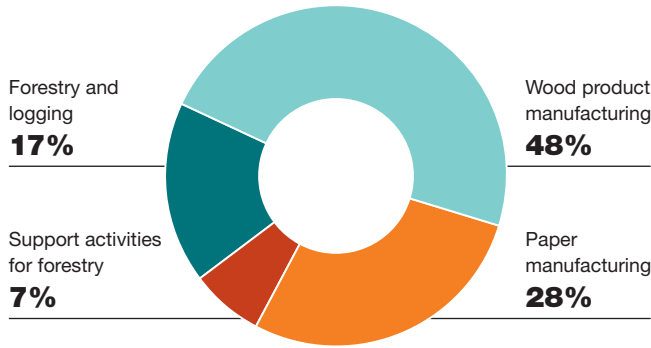


The forest industry directly employed **209,940** people (1.1% of total employment). (2017)



6% of those employed in the forest industry were **INDIGENOUS**. (2016)

Where do people work in the forest industry?



Women in the forest industry (2016)



17% of people employed within the forest industry were women.

Of this:

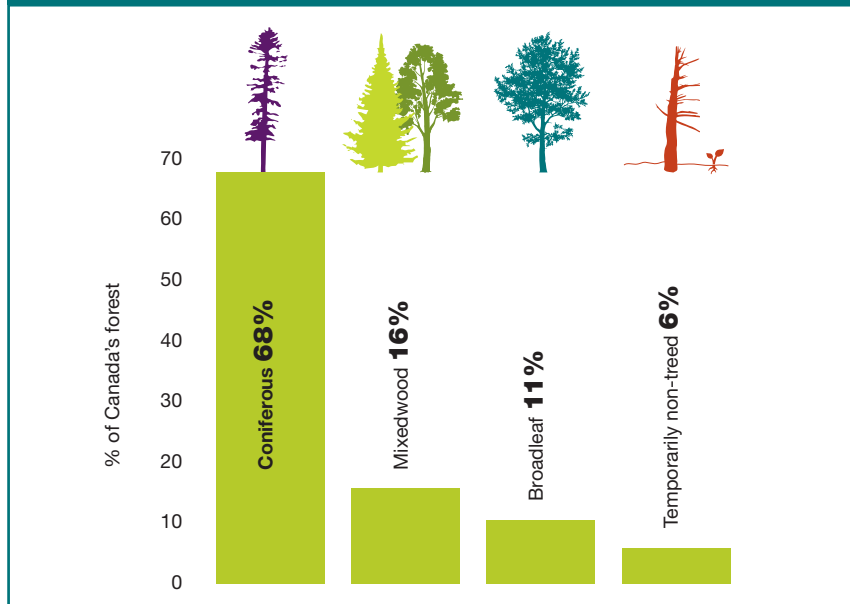


23% of women worked in the forest—in logging, forestry, and forestry support activities.



77% of women worked in wood product manufacturing and the pulp and paper industry.

What types of forest does Canada have?



THE MOST COMMON TREE SPECIES in Canada is the black spruce.



2/3 OF ALL SPECIES in Canada are found in forest ecosystems.



49% OF CANADA'S FORESTS

were certified to third party standards of sustainable forest management. (2017)



Over **615 MILLION SEEDLINGS** were planted on 410 thousand ha in Canada's forests. (2016)



Over **1,000 SPECIES** of invertebrates may be found in a single square metre of forest soil.

Source: Canadian Forest Service.

Forest Industry – National Picture

MARKET DYNAMICS

The forest sector is an important contributor to Canada's economy, providing jobs to Canadians from coast to coast. Over the last decade, the sector has faced a number of challenges (e.g. the collapse of the United States [US] housing bubble, declining demand for newsprint and printing and writing papers, and the outbreak of the mountain pine beetle) that resulted in mill closures and thousands of jobs lost. In response to these challenges, the forest industry has developed new and innovative products and materials, diversified its international markets, and developed new end-use markets.

Some of the ongoing challenges the industry faces today include:

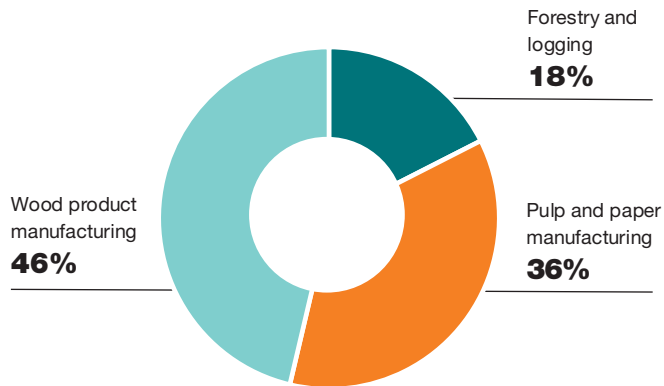
- market access following increased protectionism and trade disputes;
- fibre shortages caused by accelerating natural disturbances (e.g. residual impacts from the mountain pine beetle and the emergence of the spruce budworm) and measures to address species at risk (e.g. caribou);
- changing consumer trends (e.g. the rise of the digital media era) leading to a structural decline in newsprint and printing and writing papers;
- increased global competition in Asia, South America and the US South; and
- access to transportation caused by rail car shortages, underestimation of market demand, and severe weather conditions.

At the same time, the industry faces tremendous opportunities:

- technological advances that continually unlock new uses for fibre (e.g. biofuels, biomaterials, and biochemicals);
- rising demand for low-carbon, renewable products that are legally sourced and alternatives to fossil-based products;
- growing recognition of the environmental and safety benefits of building with wood; and
- new demand for forest products from growing economies.

MARKET STRUCTURE

Nominal gross domestic product by forest industry subsector, 2017

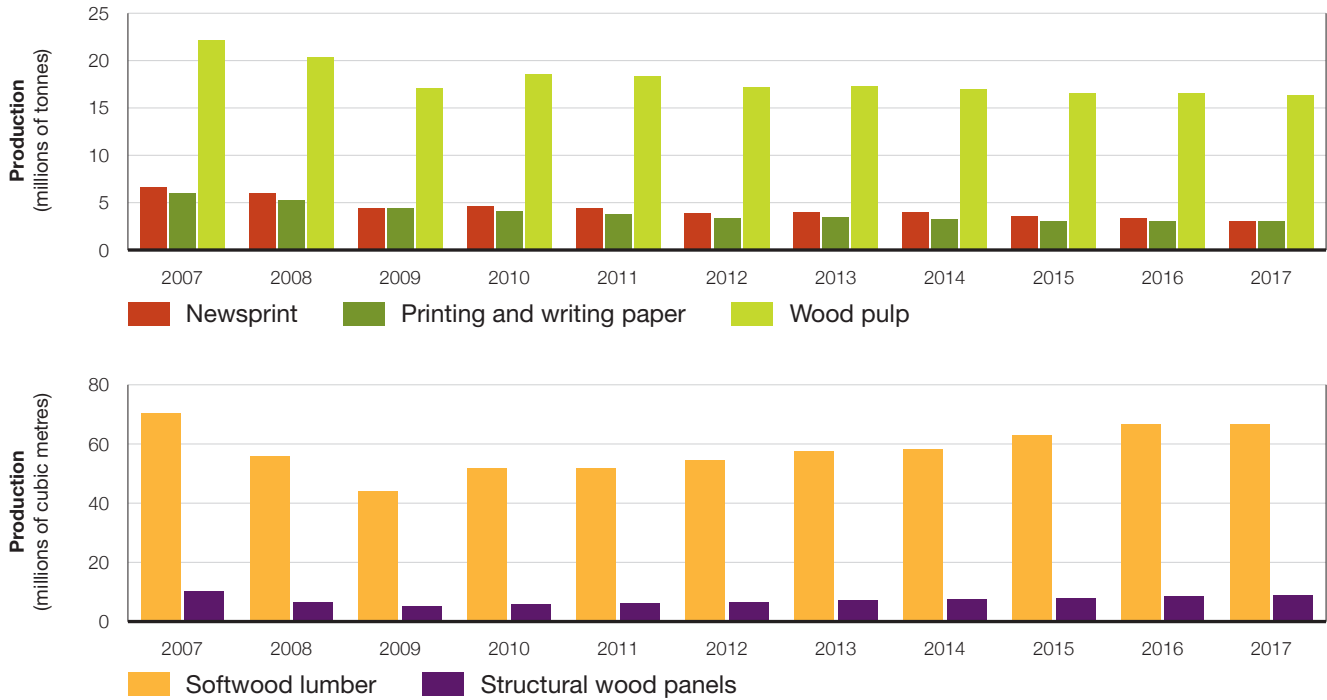


Source: Natural Resources Canada-Canadian Forest Service's calculations based on Statistics Canada's CANSIM Table 379-0031: Gross domestic product (GDP) at basic prices, by North American Industry Classification System. See "Sources" for more detail.

- The forest sector consists of three main activities categorized under the North American Industry Classification System (NAICS): forestry and logging (NAICS 113), wood product manufacturing (NAICS 321), and pulp and paper manufacturing (NAICS 322). Although support activities for forestry (NAIC 1153) are also part of the sector, data are not always available for that industry. Therefore, the majority of the data presented will focus on the three main industrial activities.
- In 2017, wood product manufacturing was the largest contributor to the nominal gross domestic product (GDP), followed by pulp and paper manufacturing and then forestry and logging.
- There are limited data available for emerging forest sector activities, such as manufacturing of biofuels, biochemicals or bioproducts. The Government of Canada is improving the availability of bioeconomy data and integrating them with traditional forest sector activities, particularly for macroeconomic indicators such as GDP and employment.

PRODUCTION

Production of Canadian forest products, 2007–2017

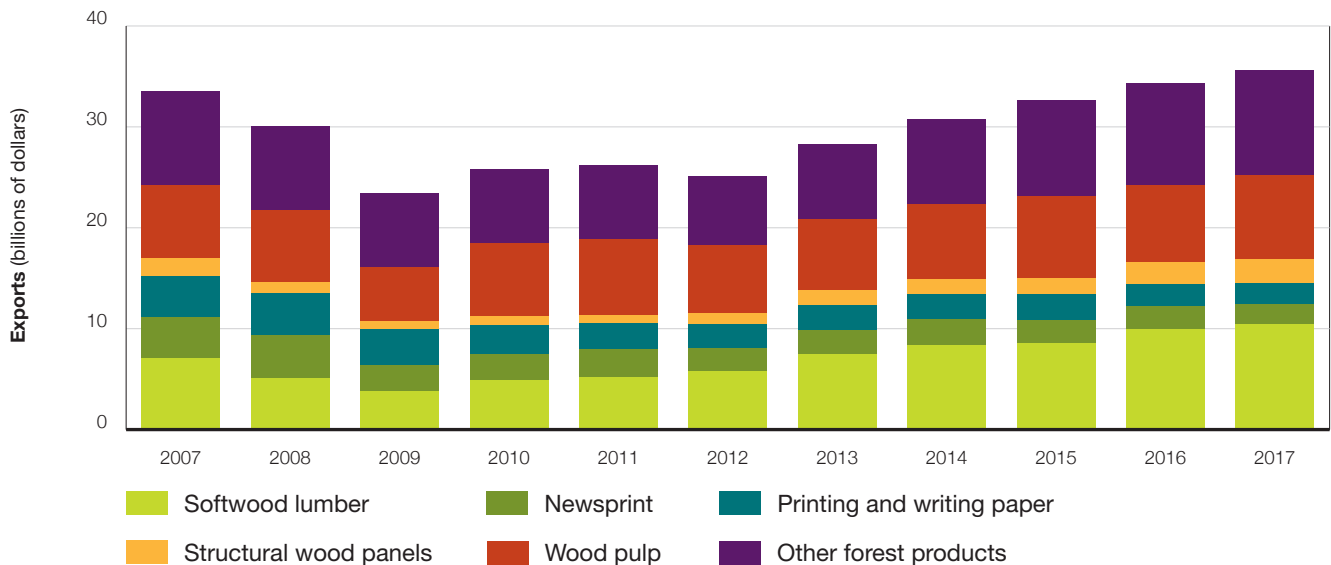


Sources: Lumber – Statistics Canada; panels – APA, The Engineered Wood Association; pulp and paper products – Pulp and Paper Products Council. See “Sources” for more detail.

- Between 2016 and 2017, production of most forest products decreased slightly. However, there was no change in the volume of softwood lumber produced, and production of structural panels increased by 1.4%.
- Production of softwood lumber was unchanged in 2017 from 2016. While demand was very strong for solid wood products, disruptions resulting from forest fires in Western Canada limited production increases.
- The declining demand for printing and writing paper, including newsprint, means that mill closures take place periodically. Globally, there were significant closures of printing and writing paper mills in 2016 and 2017, helping to maintain production in Canada relatively unchanged. However, newsprint did not benefit from such mitigating circumstances, and production declined 8.6% from 2016 levels, following mill closures and conversions.

EXPORTS

Exports of Canadian forest products, 2007–2017

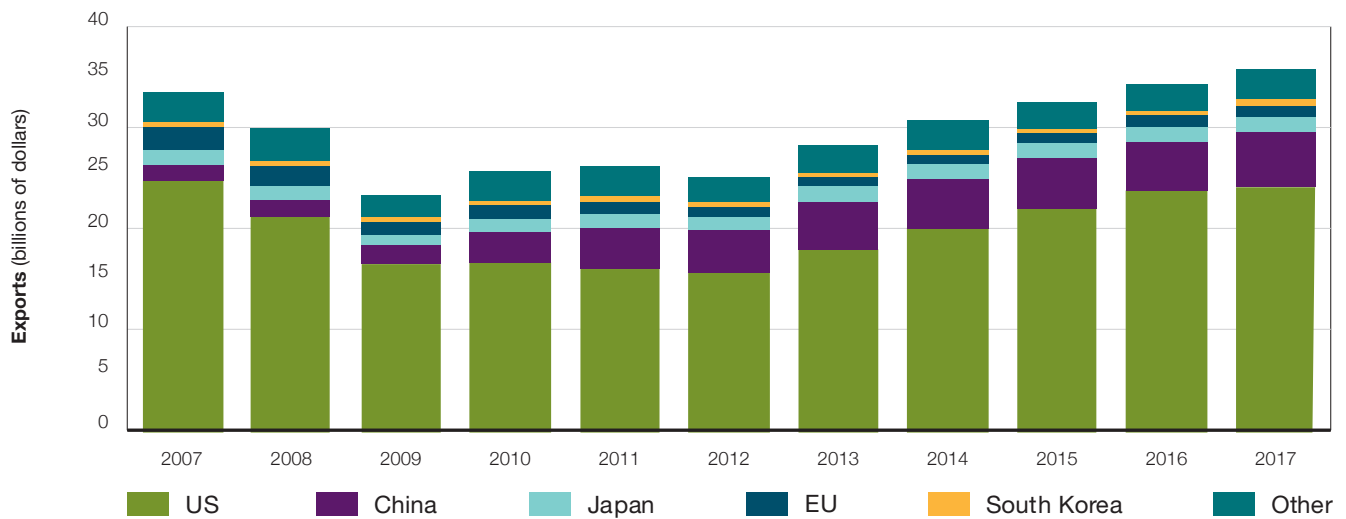


Source: Statistics Canada. See “Sources” for more detail.

- In 2017 Canada’s forest product exports were valued at \$35.7 billion, a 3.8% increase from 2016.
- Export value increased across all products except printing and writing paper and newsprint, which decreased by 8.2% and 10.1%, respectively, as a result of demand and production reductions.
- Structural panels and wood pulp saw the largest increases in export value, up 13.1% and 8.6%, respectively. Both products benefited from strong demand and rising prices. Between 2012 and 2017, the value of Canada’s wood products exports increased by 42.2%.
- 2017 was a challenging year for many Canadian exporters, with several ongoing forest product trade disputes involving key trading partners such as the United States and China. Nevertheless, strong US housing demand coupled with high lumber prices helped Canada’s forest industry post its strongest financial performance in the last decade. For more information, see the *Financial Performance* section.

EXPORT MARKETS

Exports of Canadian forest products by market, 2007–2017

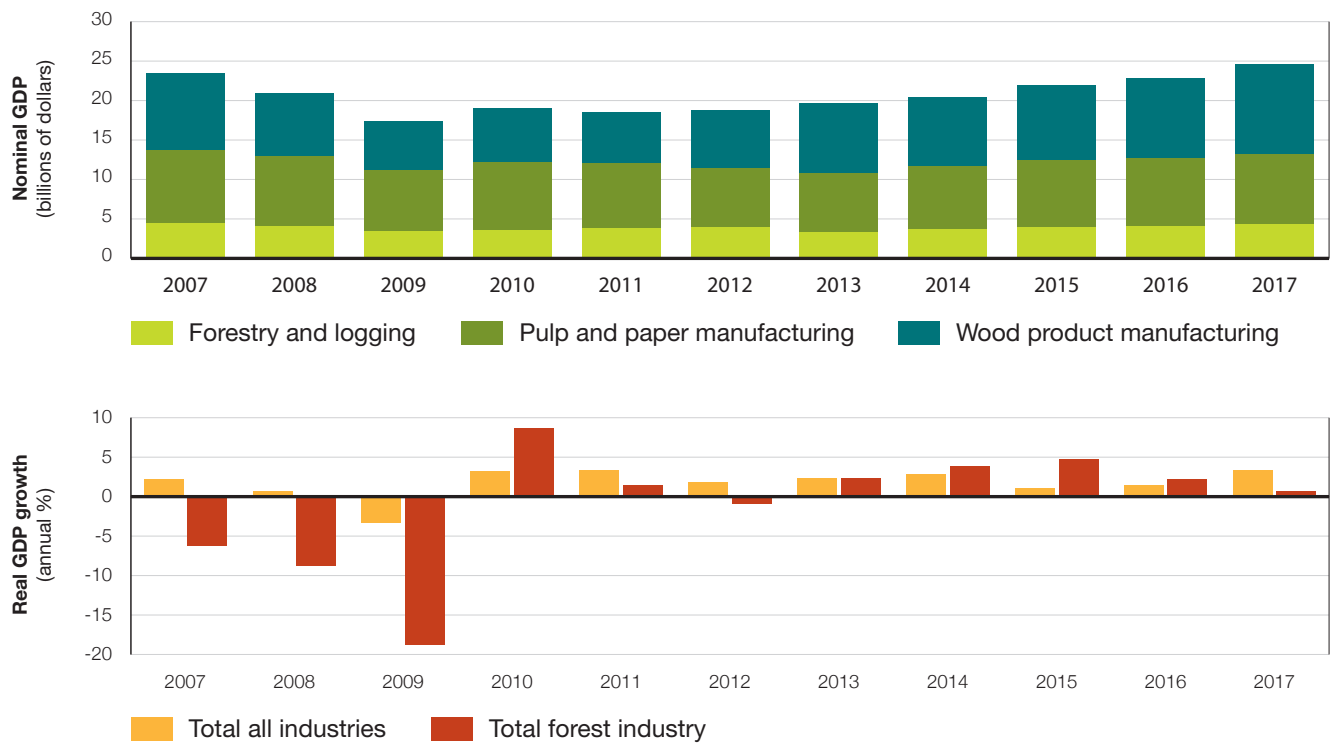


Source: Global Trade Atlas. See “Sources” for more detail.

- The United States (US) remains Canada’s primary export destination for forest products; however, over the last decade, exports to other international markets have become increasingly important.
- With the US housing market crash and the global economic crisis, the share of Canadian forest product exports to the US dropped from 81% in 2005 (just before the crash) to 61% in 2011. During that time, Canada increased exports to Asian markets, particularly China, to help mitigate the impacts.
- Today, Canada’s forest product exports to the US have recovered even as China remains an important market destination. In 2017, Canada exported \$35.7 billion in forest products globally, the majority of which went to the US (\$24.2 billion or 68%) and to China (\$5.5 billion or 15%).
- Canada continues to diversify its forest product markets, exporting to 180 countries around the world. Despite the increased competition from low-cost producers, Canada will continue to benefit from advantageous access to large and growing offshore markets.

GROSS DOMESTIC PRODUCT

Canadian forest industry's GDP, 2007–2017

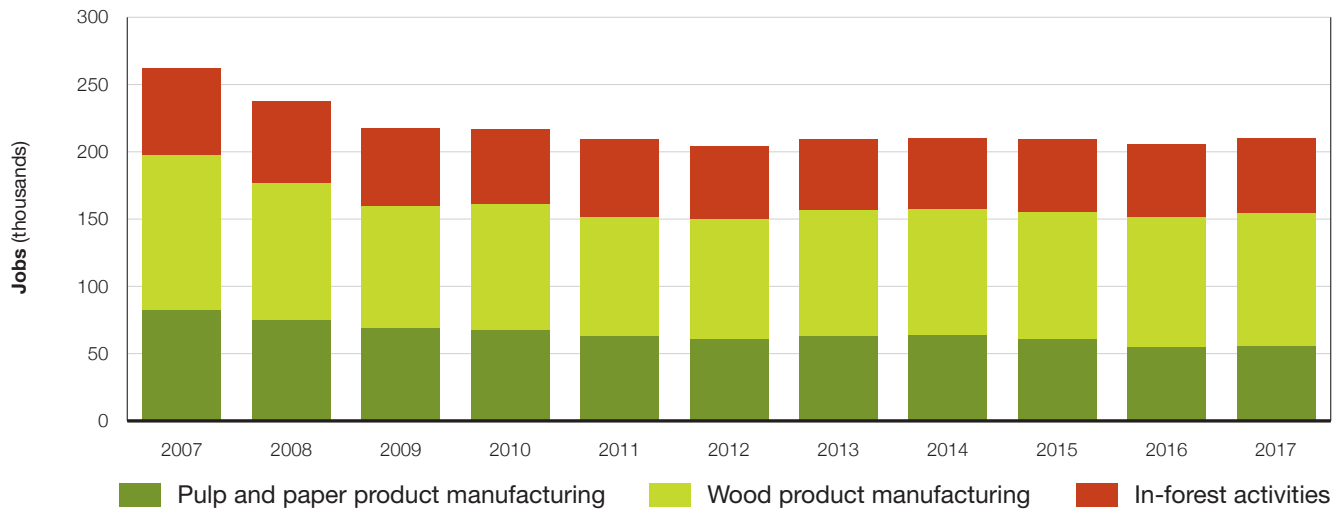


Source: Statistics Canada. See “Sources” for more detail.

- The forest industry contributed \$24.6 billion (1.6%) to Canada’s nominal gross domestic product (GDP) in 2017.
- The forest industry GDP grew by 0.7% in real terms in 2017, underperforming the overall Canadian economy, which grew by 3.3%.
- Canada’s wood product manufacturing and pulp and paper real GDP were positively driven by solid demand and strong prices, increasing by 2.2% and 1.5%, respectively. The contribution of forestry and logging to Canada’s real GDP decreased 3.6% between 2016 and 2017, likely due to decreased in-forest activity following forest fires and pest infestations.

EMPLOYMENT

Forest industry direct employment, 2007–2017



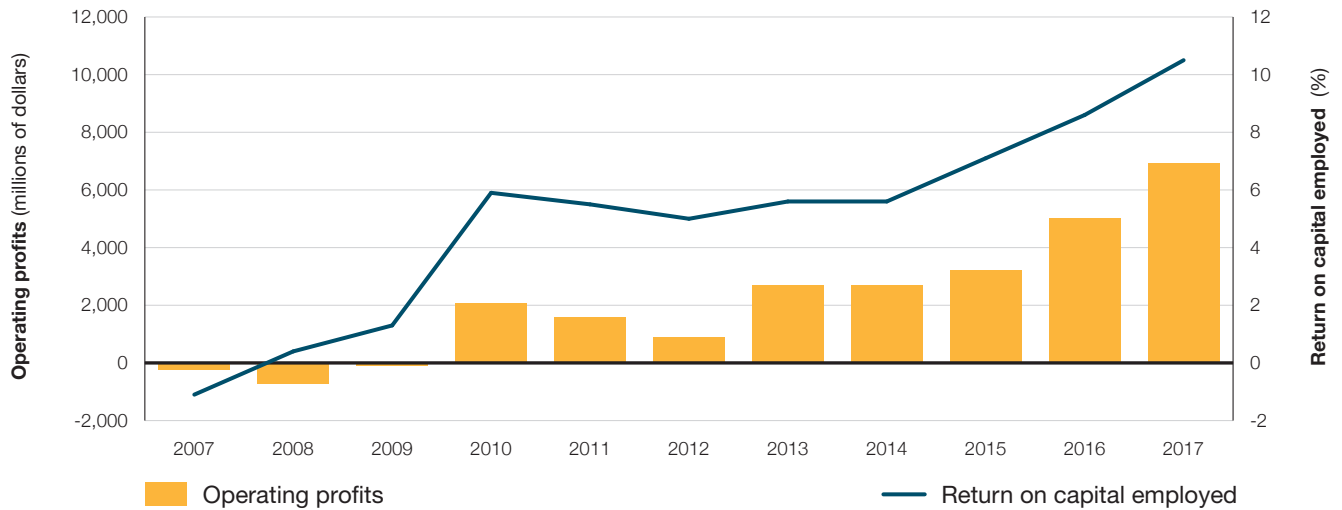
Source: Statistics Canada, System of National Accounts. See “Sources” for more detail.

- Employment in the forest industry has been largely stable over the past nine years. Between 2016 and 2017, overall forest sector employment grew slightly by 1.9%.
- Some increase in in-forest employment (+3.5%) may be attributed to increased fire-related activities in 2017.
- Employment in wood product manufacturing has been growing steadily since 2010 and grew again in 2017 (+1.4%).
- Employment in the pulp and paper sector has been more variable. After three years of decreases, employment in the pulp and paper sector increased slightly in 2017 (+1.8%) thanks to growth in converted paper product manufacturing (e.g., paper bags) offsetting losses in paper manufacturing.

See the *Regional Employment* section for more information on provincial employment.

FINANCIAL PERFORMANCE

Financial performance by Canada's forest industry, 2007–2017

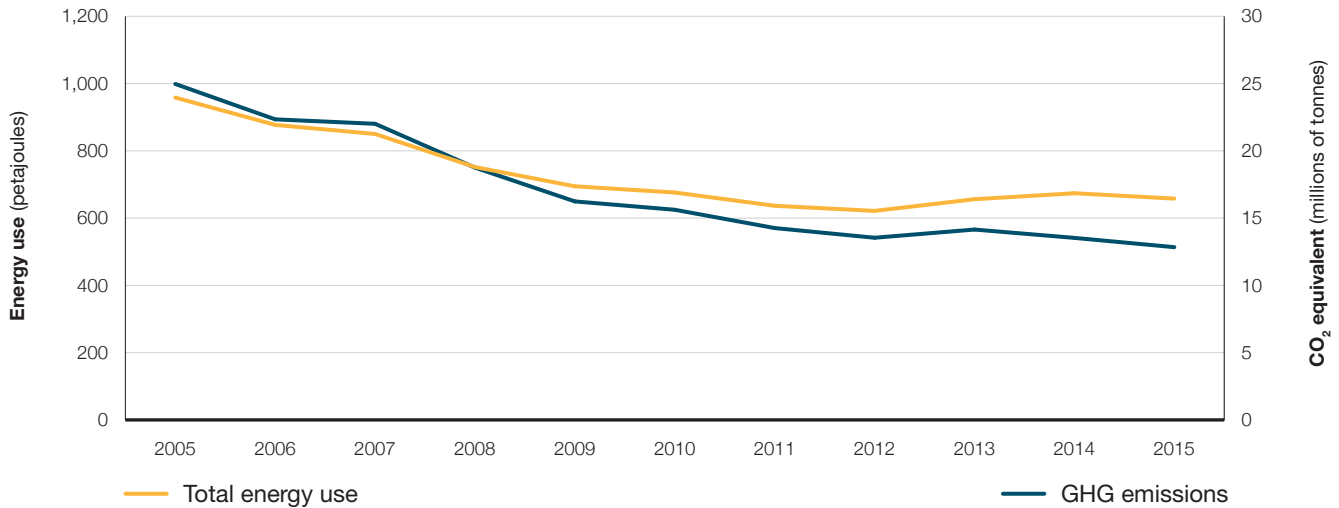


Source: Statistics Canada, Quarterly financial statistics for enterprises. See “Sources” for more detail.

- The forest industry’s financial performance improved in 2017 and marked five consecutive years of growth both in operating profits and in return on capital employed.
- Operating profits rose by 37.3% over 2016 levels.
- Return on capital employed increased to 10.5% in 2017, up from 8.6% in 2016.
- The forest industry’s financial performance benefited from improving commodity prices and strong demand for Canada’s key forest products.

FOREST INDUSTRY CARBON EMISSIONS

Fossil fuel greenhouse gas (GHG) emissions and total energy use in Canada's forest industry, 2005–2015



Source: Statistics Canada. See “Sources” for more detail.

- Total greenhouse gas emissions (GHGs, expressed as carbon dioxide equivalents, or CO₂e) from fossil fuel use in the Canadian forest industry have steadily decreased over the last 10 years, while energy use has remained relatively flat in recent years.
- The forest industry’s ability to generate its own electricity, largely from bioenergy, has reduced its reliance on fossil fuels.
- Bioenergy continues to increase its share of the energy mix, accounting for 57% of forest industry energy use in 2015, up from 49% in 2000 and 43% in 1990.
- Between 2005 and 2015, the forest industry reduced energy use by 31% and total GHG emissions (direct emissions plus indirect emissions from purchased electricity) by 49%.

Forest Industry – Regional Picture

REGIONAL MARKET DYNAMICS

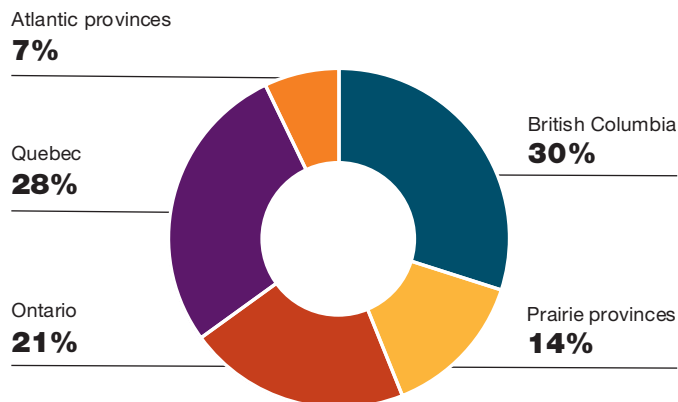
With the rise of the digital media era, over the last decade, Canada’s forest industry has endured a deep structural decline in demand for traditional paper around the globe, especially in North America. However, the impacts of these changes have varied among regions across the nation.

Eastern Canada was hit the hardest by the shrinking paper markets because the region has historically been a hub for paper production. Fortunately, strong demand for packaging, specialty paper and softwood lumber is supporting the forest sector in this region of Canada.

Conversely, western provinces are more focused on wood product manufacturing and market pulp. British Columbia and Alberta are two of the largest exporting provinces of softwood lumber and northern bleached softwood kraft (NBSK) pulp. Further to its different industrial profile, the location of western Canada provides an advantageous access to the growing markets in Asia.

The diverging profiles of these regions is expected to persist, given the differing outlooks of subsectors (most traditional paper products will continue to decline, while wood products, specialty paper and bioenergy is expected to rise).

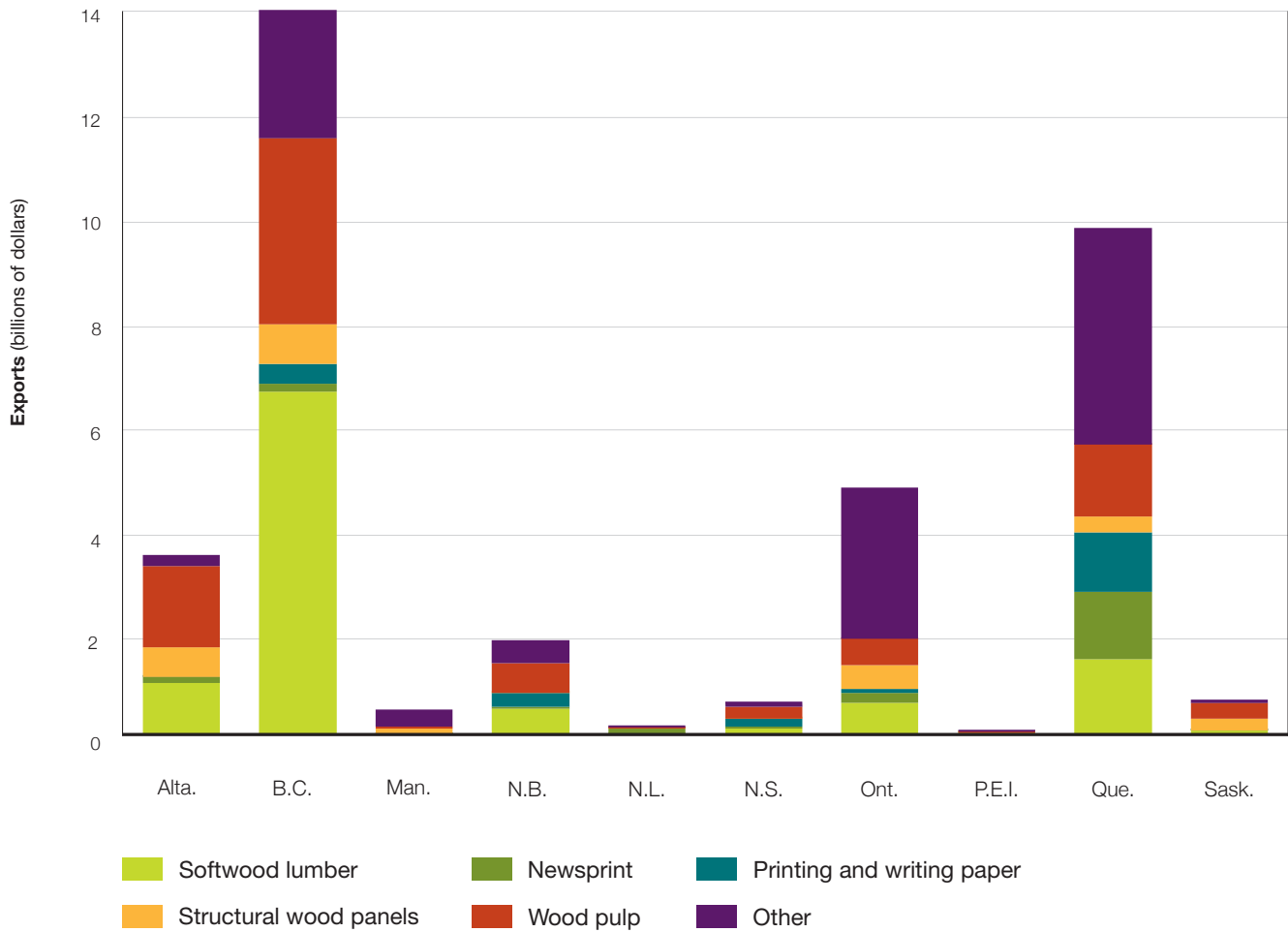
Forest industry real gross domestic product by region, 2017



Source: Statistics Canada, chained (2007) dollars. See “Sources” for more detail.

REGIONAL EXPORTS

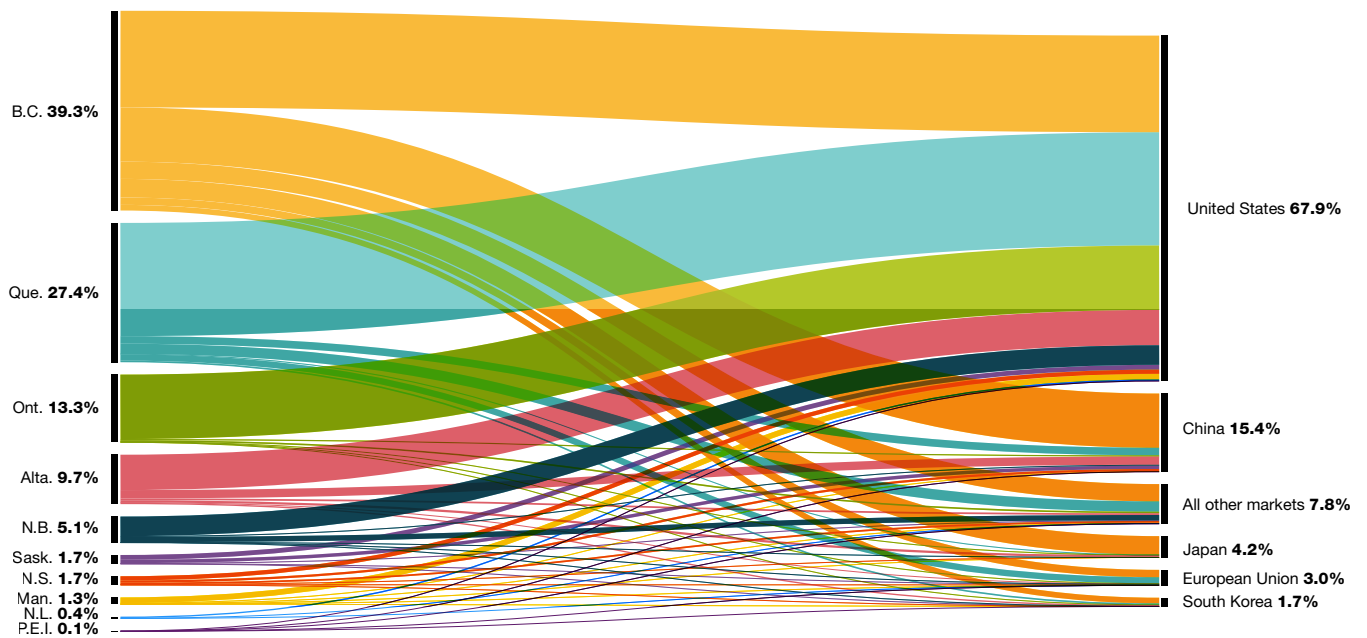
Exports of Canadian forest products by province, 2017



Source: Statistics Canada. See “Sources” for more detail.

Note: “Other” forest products includes about 415 product categories.

Provincial exports of Canadian forest products to Canada's top export markets, 2017



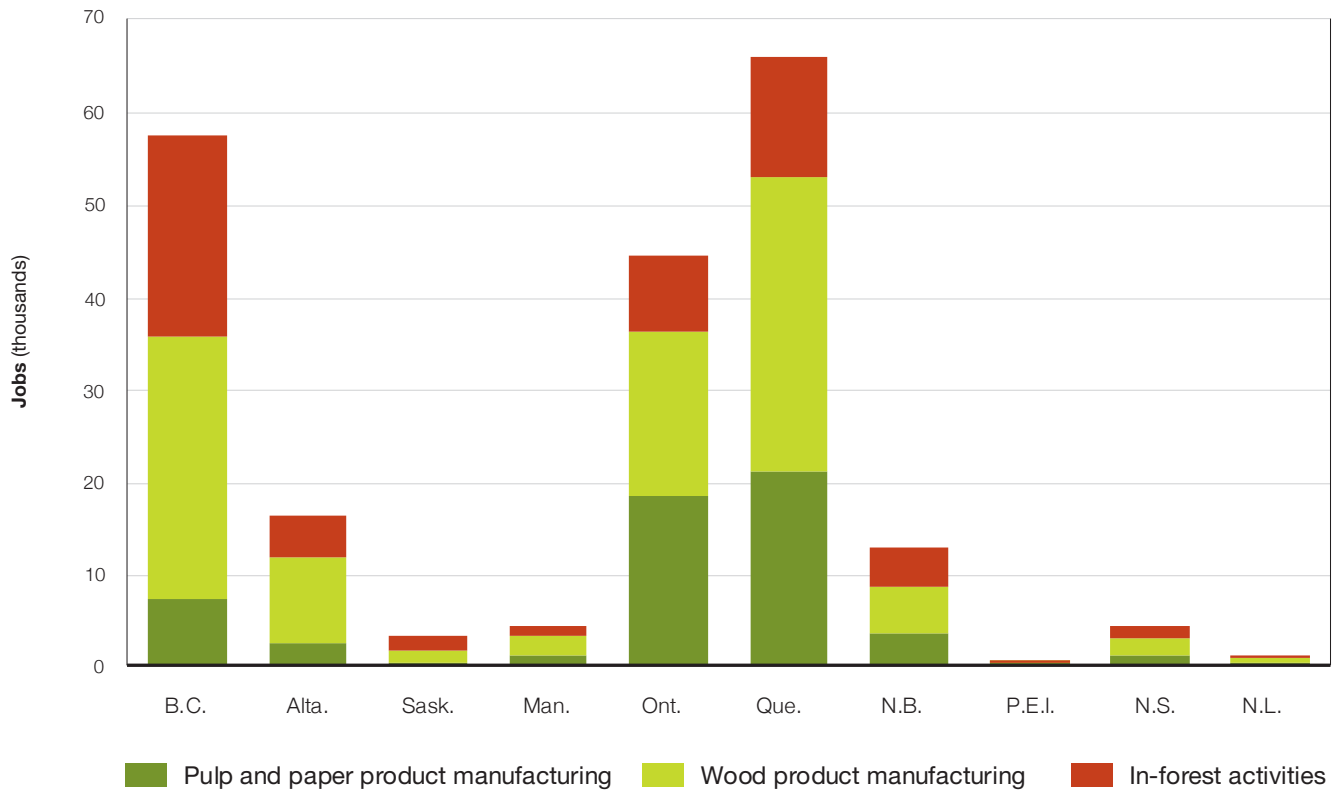
Source: Global Trade Atlas. See “Sources” for more detail.

Note: “All other markets” includes all other global export markets; the five most important by export value in this category are India, Indonesia, Taiwan, Mexico and Thailand.

- British Columbia is Canada’s leading exporter of softwood lumber, structural wood panels, and wood pulp.
- Pulp produced in the eastern provinces is mostly used directly in the domestic manufacturing of paper products, while wood pulp produced by western provinces is mostly destined for export.
- Quebec represents the bulk of Canada’s remaining newsprint exports. The United States remains Quebec’s largest export market.

REGIONAL EMPLOYMENT

Forest industry direct employment by province, 2017



Source: Statistics Canada, System of National Accounts. See “Sources” for more detail.

- Almost 80% of forest industry employment is concentrated in three provinces: Quebec (31%), British Columbia (27%) and Ontario (21%).
- However, proportionally, the forest industry represents a larger percentage of New Brunswick’s total workforce at 3.5%, followed by British Columbia (2.3%) and Quebec (1.6%).

Forest Products

Canada is the fourth-largest forest product exporter in the world, meeting the needs of consumers in over 180 countries. Forest products account for 7% of Canada's total exports. Canada's three largest export destinations are the United States (US), China, and Japan, which represent 87% of all forest product exports.

Forest products can be categorized into four segments: solid wood products (which includes softwood lumber and structural panels), wood pulp (which includes northern bleached softwood kraft pulp [NBSK]), paper products (including newsprint, printing and writing paper), and bioproducts (e.g. biofuels, biochemical, bioplastics).

The following section provides information on these forest products, including their production level and their market destination, including domestic and offshore markets.

GLOBAL QUICK FACTS (2017)

- Canada is the world leading exporter and the second-largest producer of softwood lumber, with British Columbia representing 63% of exports.
- Canada is the second-largest exporter of wood pulp, since being overtaken by Brazil in 2016. China is the world's largest importer of wood pulp and accounts for 44% of Canada's wood pulp exports
- Although softwood lumber accounts for \$10.4 billion in export value, wood pulp is a close second, with an export value of \$7.8 billion in 2017.
- Canada is the leading global producer and exporter of newsprint, and Quebec accounts for 65% of Canada's total newsprint exports
- The US is Canada's primary destination for printing and writing paper exports, accounting for 88%. Quebec produces more than half of all printing and writing paper made in Canada.
- Canada is the third-largest producer and second-largest exporter of structural panels. The US is Canada's major destination for structural panel exports (93%), the majority of which are oriented strand board (97%).

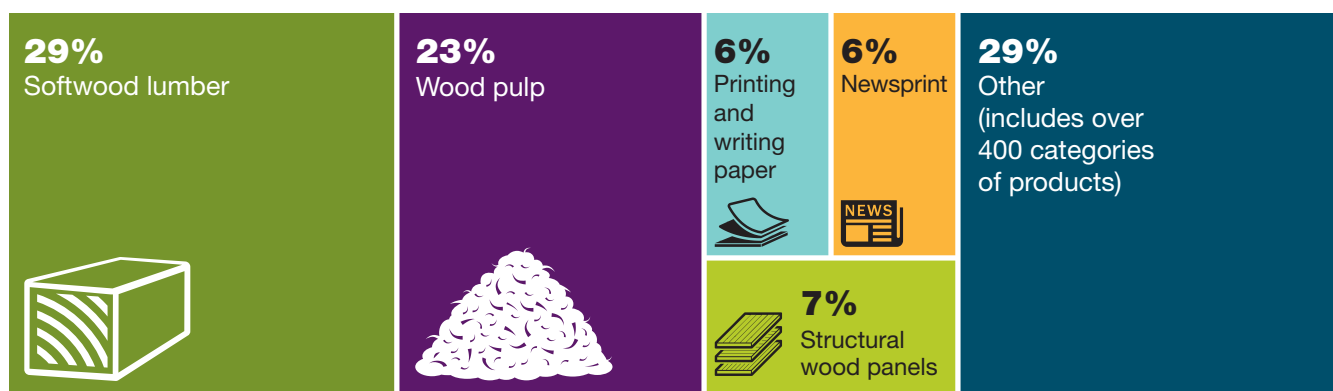
CANADA'S POSITION IN THE WORLD

Canada's Position in the World: Product Overview

PRODUCT	CANADA'S WORLD RANK FOR PRODUCTION (2016, by quantity)	CANADA'S WORLD RANK FOR APPARENT CONSUMPTION (2016, by quantity)	CANADA'S WORLD RANK FOR EXPORTS (2017, by value)	CANADA'S TOP EXPORT MARKETS (2017, by value)
Softwood lumber	2	4	1	United States, China, Japan
Northern bleached softwood kraft market pulp	1	7	1	China, United States, Japan
Packaging	17	17	7	United States, China, Italy
Printing and writing paper	8	12	8	United States, Mexico, Germany
Newsprint	1	15	1	United States, India, Brazil
Oriented strand board	2	2	1	United States, Japan, China
Plywood	9	4	7	United States, United Kingdom, Australia
Household and sanitary paper	11	11	6	United States, United Kingdom, Turkey
Logs (industrial)	4	4	2	China, Japan, South Korea
Dissolving pulp	5	14	4	India, Indonesia, China
Wood pellets	2	16	2	United Kingdom, United States, Japan
Hardwood lumber	12	9	4	United States, China, Japan
Recovered paper	16	28	8	China, United States, South Korea

Sources: Statistics Canada, Food and Agriculture Organization of the United Nations, Global Trade Atlas and FisherSolve™. See "Sources" for more detail.

EXPORTS OF CANADIAN FOREST PRODUCTS (2017)



Source: Statistics Canada. See “Sources” for more detail.

Top 10 forest product exports for Canada, 2017

RANKING	PRODUCT	EXPORTS (billion C\$)
1	Softwood lumber	10.44
2	NBSK (northern bleached softwood kraft)	4.75
3	OSB (oriented strand board)	2.34
4	Packaging	2.11
5	Printing and writing paper	2.06
6	Newsprint	1.98
7	Builders joinery and carpentry	1.53
8	Mechanical pulp	1.42
9	Semi-chemical pulp	1.41
10	Softwood logs	0.83
	Other	6.79

Source: Global Trade Atlas. See “Sources” for more detail.

SOFTWOOD LUMBER

- Softwood lumber refers to harvested coniferous timber that is sawed into dimension lumber, appearance-grade lumber, machine stress rated lumber, softwood boards and other sawn-timber products.
- Dimensional softwood lumber products are used mostly for framing purposes in residential construction, and therefore market trends are often closely aligned with housing construction in the US, especially with single family dwellings.
- Softwood lumber accounts for 29% of the value of Canada's forest product exports.
- The US accounts for 75% of the value of Canada's softwood lumber exports.
- Softwood lumber exports are expected to remain dependent on demand from the US housing market. However, market development efforts are expanding the opportunities for Canadian softwood lumber products in both offshore and domestic markets.

Global ranking for softwood lumber production by volume, 2016

RANK	COUNTRY	PERCENTAGE OF WORLD PRODUCTION (%)
1	United States	16.6
2	Canada	14.4
3	China, mainland	10.3
4	Russia	10.2
5	Germany	6.3
All others	-	42.2

Source: Food and Agriculture Organization of the United Nations. See "Sources" for more detail.

Global ranking for softwood lumber exports by value, 2017

RANK	COUNTRY	PERCENTAGE OF WORLD VALUE (%)
1	Canada	30.5
2	Russia	13.9
3	Sweden	11.6
4	Finland	7.7
5	Germany	6.4
All others	-	29.9

Source: Global Trade Atlas. See "Sources" for more detail.

Canadian trade indicators for softwood lumber, 2017

SOFTWOOD LUMBER	VOLUME (m ³)	VALUE (C\$)
Production	66,860,400	–
Consumption	24,512,010	–
Exports	43,142,554	10,440,909,872
Imports	794,164	219,677,281

Sources: Statistics Canada, Natural Resources Canada. See “Sources” for details.

Top export markets for Canada for softwood lumber, 2017

RANK	COUNTRY	VALUE (C\$)
1	United States	7,828,956,052
2	China	1,097,401,251
3	Japan	806,126,177
4	Philippines	112,110,776
5	Taiwan	100,787,168

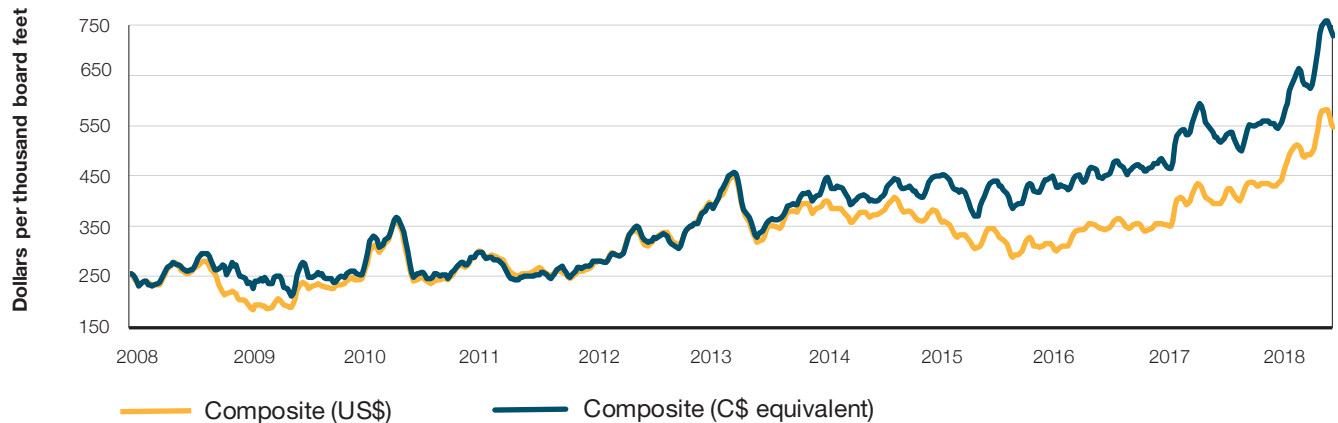
Source: Statistics Canada. See “Sources” for more detail.

Top export markets and share of total value of exports by province – softwood lumber, 2017

PROVINCE	SHARE OF TOTAL VALUE OF EXPORTS (%)	TOP EXPORT MARKETS	Export market value (ranked by top markets by province) (C\$)
British Columbia	63.4	United States	4,158,187,222
		China	1,065,888,860
		Japan	738,057,849
Quebec	14.0	United States	1,436,744,462
		Mexico	7,266,686
		Pakistan	6,060,183
Alberta	9.7	United States	897,463,928
		Japan	67,095,882
		China	27,870,828
Ontario	5.9	United States	608,038,350
		Trinidad and Tobago	872,925
		Mexico	642,833
New Brunswick	4.9	United States	507,934,219
		Iraq	164,108
		China	163,651
Nova Scotia	1.2	United States	122,108,932
		Pakistan	2,360,447
		Saint-Pierre and Miquelon	343,509
Saskatchewan	0.9	United States	89,552,525
		Taiwan	15,172
Newfoundland and Labrador	0.1	United States	6,227,887
		Saint-Pierre and Miquelon	4,183
Manitoba	0.0	United States	2,693,919
		Russia	855,841
		China	221,415
Prince Edward Island	0.0	United States	4,608

Source: Statistics Canada. See "Sources" for more detail.

Weekly lumber prices in North America, 2008–2018



Note: Random Lengths composite prices in US dollars, converted to Canadian dollars based on exchange rates posted by the US Federal Reserve.

Sources: Random Lengths, used with permission granted by the publisher. US Federal Reserve.

- Softwood lumber prices have been rising steadily since 2016 and recently reached a 10-year high (US\$, see the yellow line in the previous figure) because of factors affecting both demand and supply. The steady recovery in the US housing market from the global economic recession of 2008–09 has resulted in strong demand for softwood lumber, driving prices upward. At the same time, the effect of the mountain pine beetle on British Columbia’s lodgepole pine trees has reduced the size of the Canadian timber harvest. This reduction has limited the ability of Canadian lumber producers to respond to rising demand, also putting upward pressure on prices. Canada provides about one third of the US softwood lumber market. Since 2017, another effect on prices has been the countervailing and anti-dumping duties imposed by the US on imports of softwood lumber products from Canada.
- Since 2013, the Canadian dollar has been weaker than the US dollar, causing the price in Canadian dollars (see the blue line in the previous figure) to diverge.

WOOD PULP

- Wood pulp is a fibrous material that can be broken down either mechanically or with the use of chemicals. Pulp is used as an intermediate product to produce paper, packaging, hygiene, and textile products. The main wood pulp products in Canada include
 - Northern bleached softwood kraft pulp (NBSK)
 - bleached chemi-thermo-mechanical pulp (BCTMP)
 - commodity and specialty dissolving pulp
- Dissolving pulp produced around the world is exported mostly to China, where it is used to produce non-paper materials, including rayon fabric. Dissolving pulp is also used as food thickeners and paint additive.
- Canada is the leading global producer and exporter of NBSK, with 40% of global NBSK production capacity. NBSK is used primarily to produce printing and writing papers and tissue.
- China is Canada's top export destination, accounting for 44% of the value of Canada's wood pulp exports.

Global ranking for wood pulp production by volume, 2016

RANK	COUNTRY	PERCENTAGE OF WORLD PRODUCTION (%)
1	United States	27.6
2	Brazil	10.8
3	Canada	9.5
4	Sweden	6.5
5	Finland	6.1
All others	-	39.5

Source: Food and Agriculture Organization of the United Nations. See "Sources" for more detail.

Global ranking for wood pulp exports by value, 2017

RANK	COUNTRY	PERCENTAGE OF WORLD VALUE (%)
1	Brazil	17.9
2	Canada	17.0
3	United States	15.2
4	Chile	7.2
5	Indonesia	6.7
All others	-	36.0

Source: Global Trade Atlas. See "Sources" for more detail.

Canadian trade indicators for wood pulp, 2017

WOOD PULP	VOLUME (tonnes)	VALUE (C\$)
Production	17,080,000	–
Consumption	7,635,155	–
Exports	9,929,061	7,820,741,195
Imports	484,216	271,083,162

Sources: Food and Agriculture Organization of the United Nations and Global Trade Atlas. See “Sources” for details.

Top export markets for Canada for wood pulp, 2017

RANK	COUNTRY	VALUE (C\$)
1	China	3,442,457,865
2	United States	2,295,146,099
3	Indonesia	474,412,617
4	Japan	366,330,869
5	South Korea	365,330,011

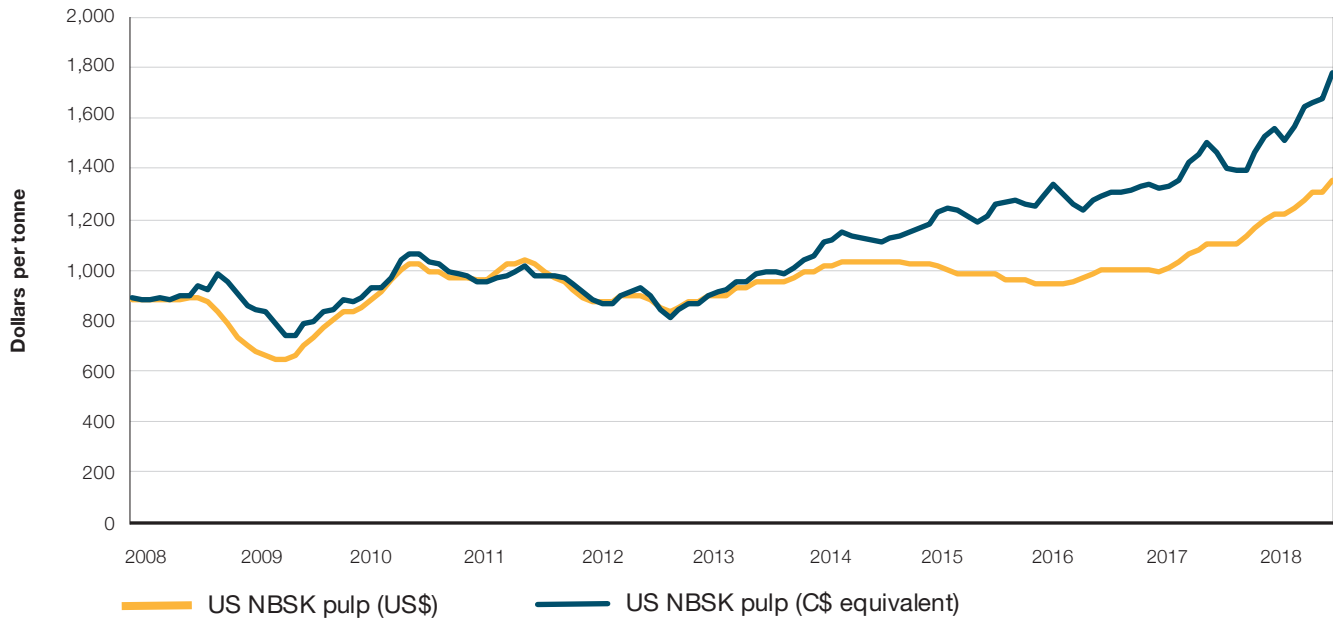
Source: Global Trade Atlas. See “Sources” for more detail.

Top export markets and share of total value of exports by province – wood pulp, 2017

PROVINCE	SHARE OF TOTAL VALUE OF EXPORTS (%)	TOP EXPORT MARKETS	EXPORT MARKET VALUE (ranked by top markets by province) (C\$)
British Columbia	44.4	China United States Indonesia	2,091,001,000 346,231,000 267,412,000
Alberta	19.6	United States China South Korea	696,126,000 530,853,000 90,084,000
Quebec	16.6	United States China South Korea	626,291,000 388,002,000 82,525,000
New Brunswick	7.6	United States India Indonesia	219,219,473 142,862,200 92,261,257
Ontario	5.3	United States Mexico China	377,514,511 26,989,972 4,318,492
Saskatchewan	3.6	China Indonesia South Korea	237,670,347 44,068,214 68,176
Nova Scotia	2.9	China Indonesia United States	148,420,438 30,793,380 29,709,328

Sources: Statistics Canada and Global Trade Atlas. See “Sources” for more detail.

Monthly US northern bleached softwood kraft (NBSK) pulp prices, 2008–2018



Note: Brian McClay & Associates, Inc. pulp prices are in US dollars, converted to Canadian dollars based on exchange rates posted by the US Federal Reserve.

Source: Brian McClay & Associates, Inc., used with permission granted by the publisher. Currency conversion based on the US Federal Reserve.

- NBSK pulp prices had been fairly stable until 2017–2018 when they started increasing. Today, NBSK pulp prices remain higher than they have been over the last decade.
- China has been the biggest driver of the pulp markets over the last 20 years and continues to be Canada's major export destination.
- The rise in pulp prices seen over the last year or so has been a result of several unplanned shortages that continued into 2018. Market pulp prices are expected to rise over the next couple years because planned capacity expansions have not been confirmed and several mills have converted to producing dissolving pulp.
- In 2013, the Canadian dollar weakened against the US dollar, causing the divergence in pulp price in Canadian dollars (see the blue line in the previous figure).

NEWSPRINT

- Newsprint is made from thermomechanical pulp and is a relatively low-cost paper product. It is most commonly used in newspapers, flyers and catalogues. Newsprint is best used in short-life applications.
- Newsprint is typically manufactured in integrated facilities, where the pulp and newsprint are made at the same site. Newsprint pulp is made from several softwood species (e.g. black spruce and balsam fir).
- Canada is the world's largest producer of newsprint (14%).
- Canada is also the world's leading exporter of newsprint (33.5%), with the majority of exports destined for the United States.
- Quebec leads Canada's newsprint production and exports (65% of total value of exports), followed by Ontario (11%).
- The rise of digital media has led to a structural decline in Canada's newsprint (10% from 2016 to 2017). It is expected that the market for newsprint will continue to decline as consumers shift away from paper to electronic media.

Global ranking for newsprint production by volume, 2016

RANK	COUNTRY	PERCENTAGE OF WORLD PRODUCTION (%)
1	Canada	14.0
2	Japan	12.1
3	China	11.0
4	Germany	7.4
5	United States	6.2
All others	-	49.3

Source: Food and Agriculture Organization of the United Nations. See "Sources" for more detail.

Global ranking for newsprint exports by value, 2017

RANK	COUNTRY	PERCENTAGE OF WORLD VALUE (%)
1	Canada	33.5
2	Russia	10.3
3	Sweden	8.2
4	Germany	6.8
5	France	6.4
All others	-	34.8

Source: Global Trade Atlas. See "Sources" for more detail.

Canadian trade indicators for newsprint, 2017

NEWSPRINT	VOLUME (tonnes)	VALUE (C\$)
Production	3,350,000	–
Consumption	531,218	–
Exports	2,853,533	1,980,831,987
Imports	34,751	31,455,386

Sources: Food and Agriculture Organization of the United Nations and Global Trade Atlas. See "Sources" for details.

Top export markets for Canada for newsprint, 2017

RANK	COUNTRY	VALUE (C\$)
1	United States	1,232,470,060
2	India	235,806,735
3	Brazil	77,314,843
4	United Kingdom	74,598,442
5	Colombia	31,767,375

Source: Global Trade Atlas. See "Sources" for more detail.

Top export markets and share of total value of exports by province – newsprint, 2017

PROVINCE	SHARE OF TOTAL VALUE OF EXPORTS (%)	TOP EXPORT MARKETS	EXPORT MARKET VALUE (ranked by top markets by province) (C\$)
Quebec	65.0	United States India United Kingdom	742,951,000 189,998,000 74,587,000
Ontario	10.8	United States India Cuba	196,009,853 10,748,404 2,146,536
British Columbia	8.4	United States Mexico Taiwan	51,625,000 17,327,000 14,380,000
Alberta	6.3	United States Taiwan India	119,857,807 4,147,660 334,504
Newfoundland and Labrador	6.2	United States India Israel	88,270,142 14,334,914 3,795,817
New Brunswick	2.1	United States China South Africa	33,705,336 7,094,661 849,813
Nova Scotia	1.3	India Mexico Brazil	8,846,296 6,928,494 2,511,713
Manitoba	0.0	United States Paraguay	37,870 36
Prince Edward Island	0.0	Turkey	25,378
Saskatchewan	0.0	Hong Kong	19,223

Source: Statistics Canada and Global Trade Atlas. See “Sources” for more detail.

PRINTING AND WRITING PAPER

- Printing and writing paper is a high grade paper with a superior quality than newsprint. It can be produced by using both northern bleached softwood kraft and bleached chemi-thermo-mechanical pulps with at least 20% mechanical pulp.
- Printing and writing paper is used to make a variety of office papers (e.g. for printers and photocopiers, bond and writing papers, envelopes, forms, pads of paper, and offset printing paper).
- Canada is the eighth-largest producer and the eighth-largest exporter of printing and writing papers globally. The United States is Canada's main export market, accounting for 88% of the nation's total export value.
- Similar to newsprint, the market for printing and writing papers is expected to continue declining (exports decreased 8.2% between 2016 and 2017).

Global ranking for printing and writing paper production by volume, 2016

RANK	COUNTRY	PERCENTAGE OF WORLD PRODUCTION (%)
1	China	25.7
2	United States	14.4
3	Japan	8.1
4	Germany	6.6
5	Finland	5.2
All others	-	40.0

Note: Canada ranks eighth and accounts for 3.0% of the global production of printing and writing paper.

Source: Food and Agriculture Organization of the United Nations. See "Sources" for more detail.

Global ranking for printing and writing paper exports by value, 2017

RANK	COUNTRY	PERCENTAGE OF WORLD VALUE (%)
1	Germany	12.4
2	Finland	11.0
3	China	8.1
4	Indonesia	7.4
5	Sweden	5.8
All others	-	55.3

Note: Canada ranks eighth and accounts for 4.9% of the global exports value of printing and writing paper.

Source: Global Trade Atlas. See "Sources" for more detail.

Canadian trade indicators for printing and writing paper, 2017

PRINTING AND WRITING PAPER	VOLUME (tonnes)	VALUE (C\$)
Production	3,000,000	–
Consumption	1,403,943	–
Exports	2,257,983	2,064,506,724
Imports	661,926	943,437,503

Sources: Food and Agriculture Organization of the United Nations and Global Trade Atlas. See “Sources” for details.

Top export markets for Canada for printing and writing paper, 2017

RANK	COUNTRY	VALUE (C\$)
1	United States	1,810,155,966
2	Mexico	50,804,858
3	Germany	50,602,475
4	Turkey	18,402,750
5	United Kingdom	15,978,245

Source: Global Trade Atlas. See “Sources” for more detail.

Top export markets and share of total value of exports by province – printing and writing paper, 2017

PROVINCE	SHARE OF TOTAL VALUE OF EXPORTS (%)	TOP EXPORT MARKETS	EXPORT MARKET VALUE (ranked by top markets by province) (C\$)
Quebec	57.1	United States Germany Turkey	1,042,080,000 48,301,000 18,170,000
British Columbia	18.7	United States Mexico Australia	307,776,000 29,687,000 8,983,000
New Brunswick	12.5	United States China Mexico	254,053,295 3,497,125 912,444
Nova Scotia	7.8	United States Spain Mexico	128,505,110 11,882,727 8,123,280
Ontario	3.8	United States Mexico India	77,490,280 1,206,973 174,729
Saskatchewan	0.0	United States Mexico India	123,135 33,567 2
Manitoba	0.0	United States India	124,450 17,513
Alberta	0.0	United States Australia Cuba	4,033 683 170
Newfoundland and Labrador	0.0	France (incl. Monaco, French Antilles) Greenland	444 200

Source: Statistics Canada and Global Trade Atlas. See “Sources” for more detail.

STRUCTURAL WOOD PANELS

- Structural panels include oriented strand board (OSB) and plywood.
- OSB is an engineered structural panel that is made from strands of wood cut from small logs.
- OSB is used mostly for load-bearing purposes in platform-frame-constructed buildings (e.g. single and multi-family housing). It is also used in wall sheathing, flooring and roofing and to make other products such as furniture and engineered wood products.
- Plywood is a structural panel made of several layers of thin veneers that are glued together.
- Plywood is used mostly as wall, floor and roof sheathing because it provides great strength, stiffness and stability against moisture. Thicker plywood that has a particular surface treatment is used often to line concrete forms for concrete-based construction.
- Canada is the third-largest producer of wood panels (5.2% of global production); while China is the world leader in panel production, accounting for over 62% of total global production.
- Canada is the second-largest exporter of wood panels (11.9% of total global exports), most of which are exported to the United States (US; 93%). British Columbia and Alberta lead Canadian exports of structural panels, accounting for over 50% of the nation's total structural panel exports.
- OSB dominates Canada's structural panel export market, representing 96% of the structural panel export value.
- Similar to softwood lumber, the export market for structural panels is driven by the demand from the US housing market.

Global ranking for structural wood panel production by volume, 2016

RANK	COUNTRY	PERCENTAGE OF WORLD PRODUCTION (%)
1	China	62.5
2	United States	11.5
3	Canada	5.2
4	Russia	2.4
5	Indonesia	2.0
All others	-	16.4

Source: Food and Agriculture Organization of the United Nations. See "Sources" for more detail.

Global ranking for structural wood panel exports by value, 2017

RANK	COUNTRY	PERCENTAGE OF WORLD VALUE (%)
1	China	32.2
2	Canada	11.9
3	Indonesia	11.0
4	Russia	7.1
5	Finland	4.1
All others	-	33.8

Source: Global Trade Atlas. See "Sources" for more detail.

Canadian trade indicators for structural wood panels, 2017

STRUCTURAL WOOD PANELS	VOLUME (m ³)	VALUE (C\$)
Production	9,864,000	–
Consumption	5,285,177	–
Exports	6,607,480	2,440,289,641
Imports	2,028,657	592,760,143

Sources: Food and Agriculture Organization of the United Nations and Global Trade Atlas. See "Sources" for details.

Top export markets for Canada for structural wood panels, 2017

RANK	COUNTRY	VALUE (C\$)
1	United States	2,279,514,874
2	Japan	59,222,104
3	China	26,513,630
4	Vietnam	15,811,411
5	South Korea	15,558,926

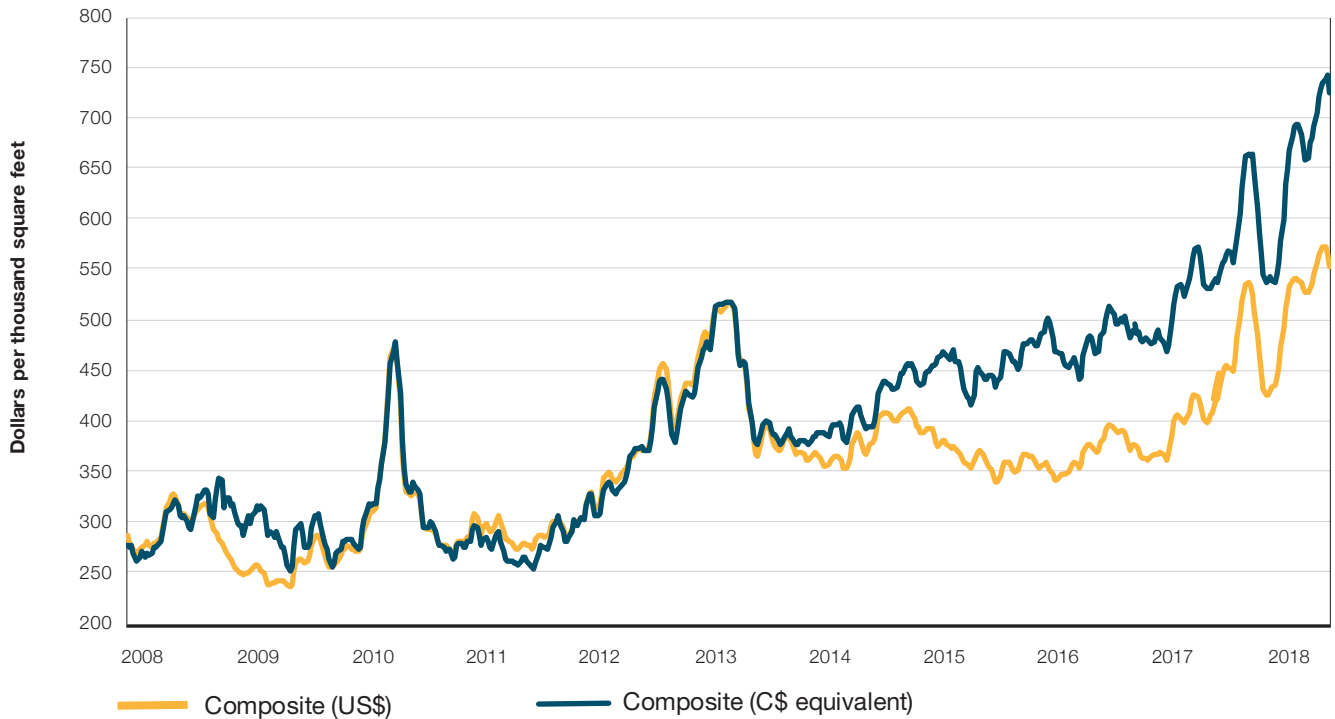
Source: Global Trade Atlas. See "Sources" for more detail.

Top export markets and share of total value of exports by province – structural wood panels, 2017

PROVINCE	SHARE OF TOTAL VALUE OF EXPORTS (%)	TOP EXPORT MARKETS	EXPORT MARKET VALUE (ranked by top markets by province) (C\$)
British Columbia	31.4	United States Japan China	630,186,383 59,165,756 26,263,277
Alberta	23.4	United States Mexico Japan	568,978,732 905,221 56,348
Ontario	17.8	United States Bermuda Mexico	432,584,455 716,092 161,742
Quebec	12.0	United States South Korea Chile	273,406,410 12,242,781 4,753,382
Saskatchewan	9.8	United States South Korea	238,699,057 1,518,560
Manitoba	5.5	United States Russia Latvia	134,125,420 162,533 44,871
New Brunswick	0.1	United States Saint-Pierre and Miquelon	1,357,910 350
Nova Scotia	0.0	Netherlands United States Saint-Pierre and Miquelon	256,534 79,573 74,096
Newfoundland and Labrador	0.0	United States	45,905
Prince Edward Island	0.0	United States	36,407
Yukon	0.0	United States	14,622

Sources: Statistics Canada and Global Trade Atlas. See "Sources" for more detail.

Weekly structural panel prices in North America, 2008–2018



Note: Random Lengths structural panels composite prices in US dollars, converted to Canadian dollars based on exchange rates posted by the US Federal Reserve.

Source: Random Lengths, used with permission granted by the publisher. US Federal Reserve.

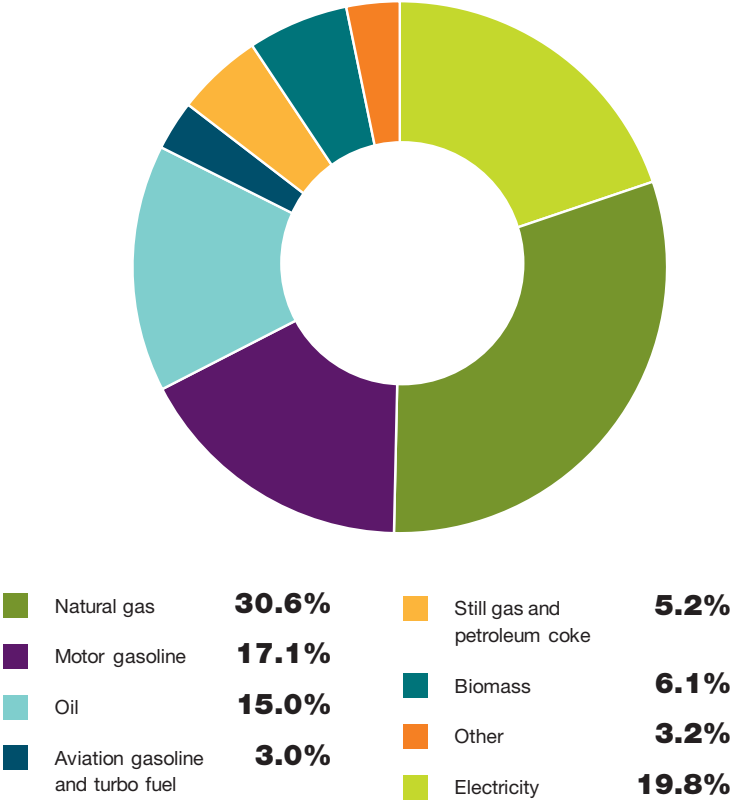
- Panel prices had been relatively stable before reaching a 10-year high in early 2018 (in US dollars, see the yellow line in the previous figure). The market remains tight as demand continues to outpace supply because of transportation interruptions and a reduced fibre supply (caused by the 2017 wildfires in British Columbia).
- The divergence between the US and Canadian prices is due to changes in the exchange rate. Since 2013, the US dollar has been strong against the Canadian dollar, causing the blue line in the previous figure to diverge.

Bioenergy and Bioproducts

BIOENERGY

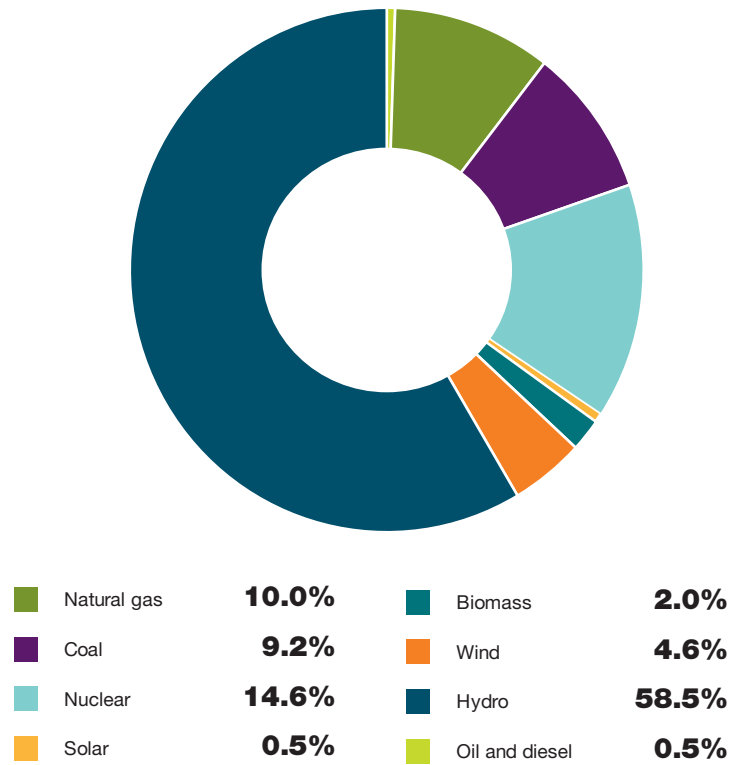
- In 2015, biomass energy use in all sectors (residential, commercial, industrial, transportation and agriculture) accounted for 6.1% of Canada’s total energy use. The majority of bioenergy sources were wood pellets, firewood, wood waste and pulping liquor.
- While biomass contributes mainly to heat energy, it also contributes to electricity generation.
- Biomass is the second-largest source of renewable electricity after hydro. In 2016, it accounted for 3.1% of electricity generation from renewable resources (such as hydro, wind, solar and biomass) and 2.0% of all electricity generation in Canada.
- Canada’s installed biomass electricity generation capacity was 2,702 megawatts in 2016, growing 49.8% from 2005 to 2016.

Biomass share of Canada's total energy use, 2015



Source: Statistics Canada. See “Sources” for more detail.

Biomass share of Canada's total electricity generation, 2016



Source: National Energy Board. See “Sources” for more detail.

WOOD PELLETS

- Wood pellets are a form of fuel made of wood shavings, bark, sawdust and chips held together by compression or the addition of a binder. They have a low moisture content and are easily transported over long distances.
- Canada is the second-largest exporter of wood pellets in the world, with \$396.7 million in wood pellets exports representing 11.9% of total global exports in 2017.
- British Columbia represents the largest share of Canadian exports, with 78.0% of total exports by value at \$311.3 million. The top three markets for wood pellets from British Columbia are the United Kingdom, Japan and Belgium.
- Total Canadian wood pellet production in 2017 was 2.9 million tonnes, a year-to-year increase of 1.6% from 2016 and an increase of 32.4% from 2012. British Columbia was the top producer in Canada with 2.1 million tonnes, representing 72.2% of the national total.

Global ranking for wood pellet exports by value, 2017

RANK	COUNTRY	PERCENTAGE OF WORLD VALUE (%)
1	United States	26.0
2	Canada	11.9
3	Latvia	8.2
4	Estonia	7.0
5	Austria	6.0
All others*	-	40.9

Source: Global Trade Atlas. See "Sources" for more detail.

* All others includes 39 countries.

Top export markets and share of total value of exports by province – wood pellets, 2017

PROVINCE	SHARE OF TOTAL VALUE OF EXPORTS (%)	TOP EXPORT MARKETS	EXPORT MARKET VALUE (ranked by top markets by province) (C\$)
British Columbia	78.0	United Kingdom	230,749,284
		Japan	42,669,792
		Belgium	20,715,512
Quebec	13.0	United States	38,823,547
		United Kingdom	9,926,449
		Italy	4,167,274
New Brunswick	6.1	United Kingdom	22,489,735
		United States	1,744,006
Alberta	1.4	United States	5,512,684
Nova Scotia	0.5	United Kingdom	1,920,000
		Belgium	119,608
Ontario	0.1	United States	525,552

Source: Statistics Canada. See “Sources” for more detail.

BIOPRODUCTS

- As reported in the 2015 Bioproducts Production and Development Survey, bioproducts are defined as products produced from biomass (e.g. biofuels such as ethanol and biodiesel; bio-gas and bioenergy; organic chemicals such as biopolymers; bio-pesticides; plant-made biologics; non-conventional construction materials and composites; intermediary biochemicals; and biomaterials if produced in a non-conventional manner). The following products are excluded: food, nutraceuticals, feed (livestock feed and pet food), medicines, and forestry-based bioproducts produced in a traditional way (such as lumber and paper).
- In 2015, 190 businesses were engaged in bioproducts production and development, using either forest or agriculture-based biomass.
- Total bioproduct revenues were \$4.3 billion in 2015, with the majority of revenues coming from biofuels, 63.6%. Total employment in the sector was 4,118.
- From 2009 to 2015, bioproduct revenues increased from \$1.3 billion to \$4.3 billion, while total employment increased from 3,019 to 4,118. The percentage of revenues spent on research and development decreased from 3.4% to 1.7%.
- The majority of bioproduct revenues were generated in Ontario and Quebec, which accounted for 44.4% and 25.8% of the national total, respectively. Similarly, Ontario and Quebec accounted for 40.4% and 33.3%, respectively, of the total bioproduct employment in Canada.

Bioproduct revenues by product type, 2015

PRODUCT	REVENUES (thousand C\$)
Biofuel	2,715,874
Bioenergy	140,027
Organic chemicals*	-
Materials and composites**	370,549
Intermediary biochemical and biomaterials	49,529
Other bioproducts*	-
Total	4,268,941

Source: Statistics Canada. See "Sources" for more detail.

*Data suppressed.

**The total for materials and composites was suppressed. This number includes only composites and bioplastics.

Bioproduct revenues and employment by region, 2015

REGION	REVENUES (thousand C\$)	DIRECT EMPLOYMENT
Atlantic provinces	35	51
Quebec	1,103,150	1,370
Ontario	1,894,151	1,662
Prairies	1,178,777	587
British Columbia	92,828	447
Canada	4,268,941	4,118

Source: Statistics Canada. See "Sources" for more detail.

Sources

CANADA'S FORESTS BY THE NUMBERS

See sources under the infographic <https://www.nrcan.gc.ca/forests/report/infographics/20031>.

FOREST INDUSTRY – NATIONAL PICTURE

Market structure

Statistics Canada. CANSIM table 379-0029: Gross domestic product (GDP) at basic prices by industry. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610040101> (accessed April 11, 2018).

- For nominal GDP up to (and including) 2014.

Statistics Canada. CANSIM tables 379-0031, 329-0077 and 329-0074. <http://www5.statcan.gc.ca/cansim/a01?lang=eng> (accessed April 11, 2018).

- Natural Resources Canada-Canadian Forest Service's calculations for 2015–2017 nominal GDP are based on Statistics Canada's tables 379-0031, 329-0077 and 329-0074: GDP in 2007 constant prices and estimated industry price deflators.

Production

APA – The Engineered Wood Association. Quarterly production reports.

- The production and consumption data of structural panels (plywood and oriented strand board) are from APA – The Engineered Wood Association.

Pulp and Paper Products Council.

- Production and consumption figures for newsprint, printing and writing paper, and wood pulp are based on data of the Pulp and Paper Products Council.

Statistics Canada. CANSIM table 303-0064: Lumber production, shipments and stocks, by Canada and provinces. <http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=3030064> (accessed February 27, 2018).

- Data used for lumber production include total softwood production for Canada.

Exports

Statistics Canada. Merchandise trade data (obtained via Global Trade Atlas) (special extraction, February 16, 2018).

- “Other forest products” includes only HS Codes 44, 47 and 48.

Export markets

Global Trade Atlas. IHS Markit Inc. (accessed July 13, 2018).

Gross domestic product

Nominal GDP:

Statistics Canada. CANSIM table 379-0029: Gross domestic product (GDP) at basic prices by industry. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610040101> (accessed April 11, 2018).

- For nominal GDP up to (and including) 2014.

Statistics Canada. CANSIM tables 379-0031, 329-0077 and 329-0074. <http://www5.statcan.gc.ca/cansim/a01?lang=eng> (accessed April 11, 2018).

- Natural Resources Canada-Canadian Forest Service's calculations for 2015–2017 nominal GDP are based on Statistics Canada's tables 379-0031, 329-0077 and 329-0074: GDP in 2007 constant prices, and estimated industry price deflators.

Real GDP:

Statistics Canada. CANSIM table 379-0031: Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS). <http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=3790031> (accessed April 11, 2018).

- Real GDP in 2007 constant prices.
- Data from Statistics Canada's new Natural Resources Satellite Account (NRSA) are a key source of information on the economic contribution of the forest sector in Canada and will be included in future releases of the Forest Fact Book. The NRSA, the result of collaboration between Natural Resources Canada and Statistics Canada, is able to capture economic activity in forest industry segments that have traditionally been difficult to measure, such as wood furniture manufacturing. According to data from the NRSA, the forest sector directly accounted for \$27.6 billion (or 1.4%) of Canada's nominal GDP in 2017.
- Nominal and real GDP vary in that real values are adjusted for inflation whereas nominal values are not. Therefore, real GDP is used to account for differences between time periods (e.g., comparing 2016 and 2017 GDP).

Employment

Statistics Canada. CANSIM table 383-0031: Labour statistics consistent with the System of National Accounts (SNA), by province and territory, job category and North American Industry Classification System (NAICS). <http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=3830031> (accessed May 23, 2018).

- Data from Statistics Canada's new Natural Resources Satellite Account (NRSA) are a key source of information on the economic contribution of the forest sector in Canada and will be included in future releases of the Forest Fact Book. The NRSA is the result of collaboration

between NRCan and Statistics Canada and is able to capture additional economic activity in segments of the forest industry that have traditionally been difficult to measure, such as wood furniture manufacturing. According to data from the NRSA, the forest sector directly employed 232,549 people across the country in 2017.

- Statistics Canada released revised 2016 SNA employment data in 2017. In the 2017–2018 Forest Fact Book, total forest sector employment was reported as 211,075. This number was revised to 205,660 by Statistics Canada.

Financial performance

Statistics Canada. Quarterly balance sheet and income statement, by North American Industry Classification System (NAICS) (special extraction).

Forest industry carbon emissions

Environment and Climate Change Canada. 2018. National Inventory Report 1990–2016: Greenhouse gas sources and sinks in Canada. <https://unfccc.int/documents/65715> (accessed April 13, 2018).

- Environment and Climate Change Canada's National Inventory Report 1990–2016: Greenhouse Gas Sources and Sinks in Canada is based on data and analysis from Natural Resources Canada–Canadian Forest Service's National Forest Carbon Monitoring, Accounting and Reporting System.

Natural Resources Canada. Comprehensive energy use database. http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/menus/trends/comprehensive_tables/list.cfm (accessed April 28, 2018).

- Residential End-Use Model, and Electricity Energy-Use Model.

Statistics Canada. 2018. Report on energy supply and demand in Canada (2016 preliminary). <https://www150.statcan.gc.ca/n1/pub/57-003-x/57-003-x2018002-eng.htm> (accessed April 28, 2018).

FOREST INDUSTRY – REGIONAL PICTURE

Regional market dynamics

Statistics Canada. Table: 36-10-0402-01 (formerly CANSIM 379-0030): Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS), provinces and territories. Chained (2007) dollars <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610040201> (accessed June 18, 2018).

- Includes data for NAICS codes 113, 321 and 322.

Regional exports

Exports of Canadian forest products by province

Statistics Canada. Merchandise trade data (obtained via Global Trade Atlas) (special extraction, February 16, 2018).

- “Other” forest products includes only HS Codes 44, 47 and 48.

Provincial exports of Canadian forest products for Canada’s top export markets

Global Trade Atlas. IHS Markit Inc. (accessed August 27, 2018).

Regional employment

Statistics Canada. CANSIM table 383-0031: Labour statistics consistent with the System of National Accounts (SNA), by province and territory, job category and North American Industry Classification System (NAICS). <http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=3830031> (accessed May 23, 2018).

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traditionally been difficult to measure, such as wood furniture manufacturing. According to data from the NRSA, the forest sector directly employed 232,549 people across the country in 2017.

- Statistics Canada released revised 2016 SNA employment data in 2017. In the 2017–2018 Forest Fact Book, total forest sector employment was reported as 211,075. This number was revised to 205,660 by Statistics Canada.

FOREST PRODUCTS

Global Quick Facts (2017)

Food and Agriculture Organization of the United Nations. FAOSTAT Database. <http://www.fao.org/faostat/en/#data/FO> (accessed July 13, 2018).

Global Trade Atlas. IHS Markit Inc. (accessed July 13, 2018).

Trade Data Online. Statistics Canada (accessed July 13, 2018).

Canada’s position in the world

Global production by volume ranking, all products

Food and Agriculture Organization of the United Nations. FAOSTAT Database. <http://www.fao.org/faostat/en/#data/FO> (accessed July 13, 2018).

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