

A banner at the top of the slide showing the British Columbia flag waving over a coastal landscape with mountains and a sunset.

2017 Economic State of the B.C. Forest Sector

August 2018

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Economic Services Branch

A decorative banner at the top of the slide featuring the British Columbia flag (a red cross on a white field with blue and red stripes) and a landscape with mountains and a body of water under a sunset sky.

Outline

- ❖ **Overview**
- ❖ **Products**
- ❖ **Markets**
- ❖ **Sector Indicators**
- ❖ **Conclusions and Outlook**
- ❖ **Appendix** *(additional slides for all topics)*

Ministry Economic Reports

- ❖ Weekly Prices: Tracks weekly prices relevant to the B.C. forest sector.
- ❖ Monthly Exports: Export values by major market and product groups, including some quantity information.
- ❖ Annual Mill Report and Quarterly Mills Status Reports: Summary outlining B.C.'s harvest and timber processing activity during the year and of quarterly openings, closings, and investment.
- ❖ Log Exports: Summary of permit information (Permit Report on right side).
- ❖ Economic State of the BC Forest Sector: Year in review for the B.C. forest sector.

The British Columbia flag, featuring a red cross on a white field with blue and red stripes, and a gold crown at the top, set against a background of a sunset over a body of water with mountains in the distance.

Overview of B.C. Forest Sector

- ❖ **Includes** forest management, harvesting, reforestation, wood product manufacturing, and pulp and paper product manufacturing.
- ❖ **Plays a key role in the provincial economy** with a significant presence in the Lower Mainland, and as an essential contributor to communities outside the Lower Mainland.
- ❖ **Is export-oriented**, depending heavily on global markets and exchange rates, and foreign competition.
- ❖ **Is cyclical**, affected by the global forest commodity markets and general performance of the world economy.

Overview of 2017

- ❖ **In sales terms, 2017 was an improvement over 2016**, with wood products (+13%) and paper products (+11%) both doing well.
- ❖ **B.C.'s forest sector exports increased** in 2017 (+3.3%). Export growth was primarily from pulp products (+25%).
- ❖ **The U.S. market** continued to gradually improve, as seen in the U.S. housing market, though B.C. exports to the U.S. declined slightly.
- ❖ **China¹** continued as the second largest export market for B.C.'s forest sector. Exports to China increased 13% thanks to strong pulp exports.
- ❖ **Employment increased 2.9% (+1,600)** in 2017 according to the System of National Accounts².
- ❖ **In 2017 B.C. Wildfires** burned an area 8 times larger than the average area burned from 2007-2016. The fires cost nearly \$570 million to fight, and the negative impact on the forest sector can be seen in lower lumber production.
- ❖ **B.C. Lumber Exporters** are estimated³ to have paid CA\$333 million in U.S. lumber duties in 2017. Tariffs were imposed in May.

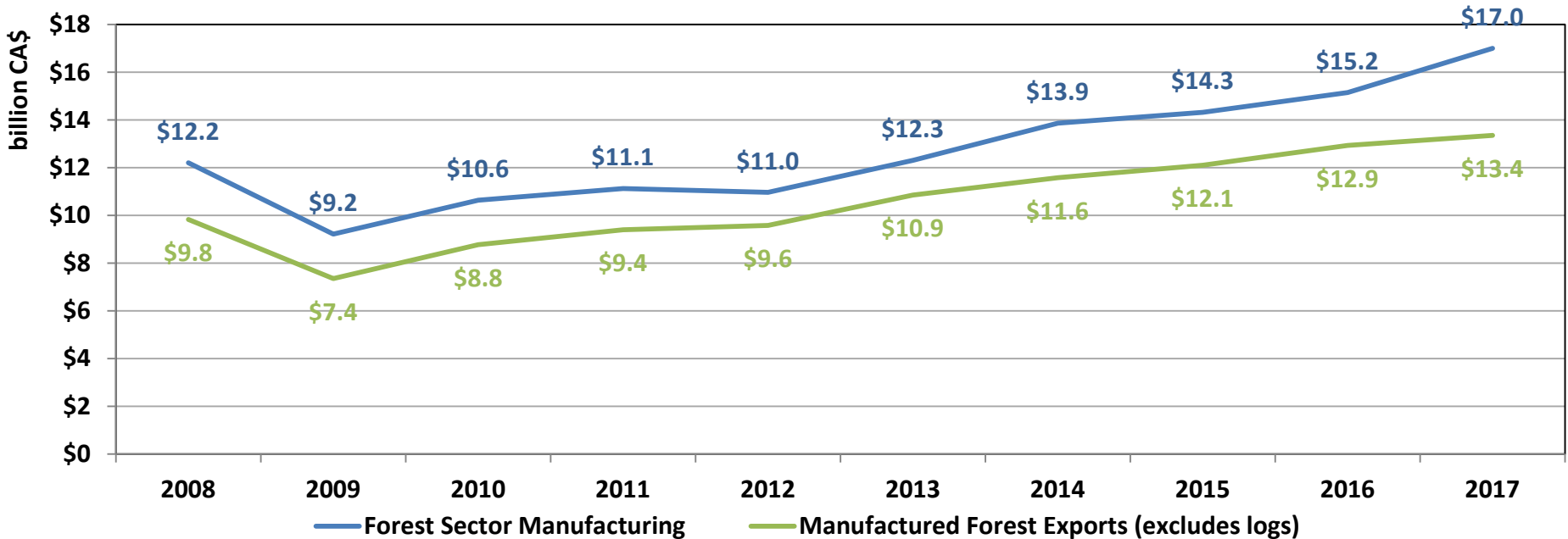
1. All references to China in this report include Hong Kong.

2. According to the Survey of Employment, Payrolls and Hours employment increased slightly (+700), and the Labour Force Survey showed a decrease (-2,800). See Appendix starting on slide 51 for more information.

3. Ministry estimate based on monthly B.C. lumber export value and the "all others" duty rates (CVD + AD).

Note: Numbers may not add properly to totals, or always be the exact same on each slide due to rounding.

B.C. Manufactured Forest Product Sales and Exports

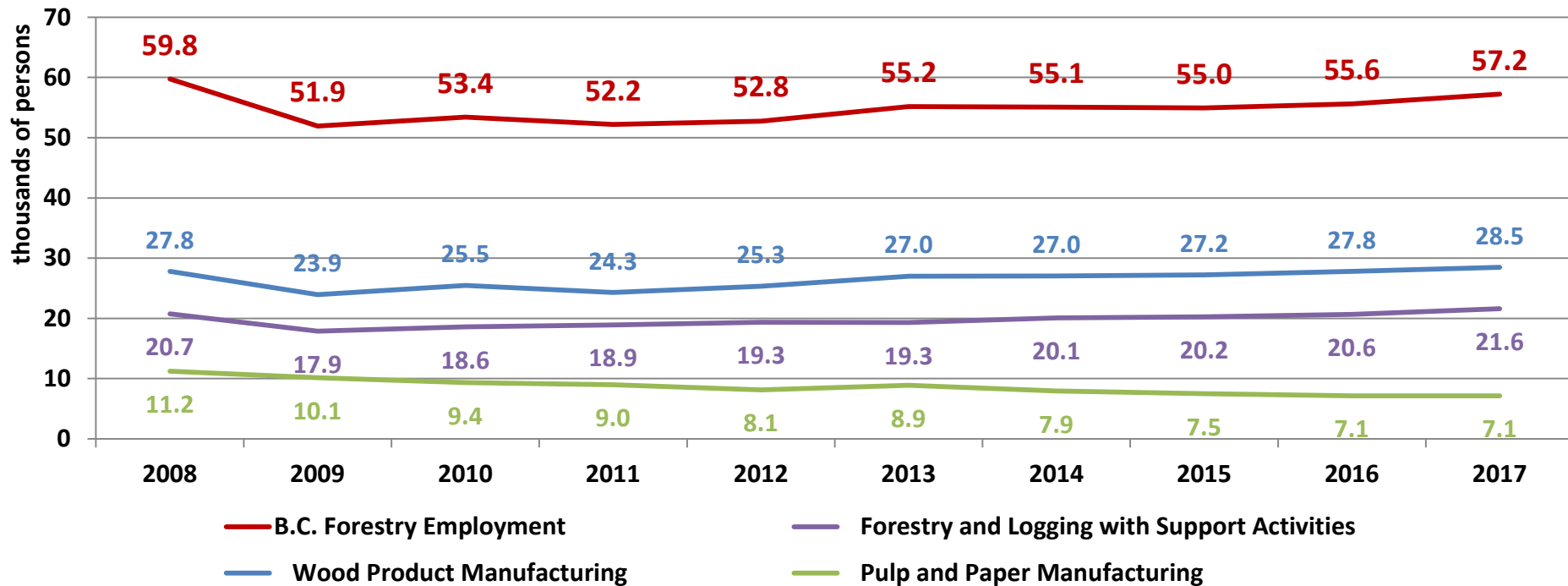


Data source: Statistics Canada; [CANSIM 304-0015](#), and [Canadian International Merchandise Trade Database \(CIMTD\)](#) or via [BC Stats](#). Note historic data is subject to revisions.

Overview Indicator 1 – B.C. forest sector manufacturing sales in 2017 were up 12% from 2016 and exports, excluding logs, were up 3.2% from 2016. During the U.S. Housing boom, 2004 was the peak in forest sector manufacturing sales and non-log exports (CA\$18.2 and CA\$14.7 billion).

The increasing gap between manufacturing sales and exports suggests growth of the domestic market, and the gap is now similar to levels seen from 2003-2005. Additionally, in May 2018 manufacturing sales for 2016 received a second upward revision (\$580 million which is in addition to the original \$780 million revision). Most of this revision was for wood products.

B.C. Forest Sector Direct Employment



Data source: Statistics Canada System of National Accounts (SNA): [CANSIM 281-0024](#).

Overview Indicator 2 – B.C. forest sector direct employment was 57,200 in 2017, up 2.9% from 2016. In 2017 there was an increase in Wood Product employment (2.4%) and in Forestry and Logging with Support Activities (4.6%). Pulp and Paper was down (-0.2%).

We report this series since it is part of the National Accounts and is therefore used in our analysis, but the Labour Force Survey (LFS) is often quoted in the media and used by other organizations. For further discussion of employment estimates please see slide 51 in the appendix. 7

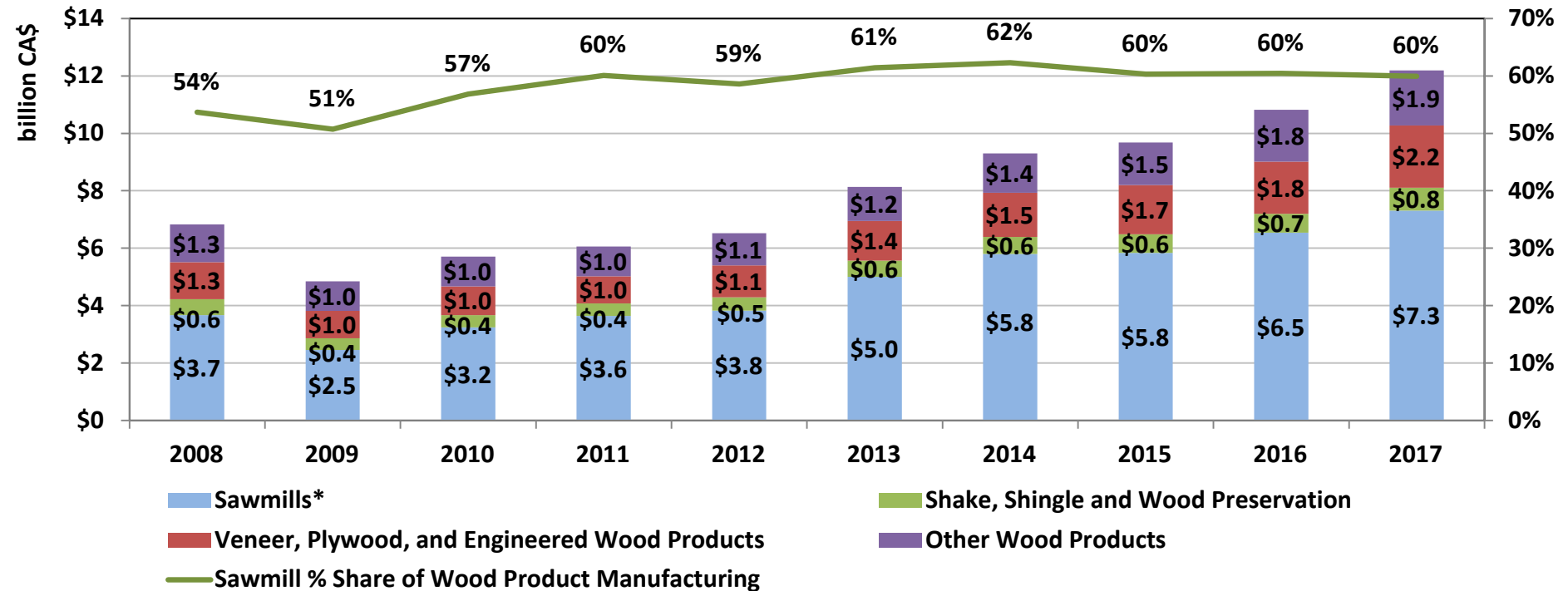
Products Overview

- ❖ **Wood Products, especially Lumber:** In 2017, B.C. produced 30.6 million cubic metres of lumber, or 46% of Canada's total softwood lumber production. B.C. wood product sales were CA\$12.2 billion in 2017. Sawmill* sales were CA\$7.3 billion, or 60% of total Wood Product Manufacturing sales in B.C.
- ❖ **Pulp and Paper Products, especially Market Pulp:** B.C. Paper Manufacturing sales were CA\$4.8 billion in 2017. Pulp mills** had sales of CA\$2.9 billion, or 59% of total Paper Manufacturing sales in B.C.
- ❖ **Logs:** In 2017, 64.3 million cubic metres of logs were harvested. Exports of 6.0 million cubic metres (9.3% of harvest), mostly from coastal areas, were worth CA\$807 million.
- ❖ **Wood Products-Pellets:** B.C. exported 1.78 million tonnes of wood pellets worth CA\$311 million. The UK was the primary destination by weight (73%), followed by Japan (14%), Belgium (7.1%), and South Korea (3.1%).

*Excludes shake and shingle mill sales. Sawmills are a subcategory of Wood Product Manufacturing.

**Pulp is a subcategory of the Paper Manufacturing NAICS code.

B.C. Wood Product Manufacturing Sales

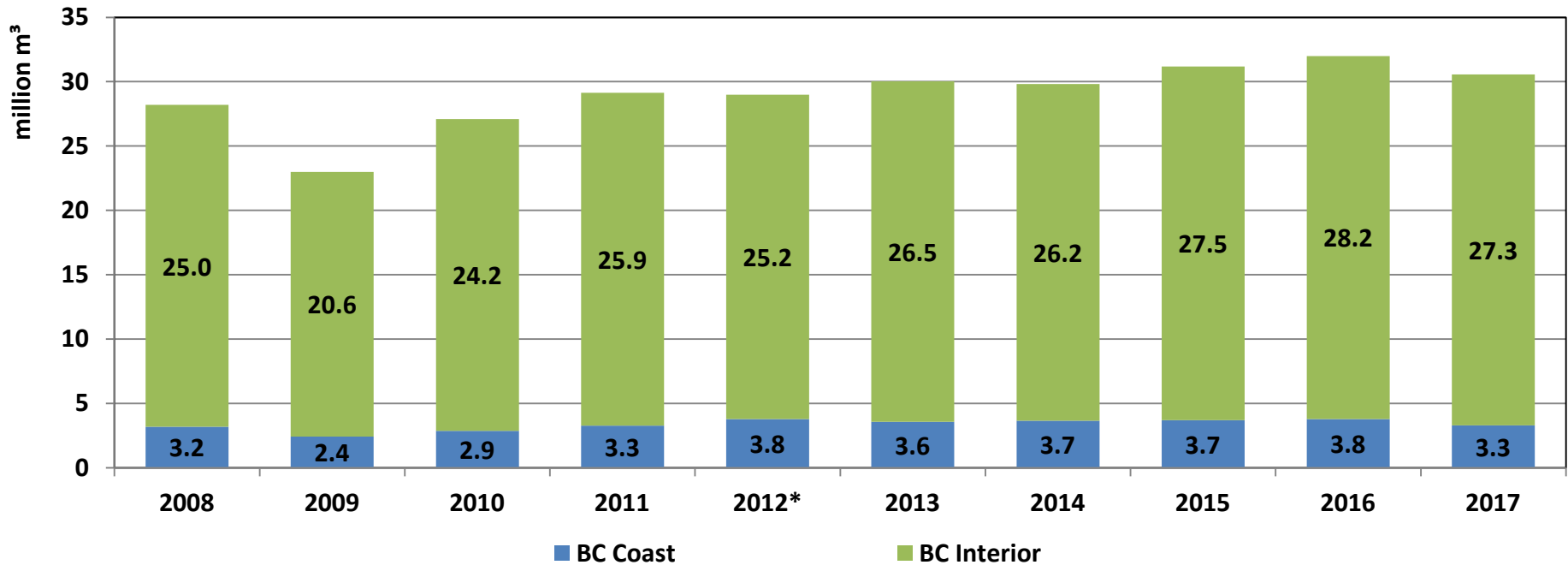


Data source: Statistics Canada; [CANSIM 304-0015](#). Sawmill sales are primarily lumber, and include chip and sawdust sales. Other wood products include wood pellets, and most other products of wood such as cabinets, bowls, tool handles, fencing, etc.

Products – Wood Products – Wood Product Manufacturing sales totaled CA\$12.2 billion in 2017. Sawmill sales accounted for 60% of Wood Product Manufacturing sales. From 2016 to 2017, Sawmill sales increased 12%, and the three other industry groupings increased a combined 14%.



B.C. Softwood Lumber Production



*Interior and Coast totals are Estimates. In all years the Interior includes production from Yukon, Northwest Territories, and Nunavut, though the volume is negligible

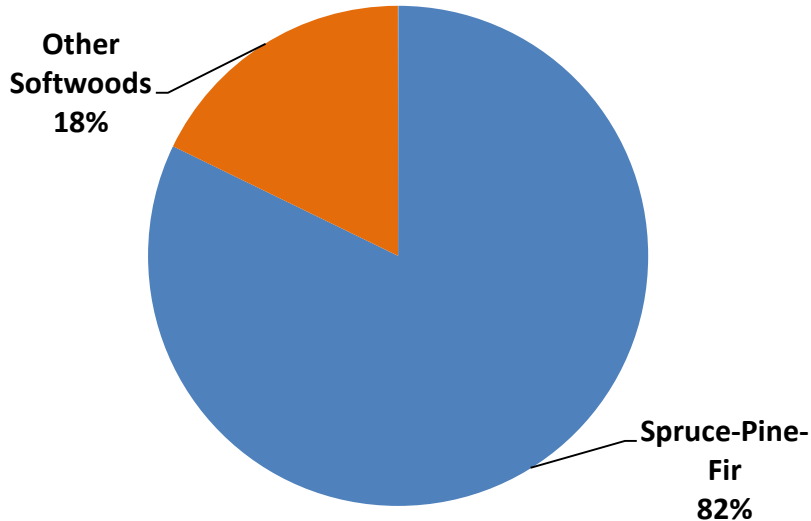
Data source: Statistics Canada; [CANSIM 303-0064](#).

Products – Softwood Lumber – Softwood lumber production volume declined 4.5% in 2017. Part of this decline was due to forest fires. The Coast accounted for 11% of B.C. production. Lumber production in the past several years is comparable to the production in 1995-1999 when U.S. housing starts averaged around 1.5 million, yet housing starts are currently only 1.2 million. This is due to expanding offshore markets, and possibly to increased domestic value added manufacturing.

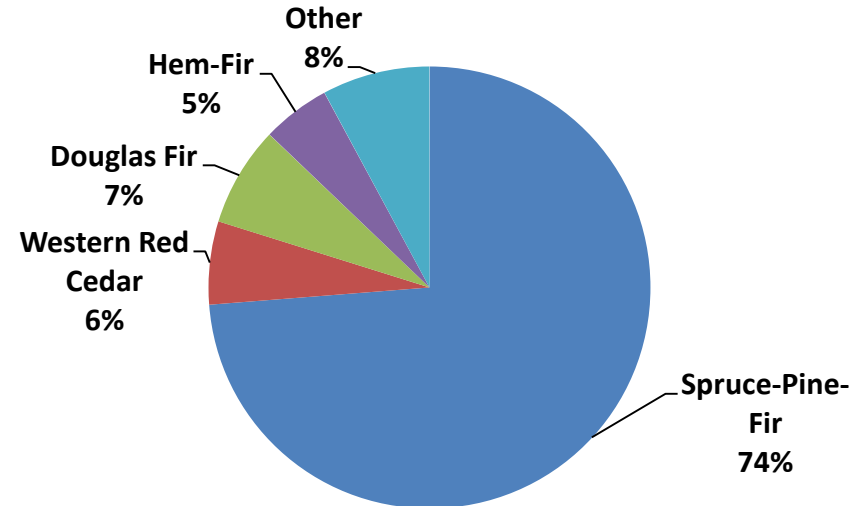


B.C. Softwood Lumber Production and Export Value Share by Species, 2017

**B.C. Softwood Lumber Production
(30.6 million m³), 2017**



**B.C. Softwood Lumber Export Volume
(25.3 million m³), 2017**

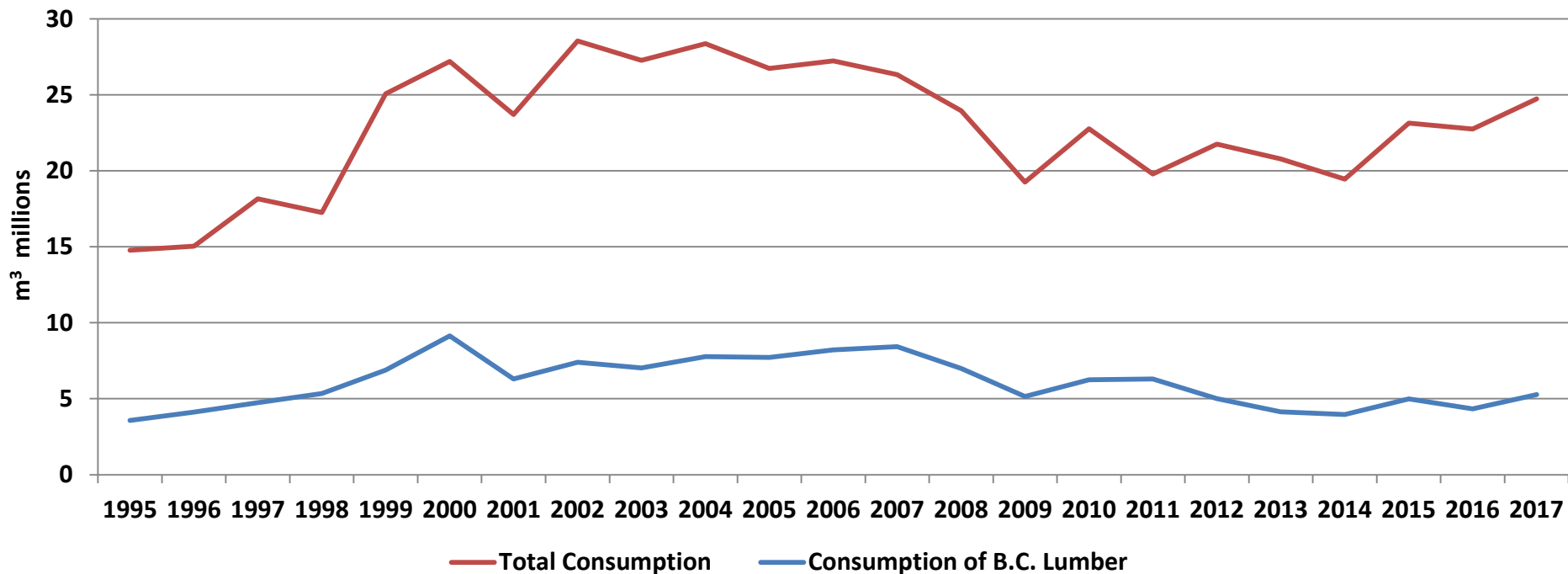


Data source: Statistics Canada; [CANSIM 303-0064](#) and [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Based on volume in cubic metres. Note historic data is subject to revisions.

Products – Softwood Lumber – In 2017, 82.2% of softwood lumber production volume was spruce, pine or fir (SPF), and 17.8% was from other species such as cedar, Douglas fir, and hemlock. For comparison, in terms of export volume SPF was 74% of the total, while other species made up 26%. This demonstrates SPF is important to the domestic market (5.3 million m³, 17% of production).



Estimated Canadian Consumption of Lumber

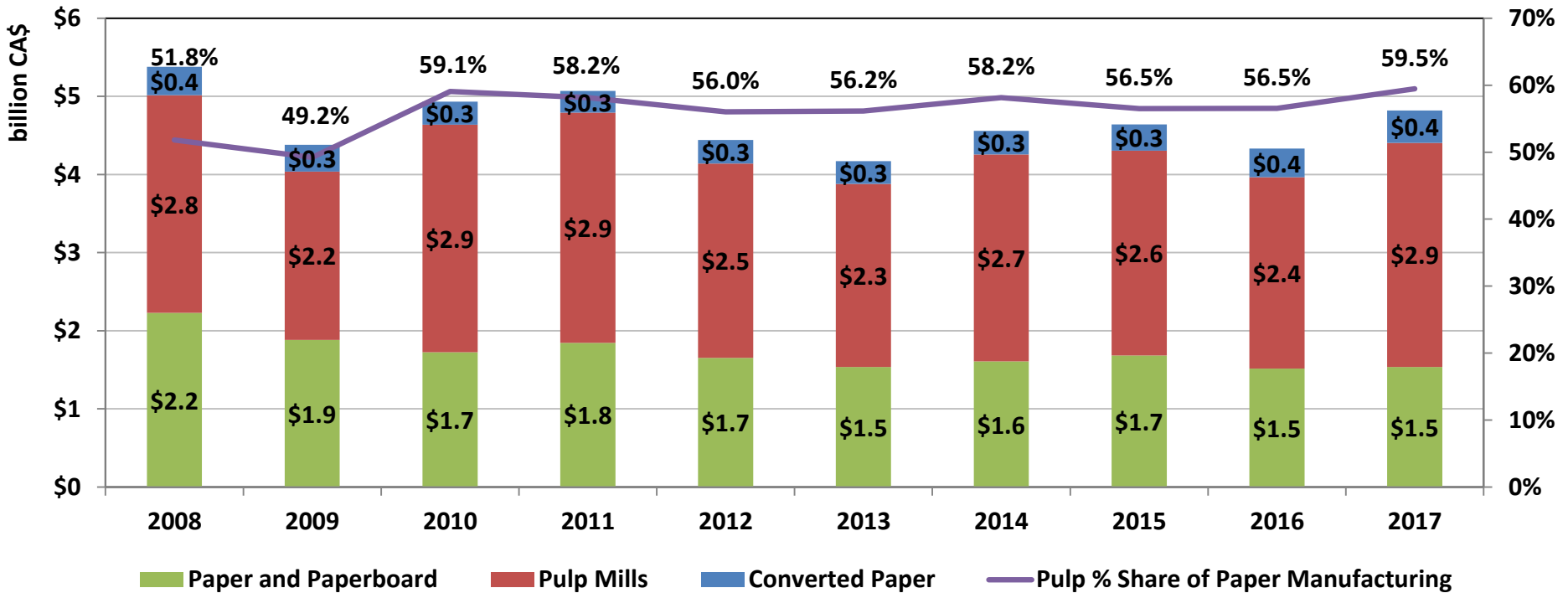


Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#) and [CANSIM 303-0064](#). Note historic data is subject to revisions.

Products – Softwood Lumber – In 2017 Canada consumed approximately 25 million m³ of lumber, which included 5.3 million m³ of B.C. lumber. This volume was used domestically as lumber (such as in housing) or was turned into a value added wood product (siding, engineered wood products) which was used domestically or exported.

The increase in consumption since 2014 indicates growing demand for lumber, and possibly the expansion of the value added sector. In 2017 an additional 1 million m³ of B.C. lumber production was consumed in Canada.

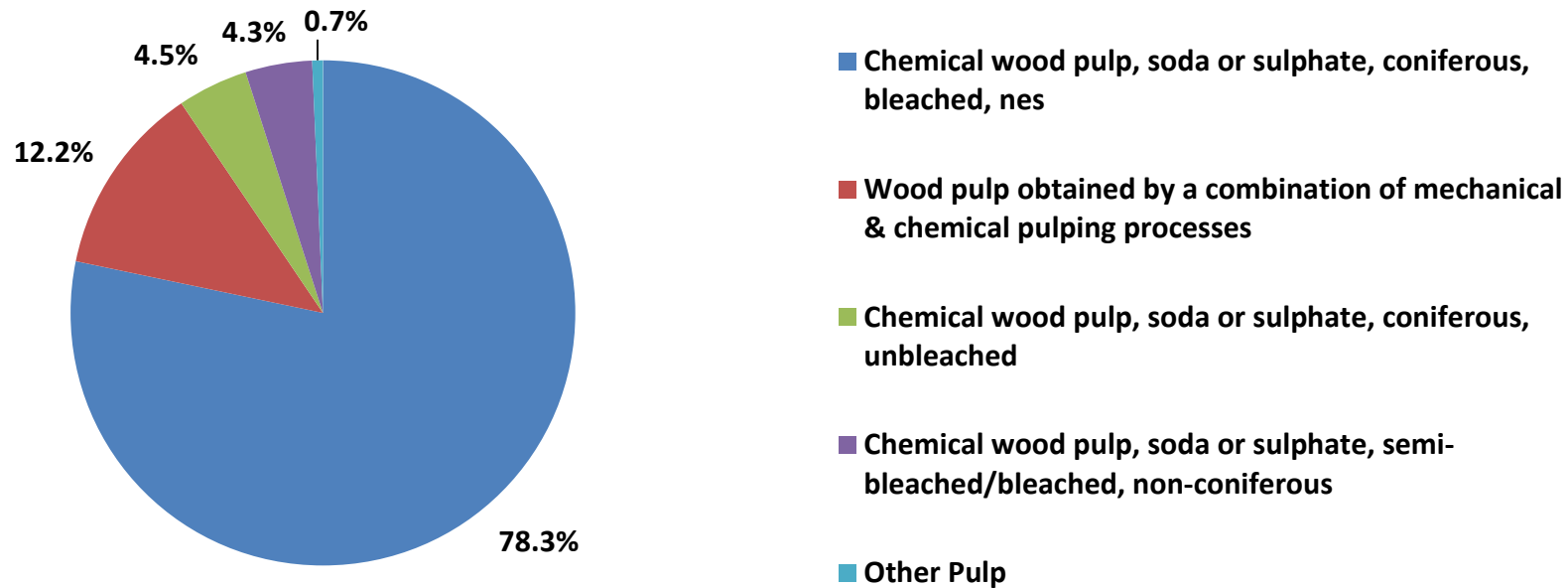
B.C. Paper Manufacturing Sales



Data source: Statistics Canada; [CANSIM 304-0015](#). Converted paper includes products created from purchased paper and paperboard.

Products – Pulp and Paper – Total Paper Manufacturing sales (includes pulp) were CA\$4.8 billion in 2017, increasing by 11%. Pulp Mill sales increased 17% from 2016 to 2017, and accounted for 60% of total sales. Paper and Paperboard sales were up 1.4%, and Converted Paper was up 13%.

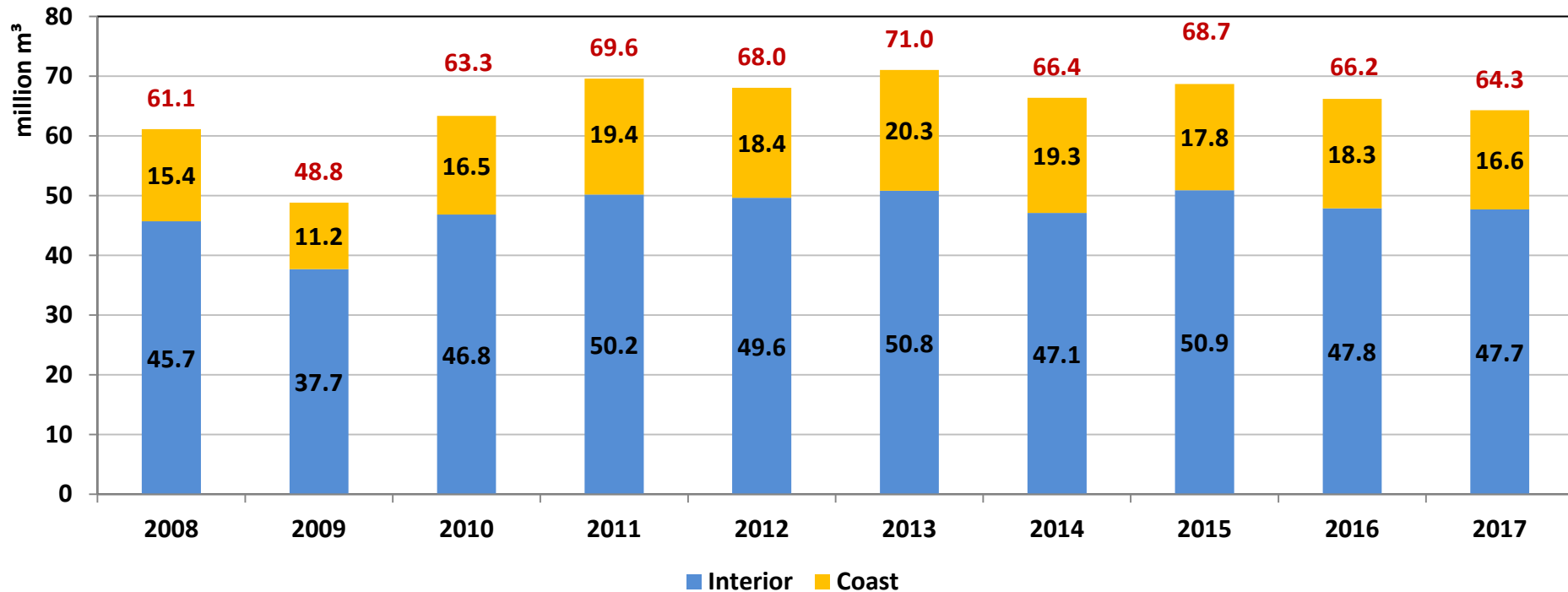
2017 B.C. Pulp Export Share by Product (4.3 million tonnes)



Data source: Statistics Canada via BC Stats; CIMTD. Based on air dry tonnes. NES stands for "not elsewhere specified". Note historic data is subject to revisions.

Products – Pulp – Bleached sulphate (kraft) pulp dominates B.C.'s pulp exports.

B.C. Timber Harvest Volume

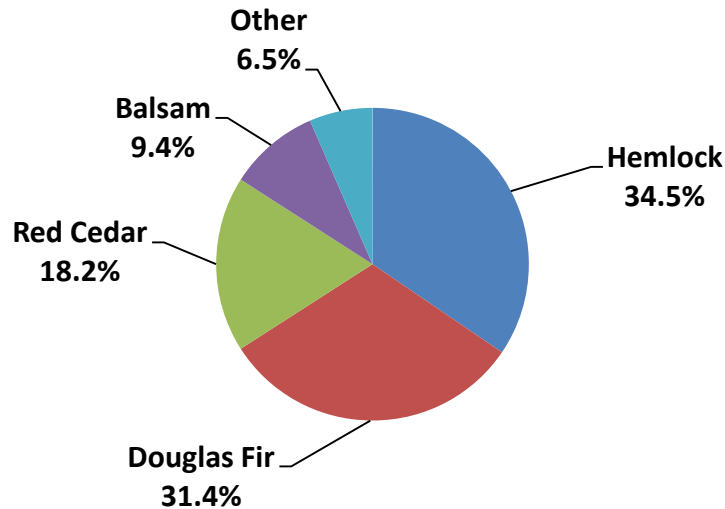


Data source: B.C. Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNR) [Harvest Billing System](#). All logs, special forest products, species and grades billed excluding waste, reject and Christmas trees, data run on June 1, 2018. Includes both Crown and private lands.

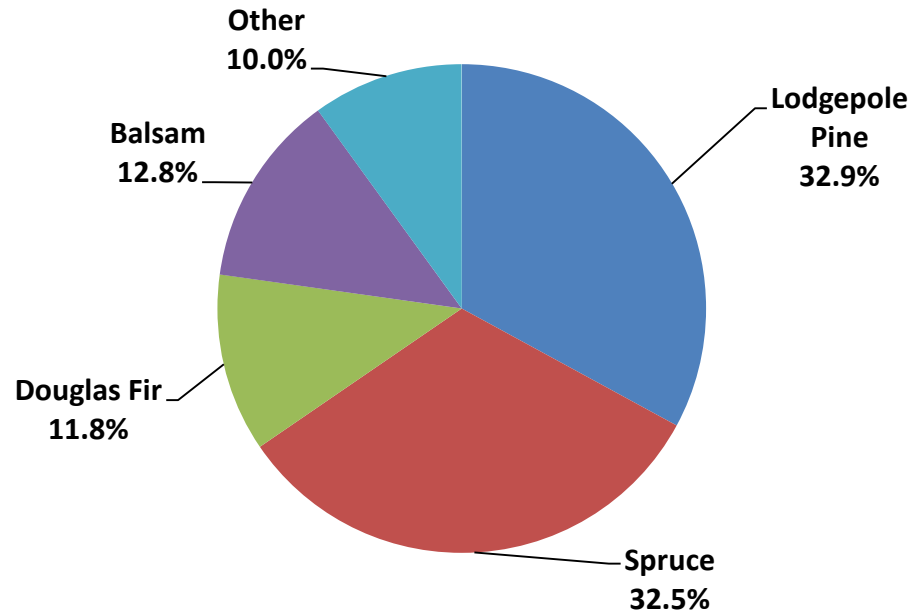
Products – Logs – Total harvest volume (64.3 million m³) was down 2.9% from 2016, and up 32% from 2009. The Interior accounted for 74% of the harvest, and the Coast for 26%. The last few years of interior harvest are close to pre-beetle harvest uplift, pre-housing boom levels.



Species Mix for 2017 B.C. Coast Harvest (16.6 mil. m³)



Species Mix for 2017 B.C. Interior Harvest (47.7 mil. m³)



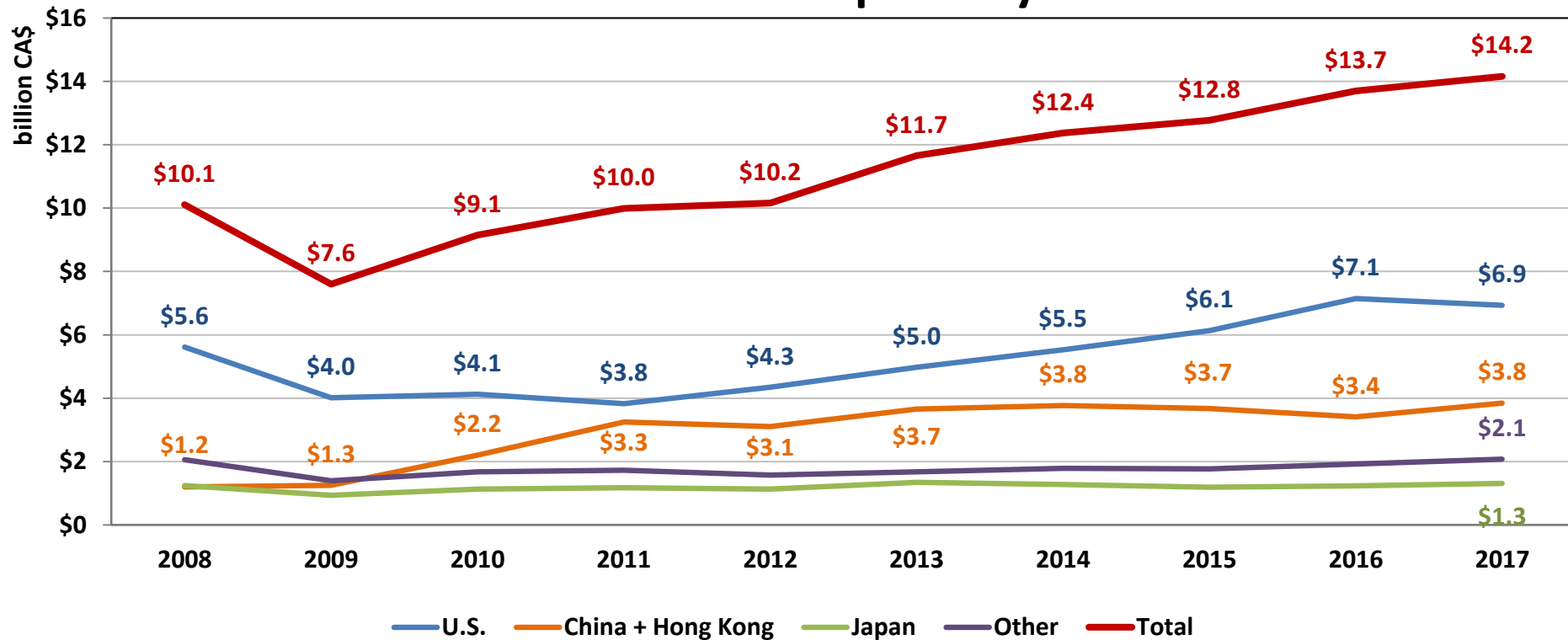
Data source: B.C. Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNR) [Harvest Billing System](#). All logs, special forest products, species and grades billed excluding waste, reject and Christmas trees, data run on June 1, 2018. Includes both Crown and Private lands.

Products – Logs – Hemlock and Douglas fir make up roughly 2/3 of the harvest on the Coast. In the Interior the main species is lodgepole pine, followed closely by spruce in 2017. Lodgepole pine as a share of Interior harvest fell roughly 10 percentage points compared to 2016, with spruce filling most of the gap. During the height of salvage response to the mountain pine beetle epidemic, lodgepole’s share was in the 60’s.

Markets Overview

- ❖ **The U.S., China, and Japan** are the top three export markets for the B.C. forest sector.
- ❖ **The U.S. is the largest market** and has improved substantially since 2009. It still has significantly less share of B.C. forest exports compared to pre-2009. Value of exports to the U.S. declined in 2017 (-\$212 million) due primarily to lower lumber export volume.
- ❖ **China has increased** substantially over the last decade and is now in a strong second place. China's share increased to around 27% of B.C. forest product exports in 2017 compared to 25% in 2016.
- ❖ **Japan has decreased** compared to the late 1990s, but value has been steady lately. In terms of share, Japan remains in third place since 2009. Value was up \$77 million in 2017.
- ❖ **Other export markets** made up 15% of total forest sector exports in 2017, with notable destinations being South Korea (2.8%), the U.K. (2.2%), Indonesia (1.9%), and Taiwan (1.2%).
- ❖ **The domestic market** is also important to the forest sector. The potential size of the market is suggested by the difference between manufacturing sales and exports on slide 6.

B.C. Forest Product Exports by Market

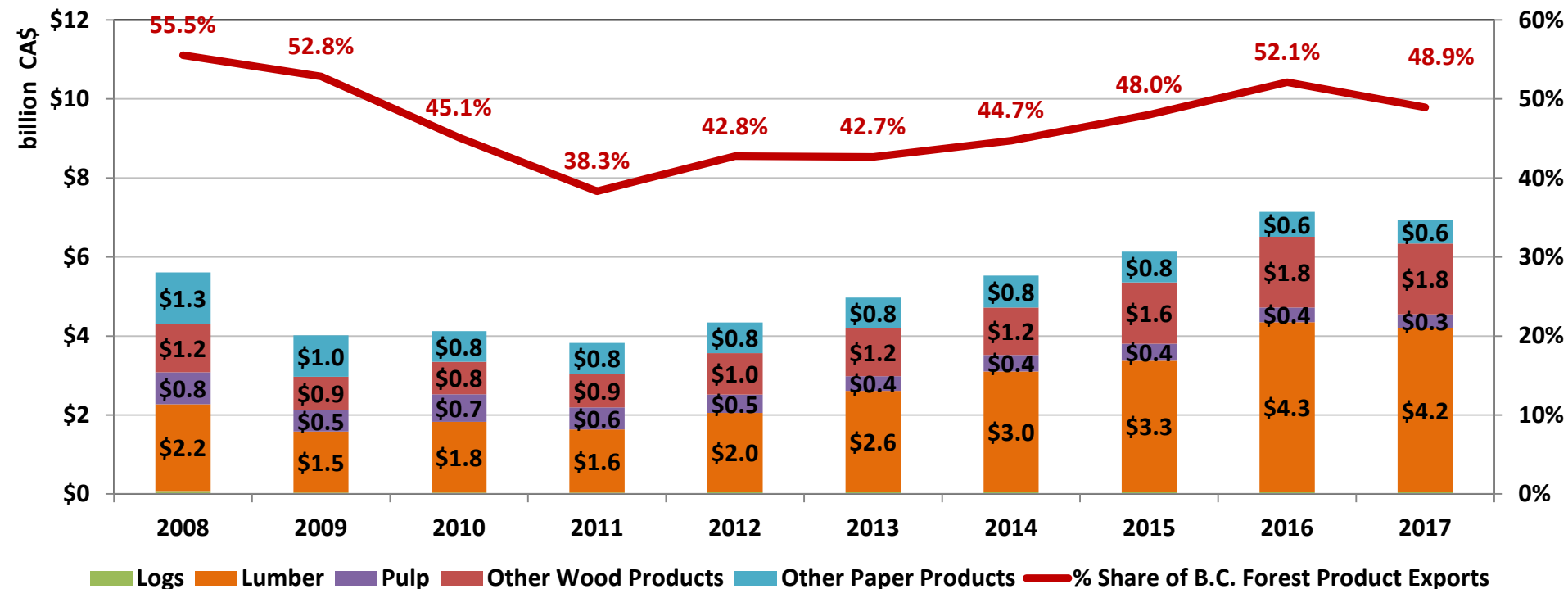


Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions

Markets – The U.S. was the #1 export market by value, and was increasing steadily until 2017. China became the #2 market in 2009 and has been a key driver of the forest sector’s recovery since then. Japan was #2 for many years, until 2009, and is now #3.



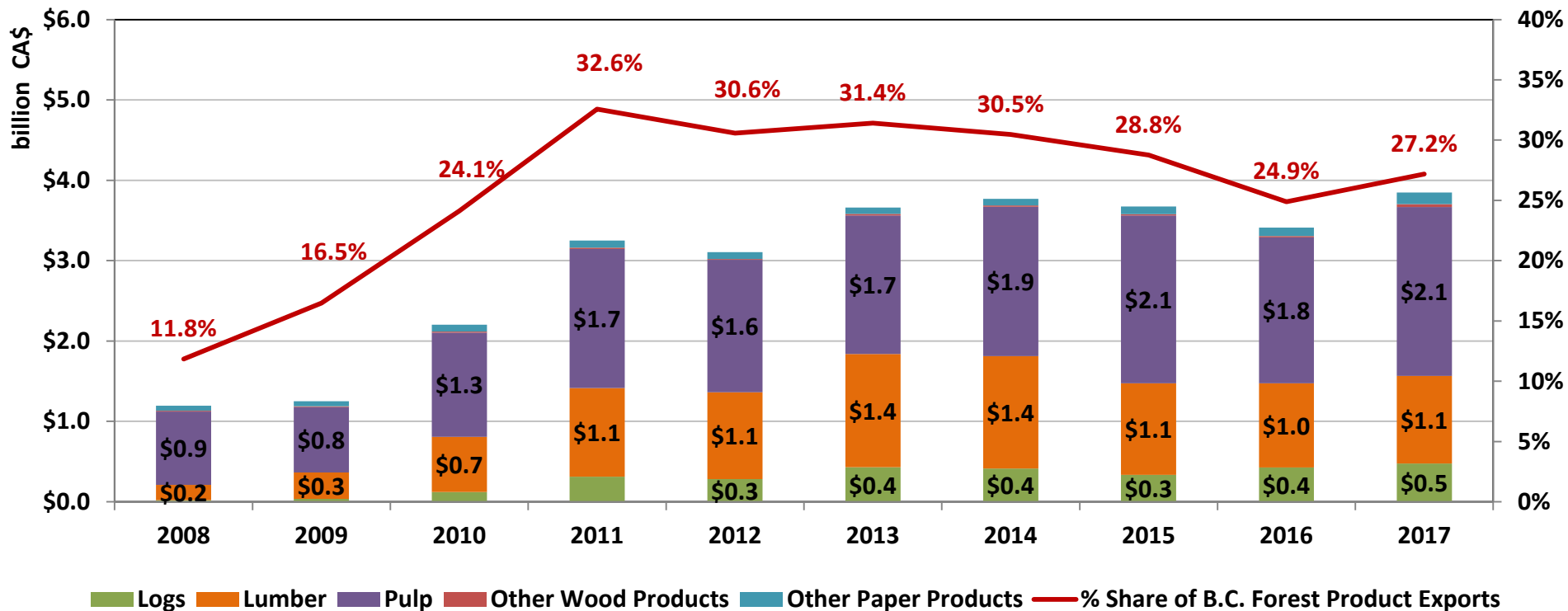
B.C. Forest Product Exports to the United States



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – U.S. – The U.S. was B.C.’s largest market in 2017 at CA\$6.9 billion, a decrease of 3% over 2016. The U.S.’s share of B.C.’s forest product exports decreased to 48.9%. The top 5 Other Wood Products were OSB, Veneer and Plywood (Douglas fir), Shakes, Shingles, and Siding.

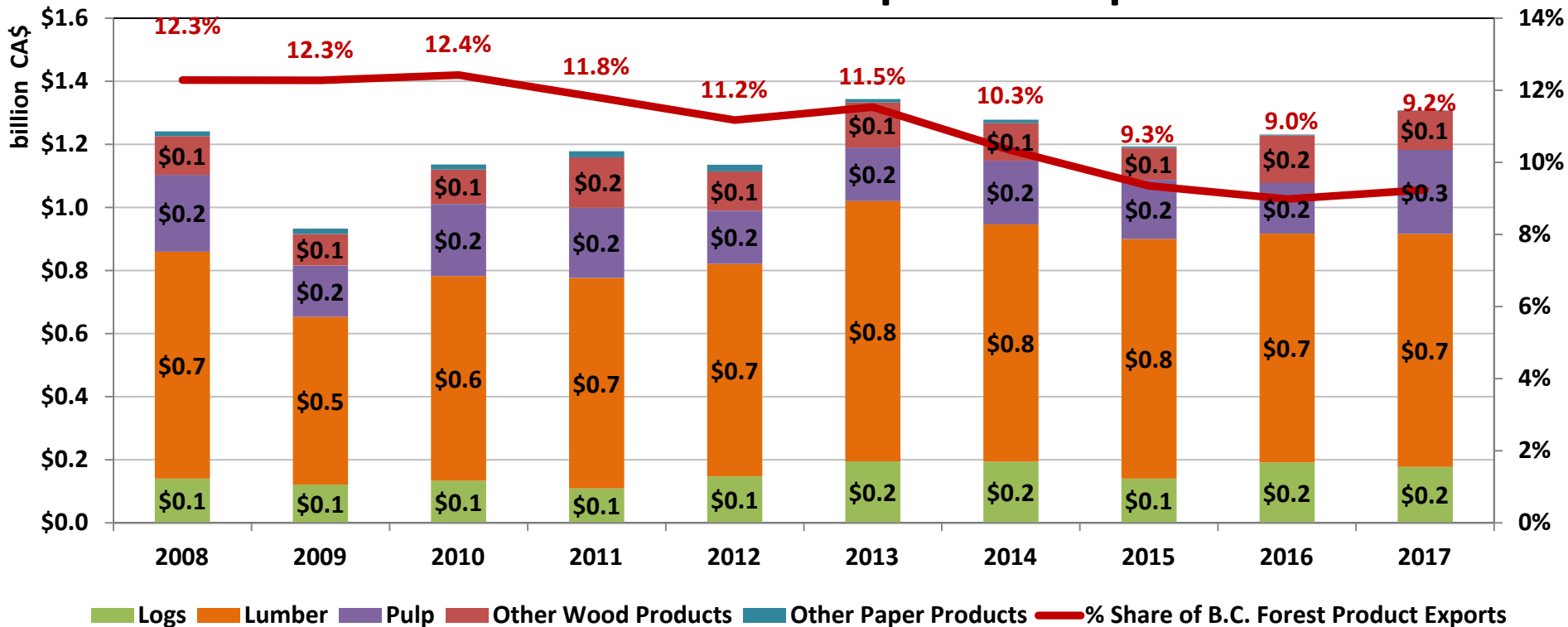
B.C. Forest Product Exports to China



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – China – B.C. forest product exports to China as a share of total B.C. forest exports increased to 27% of B.C.’s forest exports. The value in 2017 was CA\$3.8 billion, an increase of 13% from 2016. Pulp is the dominant export product (55%).

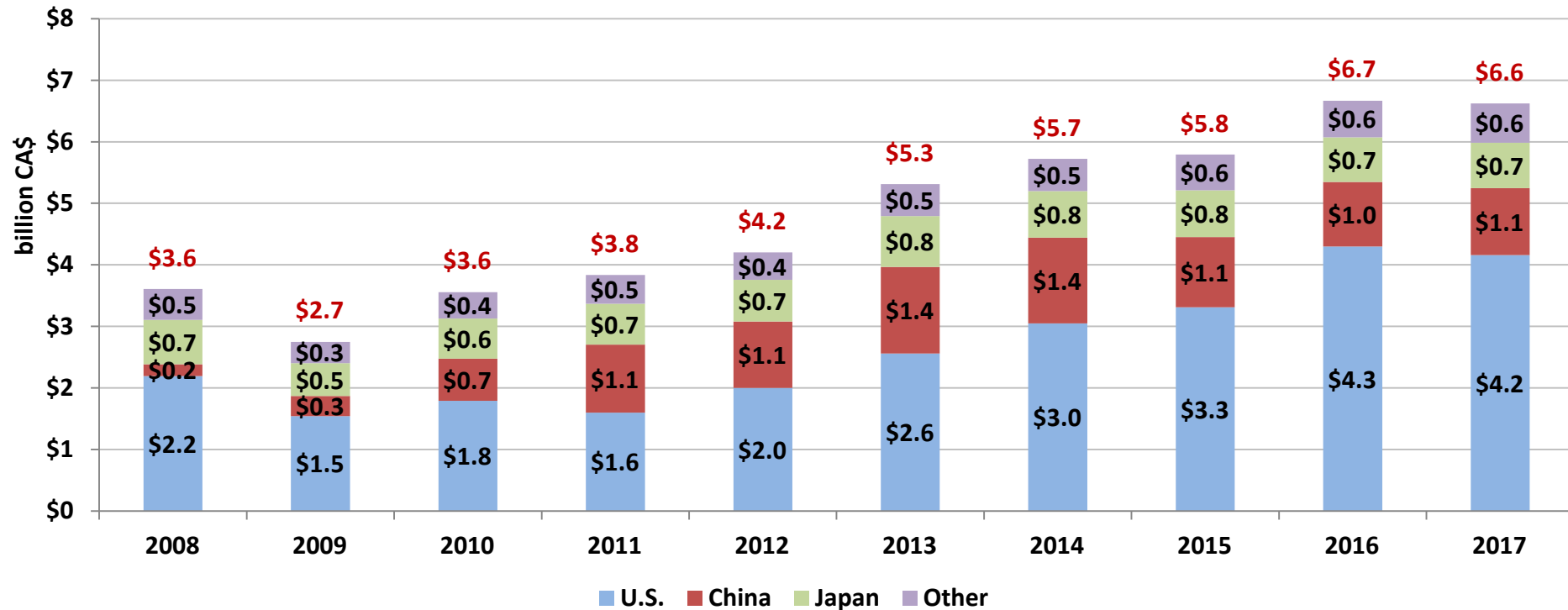
B.C. Forest Product Exports to Japan



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – Japan – B.C.’s exports to Japan have decreased about 75% from peak years in the mid-1990s, but exports have been relatively steady in recent years. Exports were valued at CA\$1.3 billion in 2017, an increase of 6.3% from 2016. Lumber had the highest share of value with 56% in 2017.

B.C. Softwood Lumber Exports by Market

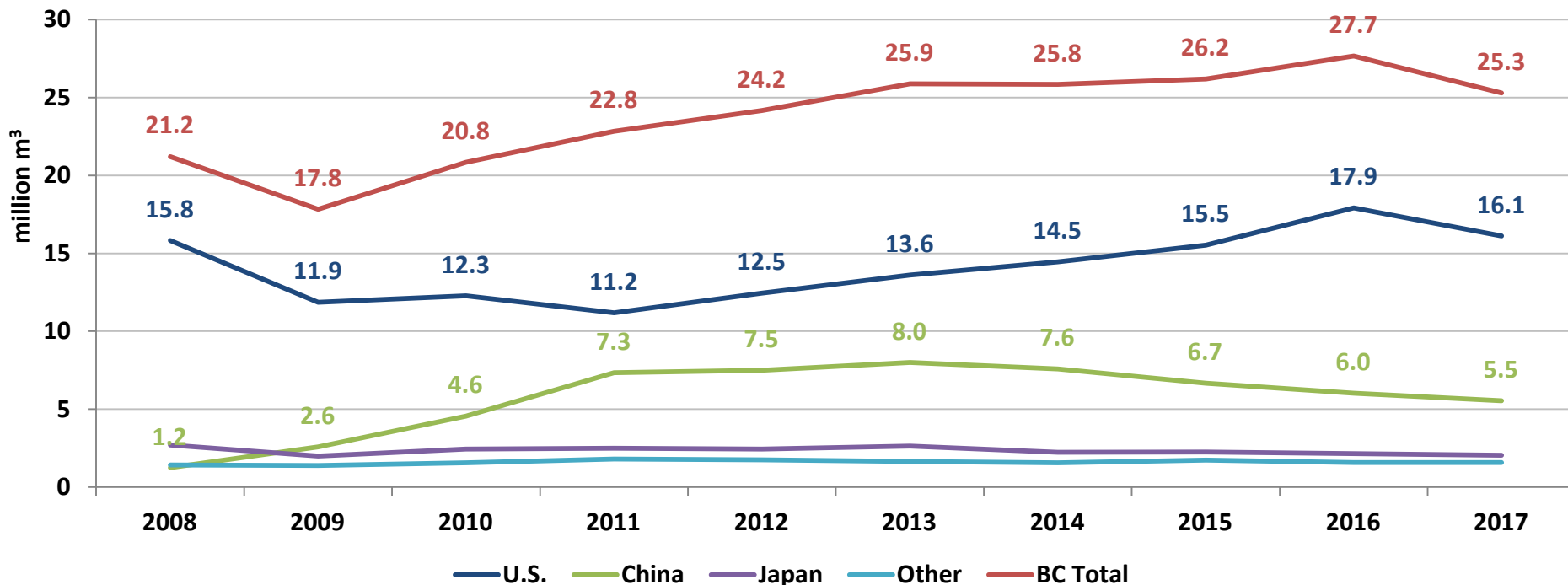


Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – Softwood Lumber – Prior to the U.S. housing crash B.C.’s lumber export market was heavily reliant on the U.S. Now other destinations, primarily China, have reduced the share of the U.S., though the U.S. still makes up the majority of B.C.’s lumber export value.



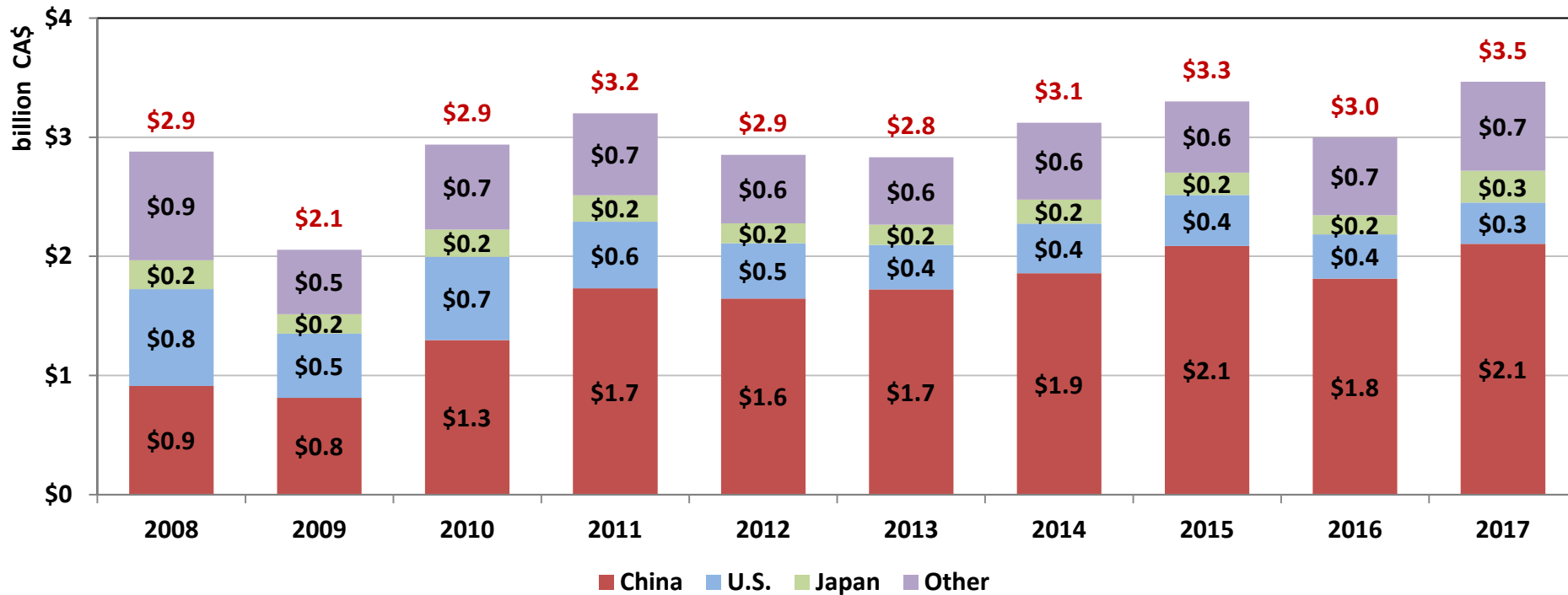
B.C. Softwood Lumber Export Volume by Market



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – Softwood Lumber – Prior to the U.S. housing crash B.C.’s lumber export market was heavily reliant on the U.S. Now other destinations, primarily China, have reduced the share of the U.S., though the volumes to China have been declining after 2013. The lower volumes in 2017 were offset by higher prices as demonstrated on the previous slide where total value is relatively unchanged.

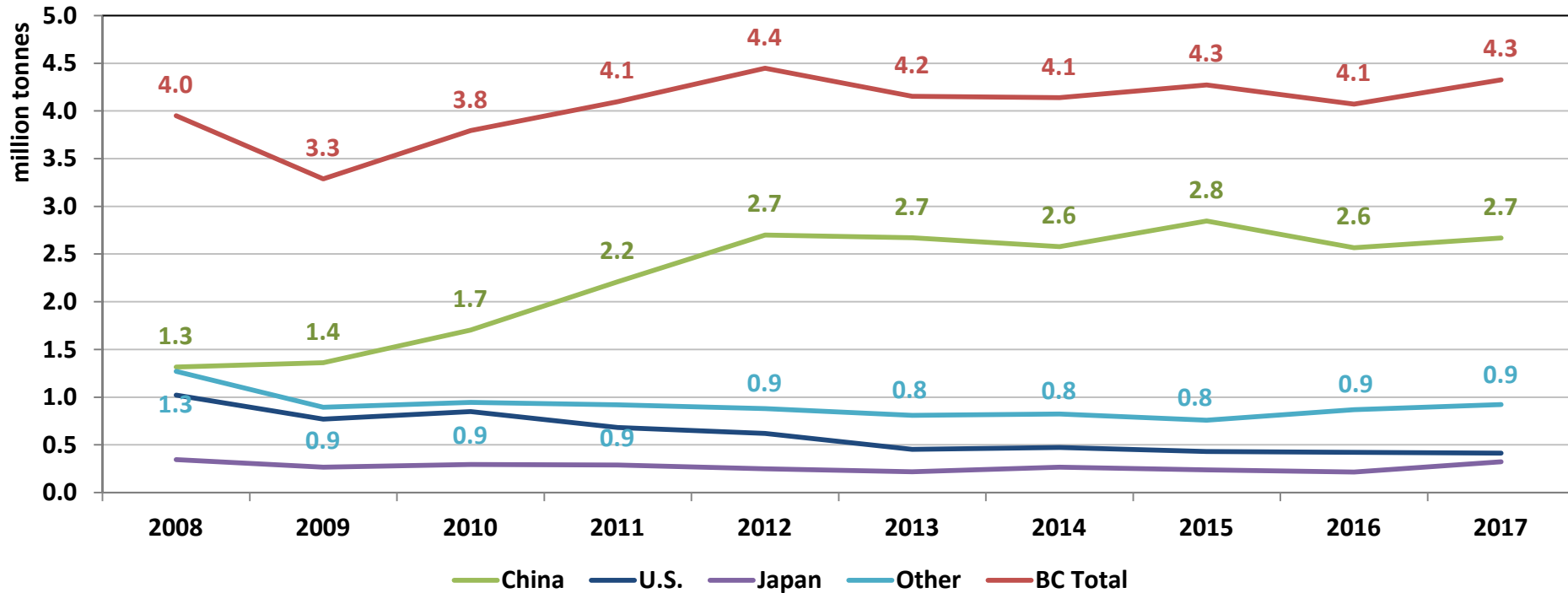
B.C. Pulp Export Value by Market



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – Pulp – China had a dominant 61% share of B.C. pulp exports in 2017, followed by the U.S. (10%), Japan (8%), and other destinations (22%).

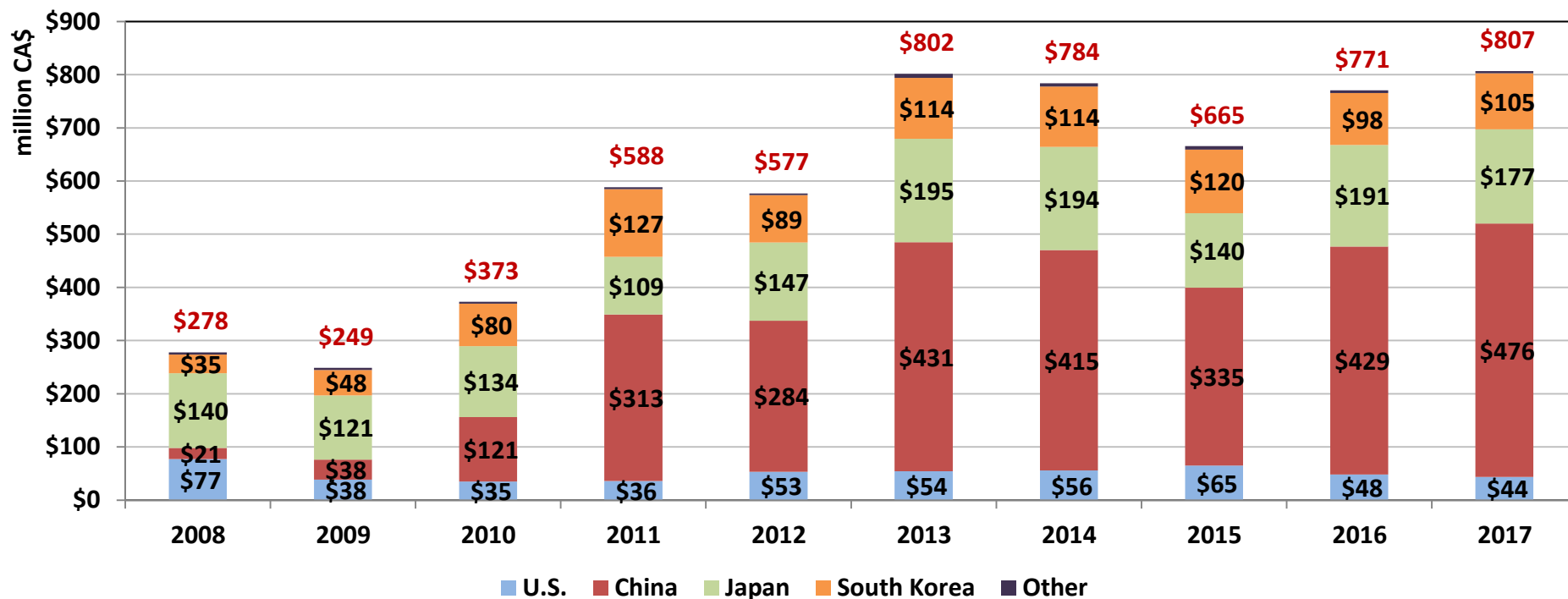
B.C. Pulp Export Tonnage by Market



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – Pulp – China had a dominant share of B.C. pulp exports in 2017. Over the past decade exports to China have more than doubled.

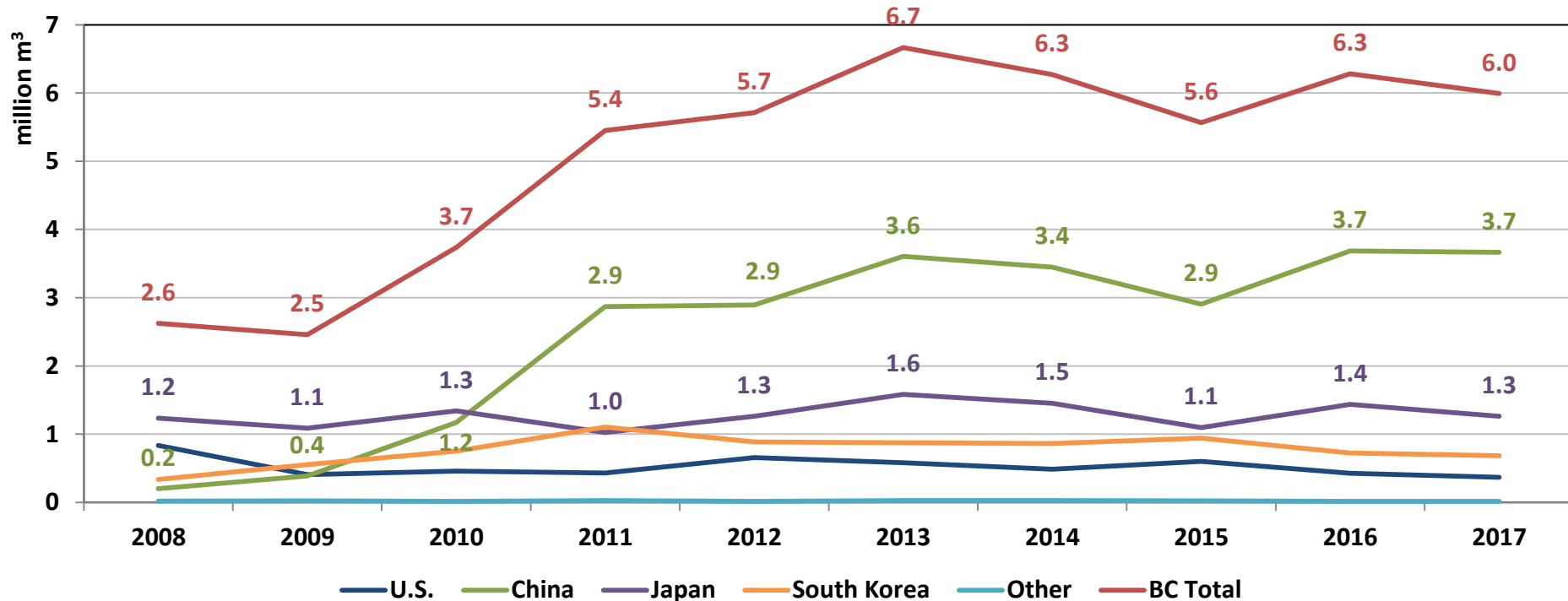
B.C. Log Exports by Market



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – Logs – The value of log exports increased by 4.7% in 2017. China (59%) remained the largest destination. Japan (25% share) and the U.S. (5%) decreased. South Korea (13% share) increased in 2017 over 2016. Over the past decade China replaced Japan as the main log export market.

B.C. Log Export Volume by Market



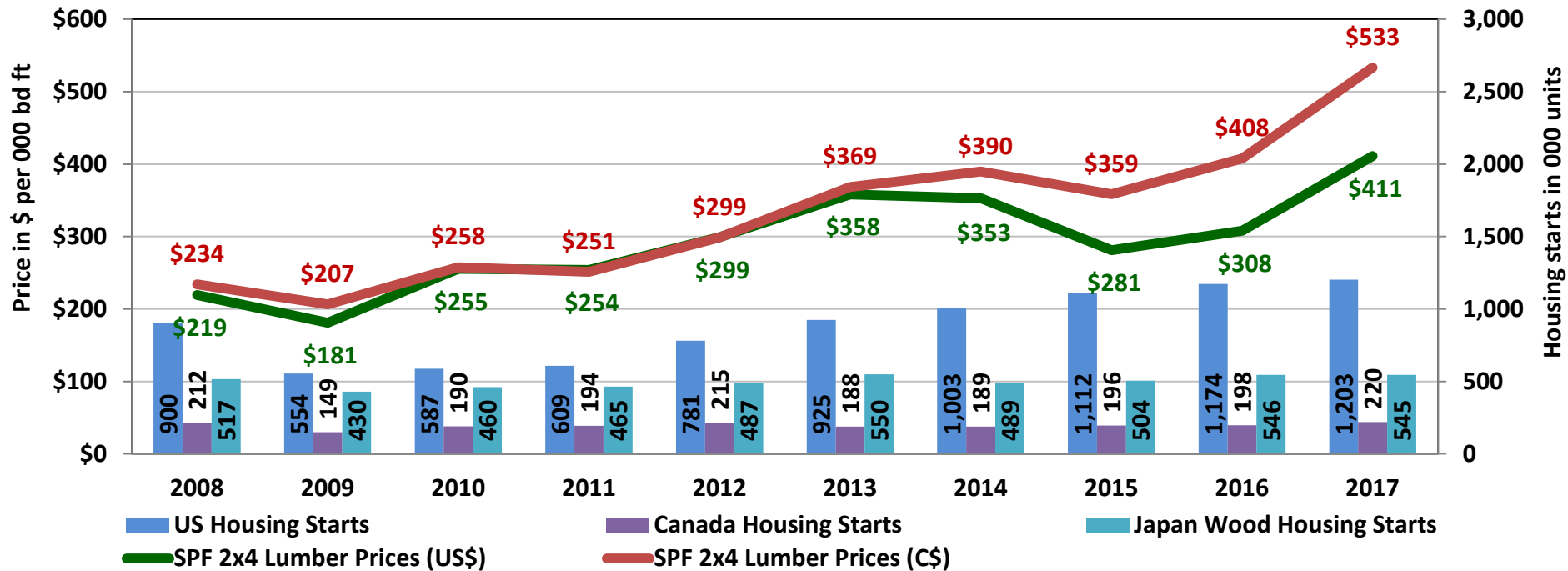
Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – Logs – The volume of log exports decreased in 2017. Volume to China (59% share) declined slightly. South Korea (11% share), the U.S. (6%), Japan (21%) decreased in 2017 over 2016. Over the past decade China replaced Japan as the main log export market.

Overview of Sector Indicators

- ❖ **Prices and Costs:** 2017 was a good year for a vast array of wood products. Lumber, wood panels, pulp, and paper all had price increases. B.C. Interior sawmilling costs increased slightly in 2016, but this was more than offset by higher lumber prices.
- ❖ **U.S. Housing Market:** U.S. housing starts were 1.2 million in 2017, the seventh year of gains since the 0.55 million start low in 2009. The share of multi-family starts is high (29%, down from 2015's recent high of 36%), which reduces wood consumption compared to similar levels of starts in the past.
- ❖ **B.C.'s Share of Canadian Forest Export Value:** B.C.'s share increased slightly from 2016 to 2017, now accounting for 38% of Canadian forest product export value.
- ❖ **Government Revenues:** Direct forestry revenues to government increased 5.7% in fiscal year 2016/17 (\$913 million) compared to 2015/16 (\$865 million) according to the 2018 B.C. budget and fiscal plan. Ministry accounts indicate revenue of \$1,065 million in 2017/18.

SPF 2x4 Lumber Prices and Housing Starts

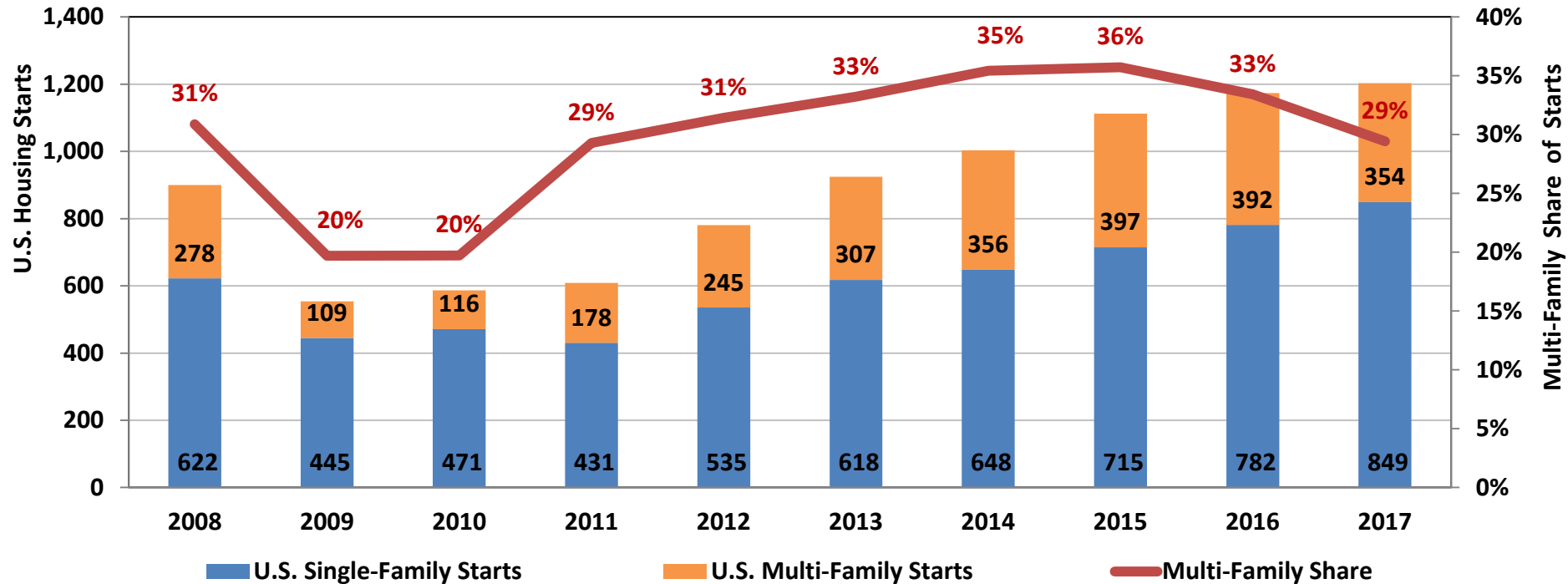


Data sources: [Madison's Lumber Reporter](#) (SPF), [U.S. Census Bureau](#), [JAWIC](#) and [Statistics Canada](#).

Prices and Costs – North American housing markets improved in 2017, but housing starts were still low compared to the early/mid 2000's. Average SPF 2x4 lumber prices rose significantly in 2017.



U.S. Housing Starts: Single vs. Multi-Family Units

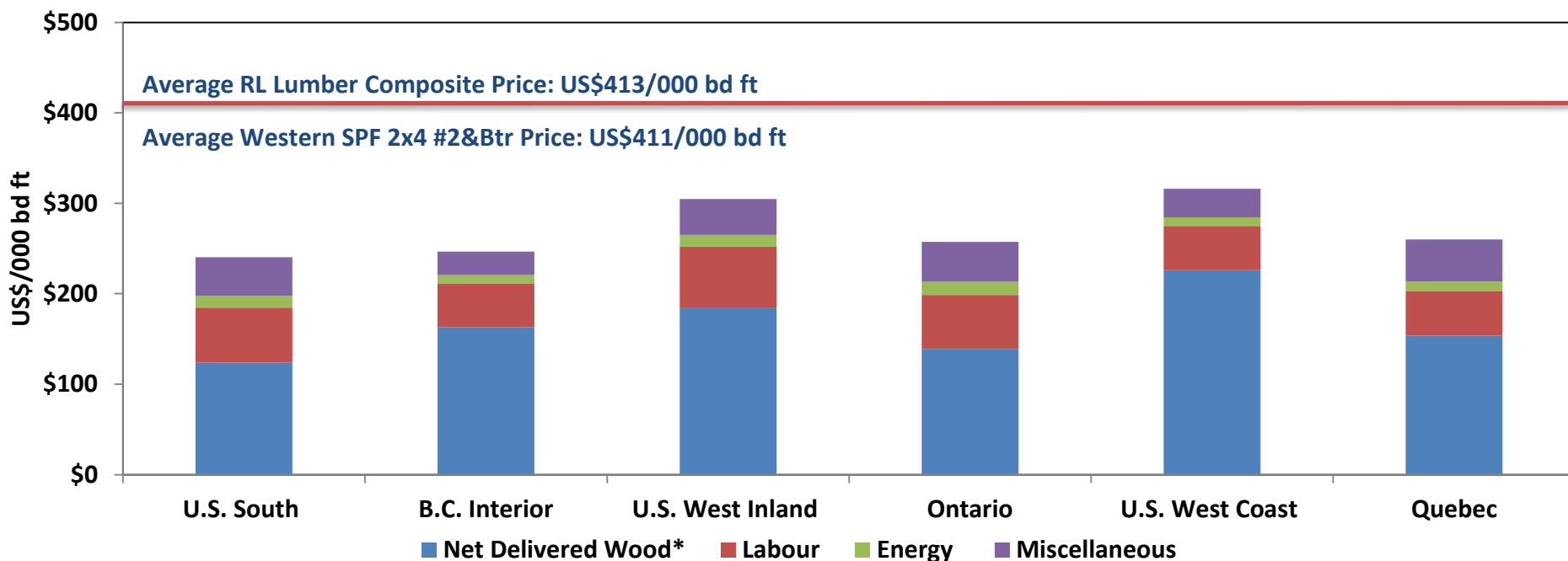


Data sources: [U.S. Census Bureau](http://www.census.gov).

Prices and Costs – The share of multi-family starts has declined for two years in a row now. Multi-family units use roughly 66-75% of the wood that a single family unit does.



Softwood Lumber Mills' Variable Costs (2017)



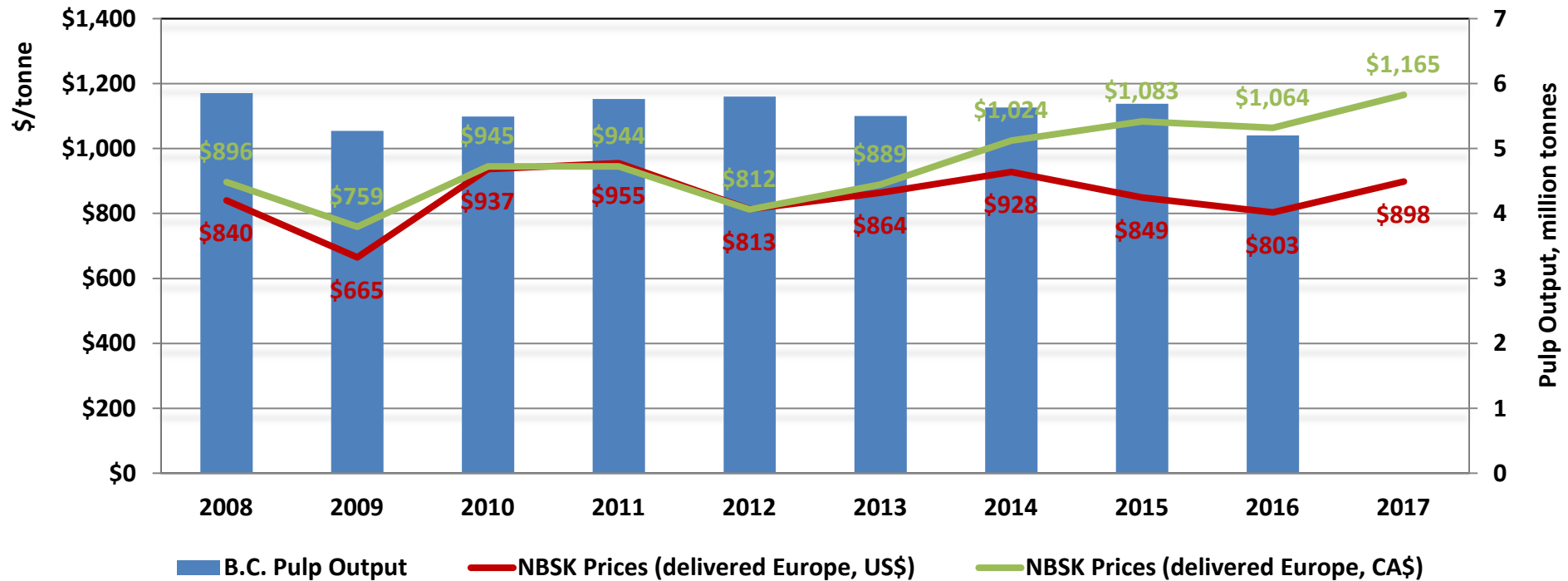
* = Delivered Wood - Residual Income

Data source: Costs are from [Forest Economic Advisors \(FEA\)](#), composite from [Random Lengths](#), and SPF 2x4 from [Madison's Lumber Reporter](#).

Prices and Costs – In 2017, B.C. Interior softwood lumber mills had variable costs slightly above the U.S. South. The U.S. South was the lowest cost producer.



Market Pulp Prices and Pulp Output



Data source: Prices from [Equity Research Associates \(ERA\)](#). Pulp output from [Major Primary Timber Processing Facilities](#) report.

Prices and Costs – Pulp prices increased in 2017. Pulp output declined in 2016 (-8.6%). The latest production data available from the B.C. Mill survey is for 2016.



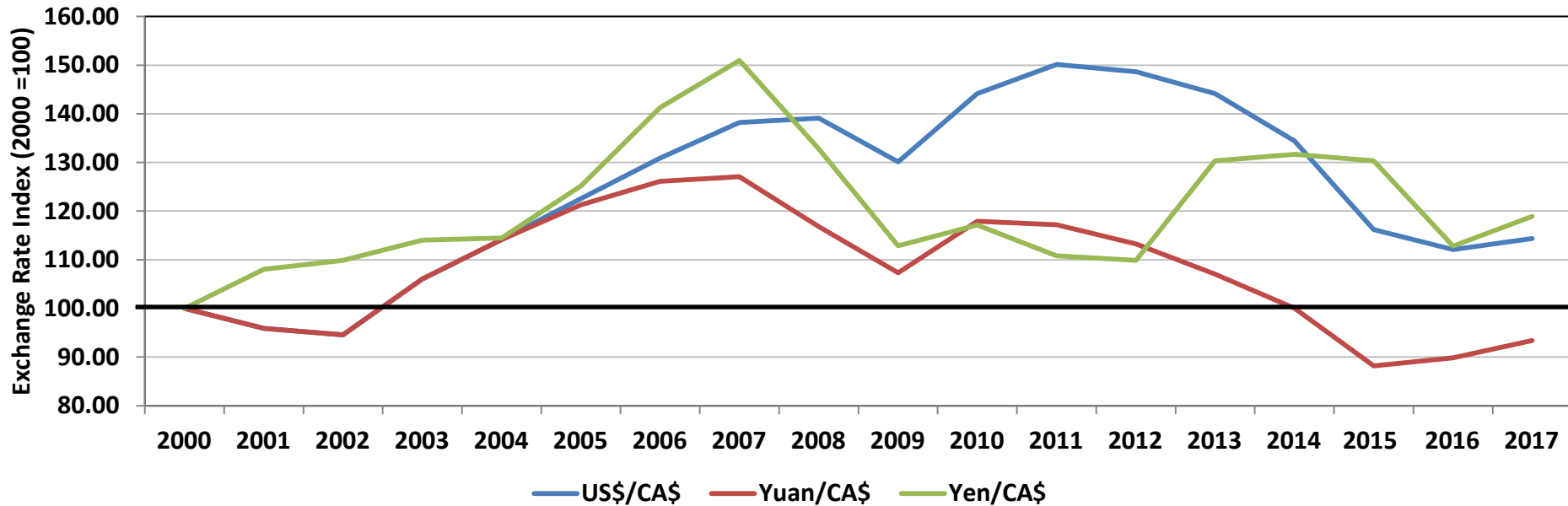
2000 Exchange Rates

0.67 US\$/CA\$
5.58 Yuan/CA\$
72.62 Yen/CA\$

2017 Exchange Rates

0.77 US\$/CA\$
5.21 Yuan/CA\$
86.36 Yen/CA\$

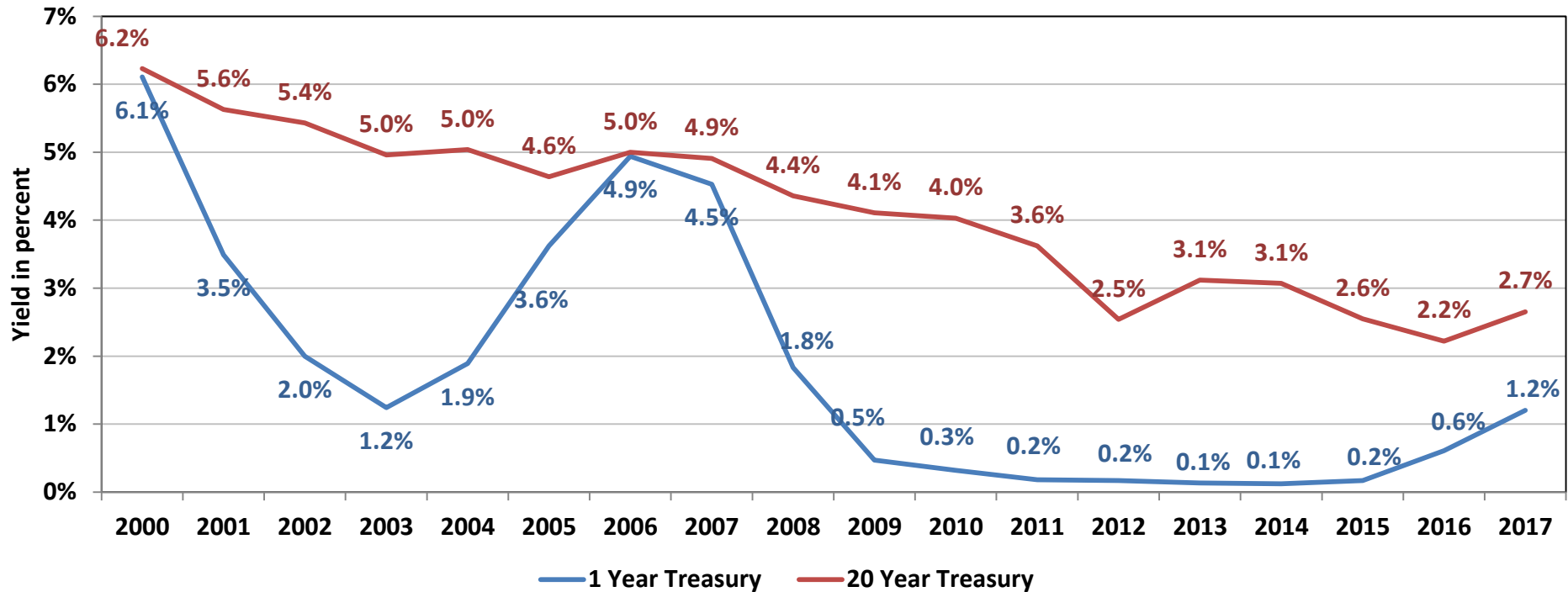
Indexed Foreign Exchange Rates Relative to CA\$



Data source: 2000-2006, [OANDA](#). 2007-2016, [Bank of Canada](#).

Prices and Costs – This shows the percent change in CA\$ exchange rates compared to 2000. Increases indicate appreciation of the CA\$ and make Canadian exports less competitive. By the end of 2017 the CA\$ appreciated against the US\$ and Yen and Yuan.

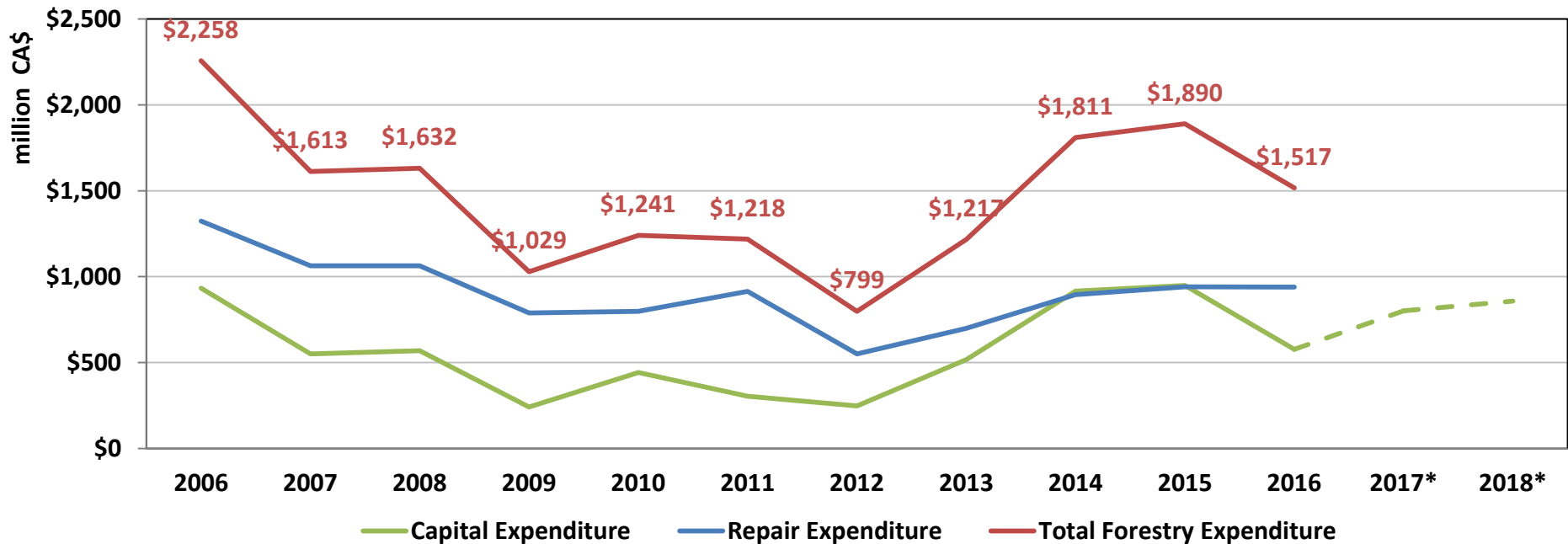
U.S. Treasury Bill Yields



Data source: [U.S. Department of the Treasury](http://www.treasury.gov).

Prices and Costs – The cost of short-term and long-term borrowing increased in 2017. This is the first time they've both increased since 2006.

B.C. Forest Sector Capital and Repair Expenditures



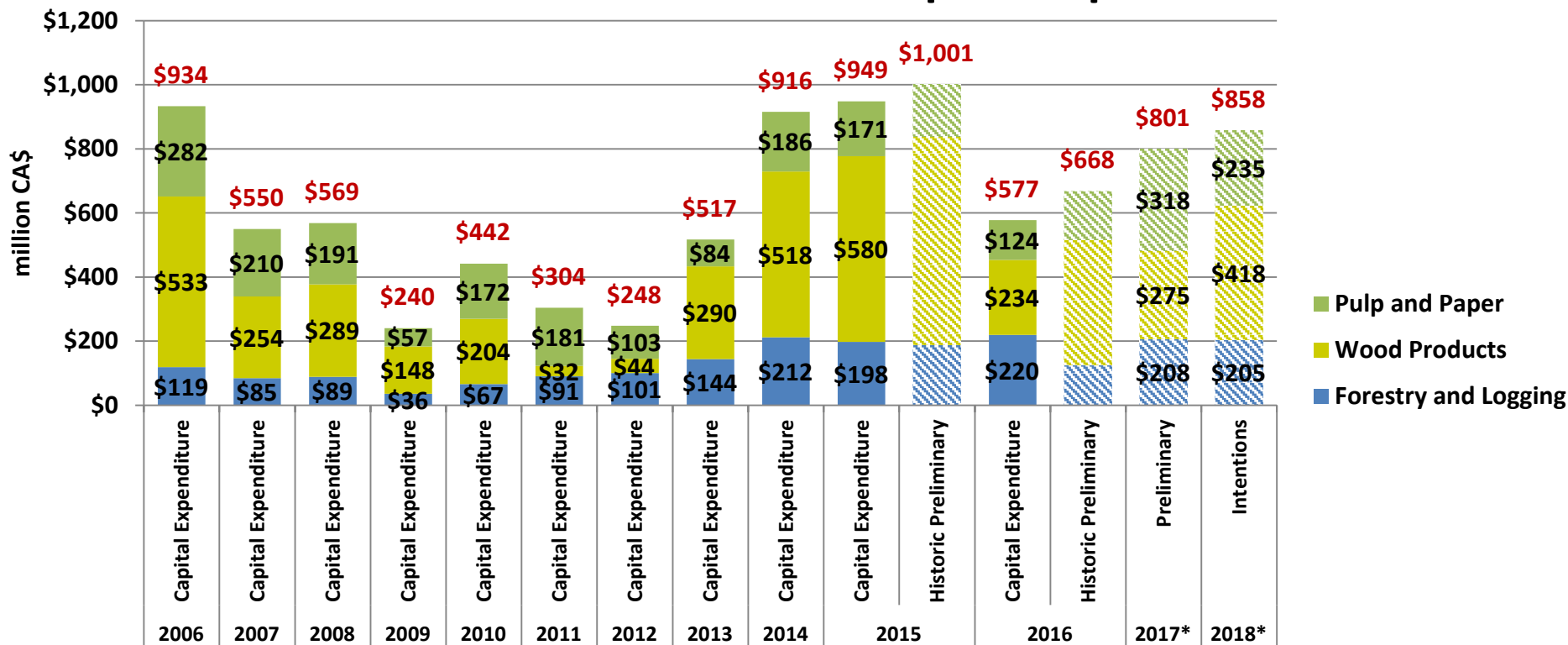
Data quality grade is often "Use with caution".

*Preliminary and intentions, subject to change.

Data source: Statistics Canada; [CANSIM 029-0045](https://www150.statcan.gc.ca/n1/pub/029-0045).

Investment – B.C. forest sector investment (CA\$1,517 million) decreased 20% from 2015 to 2016. Expenditure includes investment in construction (e.g. buildings and land improvements) and in machinery and equipment. 2016 is the latest year for repair expenditure.

B.C. Forest Sector Capital Expenditure

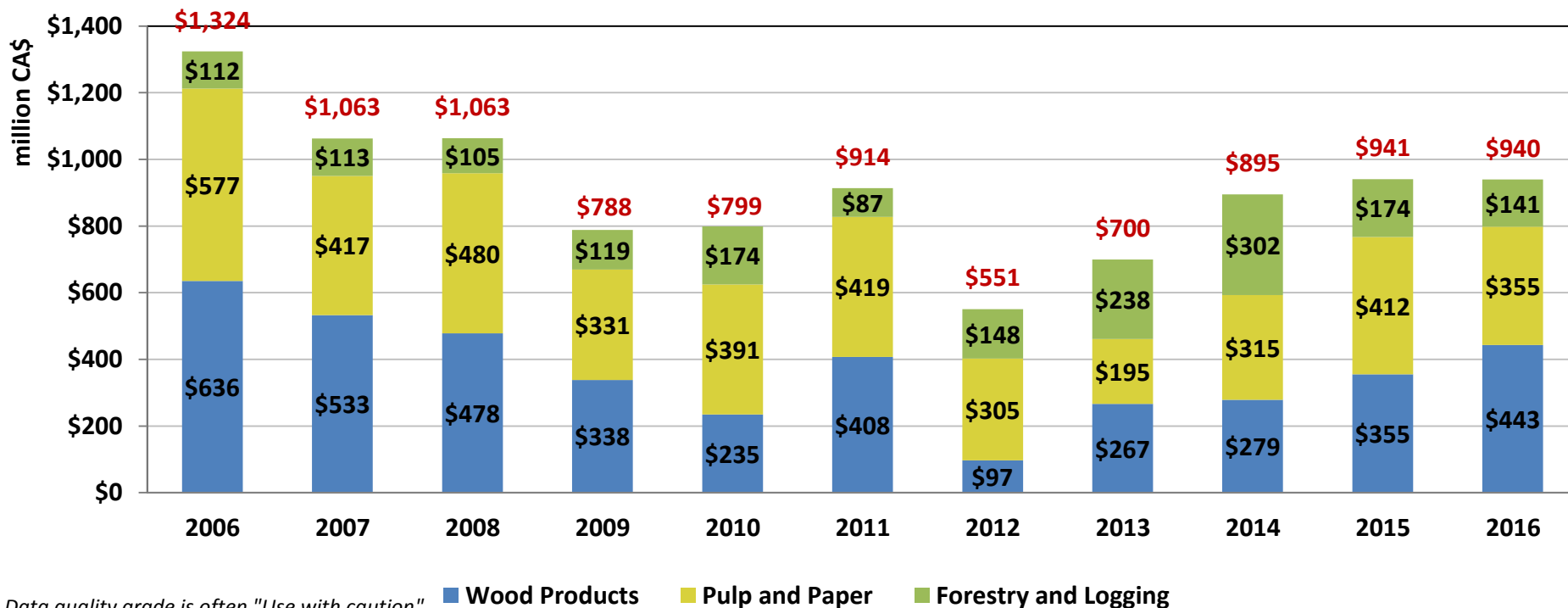


Data source: Statistics Canada; [CANSIM 029-0045](#). *Preliminary and intentions, subject to change. Data quality grade is often "Use with caution".

Investment – From 2015 to 2016 capital expenditure decreased 39%, 2017 preliminary results indicate a 39% increase from 2016 to 2017. Historic preliminary data has been included to demonstrate the difference that can occur when moving from preliminaries to actuals.

Capital expenditure includes investment in construction (e.g. buildings and land improvements) and in machinery and equipment.

B.C. Forest Sector Repair Expenditure

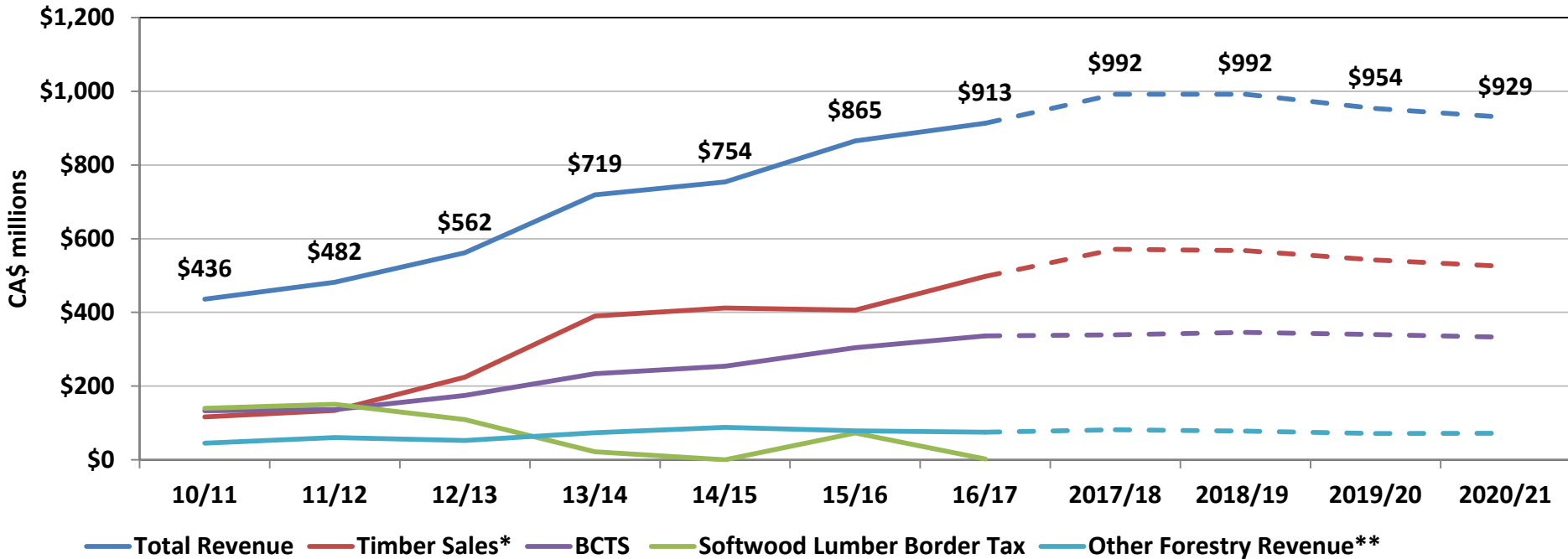


Data quality grade is often "Use with caution".

Data source: Statistics Canada; [CANSIM 029-0045](#).

Investment – 2016's results indicate B.C. forest sector repair expenditures were relatively unchanged from 2015. Repair expenditure includes investment in construction (e.g. buildings and land improvements) and in machinery and equipment. 2016 is the latest data for repair expenditure.

B.C. Government Forest Sector Revenue, by Fiscal Year



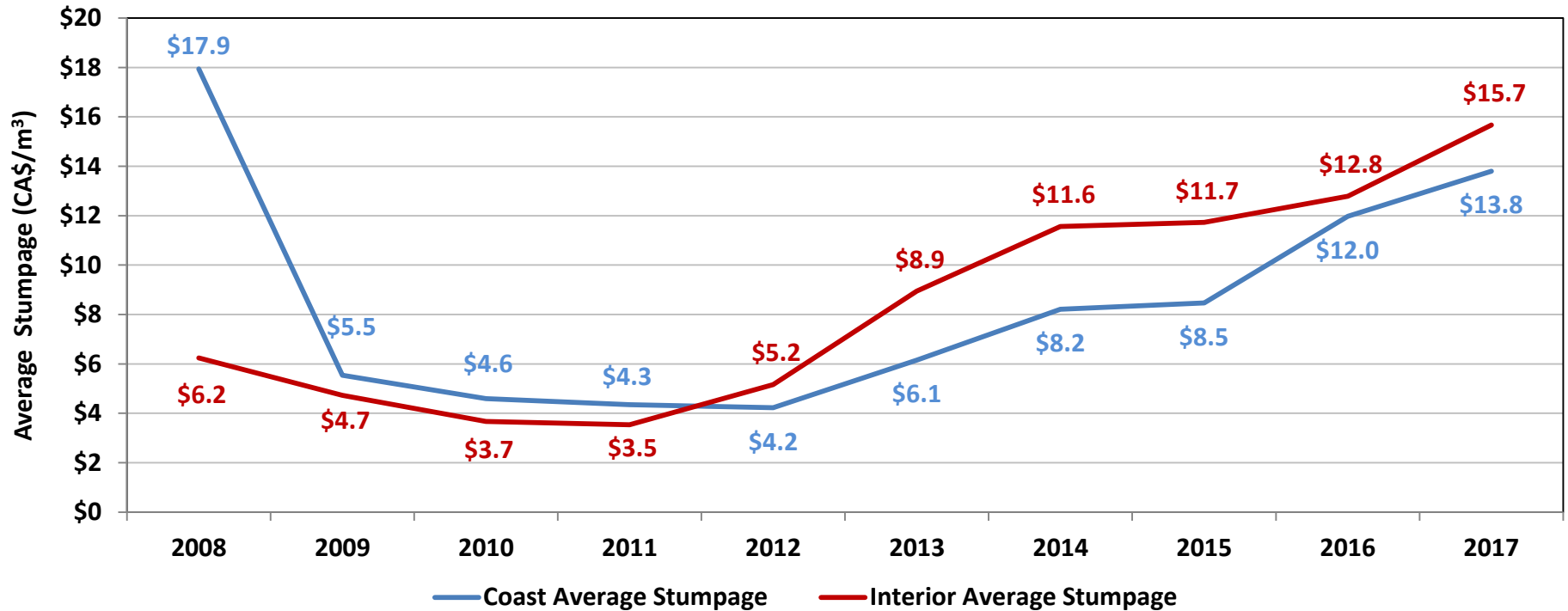
*Timber Sales excludes BCTS sales. **Includes Other CRF Revenue, Forest Recoveries, and Logging Tax. Dashed lines denote forecasts.

Data source: B.C. FLNR. Corporate and personal income taxes are not included in these figures. These numbers are consistent with the B.C. Ministry of Finance [Budget and Fiscal Plan](#), Table A5, page 133. Forecasts are from the 2018/19 to 2020/21 Budget and Fiscal Plan dated February 20, 2018.

Government Revenues – The current version of the Budget and Fiscal plan shows forest revenue of CA\$912 million in 2016/17. Current 2017/18 actual revenue is \$1,065 million, which is higher than the updated forecast shown above (\$992 million).

Note this chart is different than in previous years; it now matches information found in the B.C. Budget and Fiscal Plan. The softwood lumber border tax ended in 2016/17.

Average Stumpage Rates (CA\$/m³)



Data source: [FLNR HBS](#). Data run on June 1, 2018. Includes BCTS. Excludes waste and reject.

Government Revenues – In 2017, Interior average stumpage increased CA\$2.9/m³ (23%) and Coast average stumpage increased CA\$1.8/m³ (16%).

Conclusions

- ❖ Despite some quantity indicators suggesting a slowdown in B.C.'s forest sector (lumber production -1.4 million m³, harvest -2 million m³), and an unprecedented fire season, value indicators demonstrate strong growth (manufacturing sales +\$1.9 billion, exports +\$1.1 billion). The \$800,000 increase of manufacturing over exports suggests a large bump in the Canadian domestic market (which may also indicate additional value added).
- ❖ Chinese demand for logs, lumber, and especially pulp continued to be a key market for the B.C. forest sector. China's total lumber imports rose substantially yet again (+6 million m³), mostly from Russia and non-U.S./Canadian. Canada's lumber export volume to China declined (-0.2 million m³), but this was offset by strong pulp sales.
- ❖ Compared to pre-recession, B.C.'s forest sector has better diversity in export destinations. China has a major share, and the U.S. and Japan continue as major markets. The B.C. forest sector is trying to further this diversification by promoting sales to India, and expanding into new products such as engineered lumber and wood pellets.

Outlook

- ❖ Stronger demand (mainly from a recovering U.S. market) and smaller B.C. timber supply are expected to continue to have a positive influence on prices. So far in 2018 lumber prices have been exceptional, hitting record levels. It's difficult to tell how much has been driven by the U.S. tariffs on lumber (CVD 14.19%, AD 6.04%*) vs. changing consumer demand and supply constraints. Transportation problems have also been contributing to higher prices.
- ❖ China continued as the world's largest importer of logs and lumber in 2017, with large increases in log and lumber imports. This demonstrates China is continuing as a strong market, but Russia's continued increase in supply to China may harm B.C. exporters.
- ❖ Pulp and paper prices have been high recently as well. If this continues it will be good news for the B.C. Industry. However, paper has been a target for U.S. tariffs as well.

*These are the rates for "All others", which excludes Canfor, Irving, Resolute, Tolko, and West Fraser. Those five companies have their own rates.

Outlook - Continued

- ❖ Foreign demand for wood pellets has been strong. B.C. export tonnage increased roughly 56% making it an extraordinary year to follow; 2017 tonnage decreased roughly 8%. The U.K. is the number one destination. Japan and Belgium also took large volumes in 2017.
- ❖ Innovations and investments in markets, products and technologies will make the sector more competitive. BC is known for manufacturing high-quality engineered wood products and advancing innovative mass timber building systems, such as [UBC's 18 storey residence](#), and UNBC's Wood Innovation Research Lab, representing opportunities that can grow the forest sector and maximize the value of BC's forest resource.
 - ❖ UBC's Brock residence used an estimated 2,233 m³ of Cross-Laminated-Timber or Glulam, which is equivalent to the amount of lumber used in 60 single-family houses in Canada*.
- ❖ There's also research and innovation occurring for non-traditional uses of wood. Products like wood-cellulose based plastic, 3-d printing, and insulation are just a few examples.

Appendix

❖ Overview (44-55)

- ❖ Manufacturing sales, exports, GDP, Employment

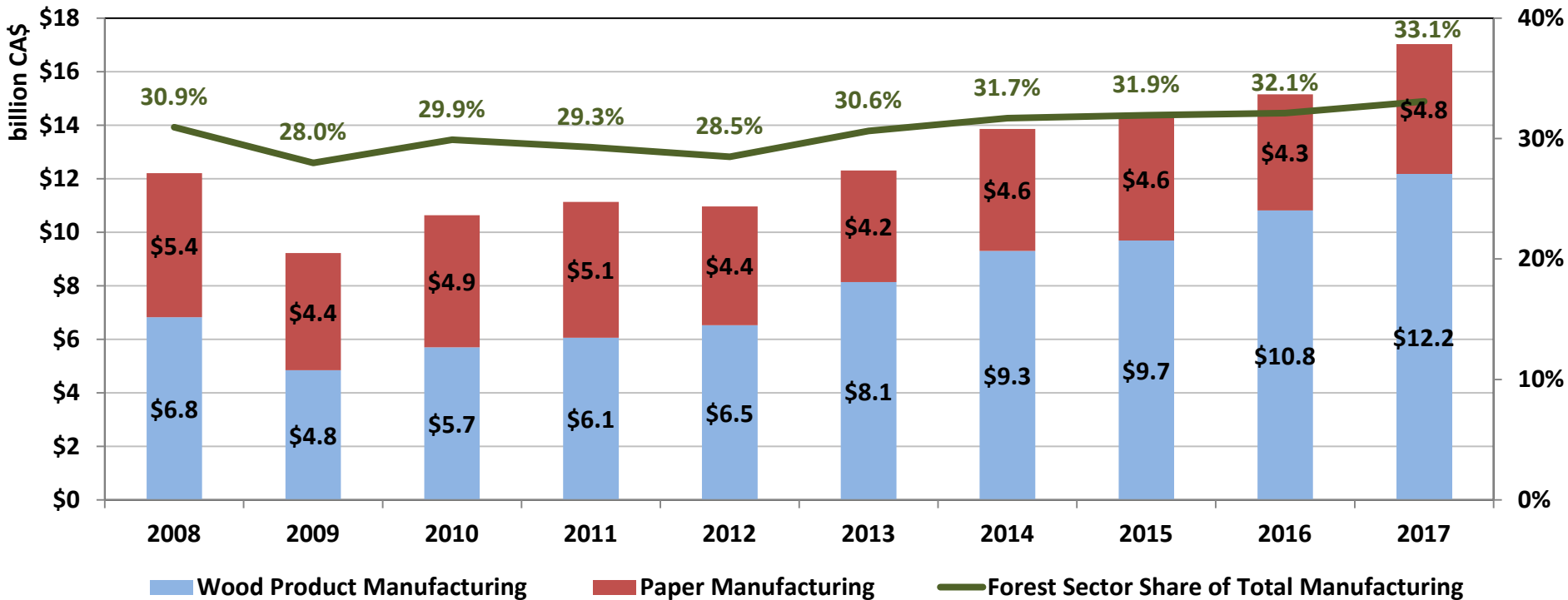
❖ Products (56-66)

❖ Markets (67-80)

❖ Economic Multipliers (81)

❖ Additional Sources (82)

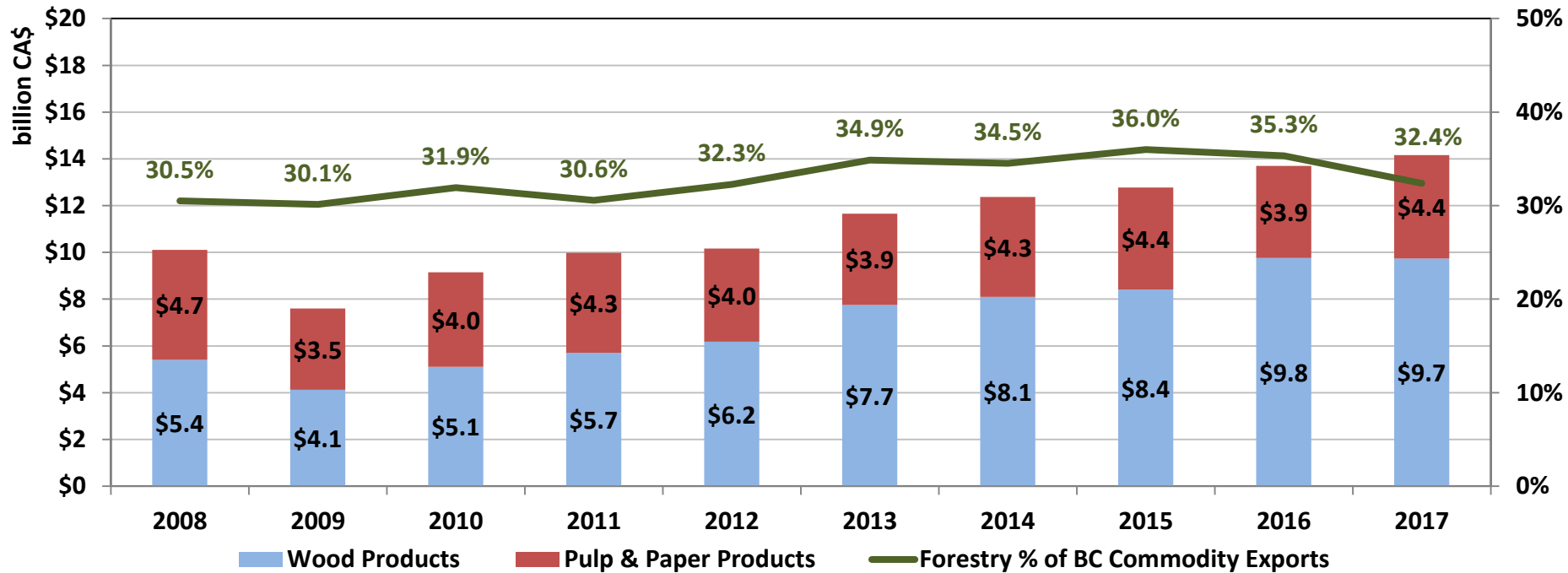
B.C. Forest Sector Manufacturing Sales



Data source: Statistics Canada; [CANSIM 304-0015](#).

Overview Indicator 1a – B.C. forest sector manufacturing sales (CA\$17.0 billion) increased 13% from 2016. The forest sector accounted for 33% of B.C. manufacturing sales. 2016 was revised upward significantly.

B.C. Forest Sector Exports

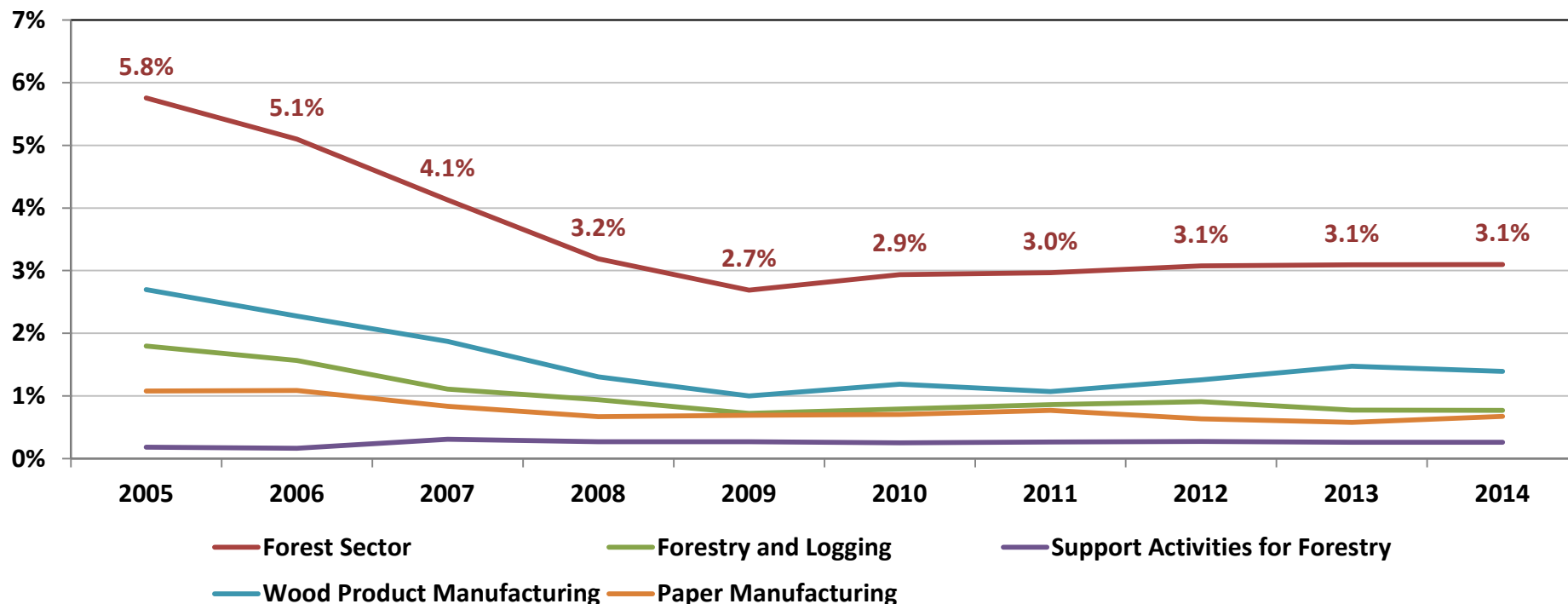


Data source: [B.C. Stats](#) extract from Statistics Canada data. Does not include products shipped to other regions of Canada. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Overview Indicator 1b – B.C. forest product exports (CA\$14.2 billion) increased 3.3% from 2016, and 86% from 2009. The forest sector’s share of total B.C. export value declined roughly 2 percentage points from 2016 to 2017.



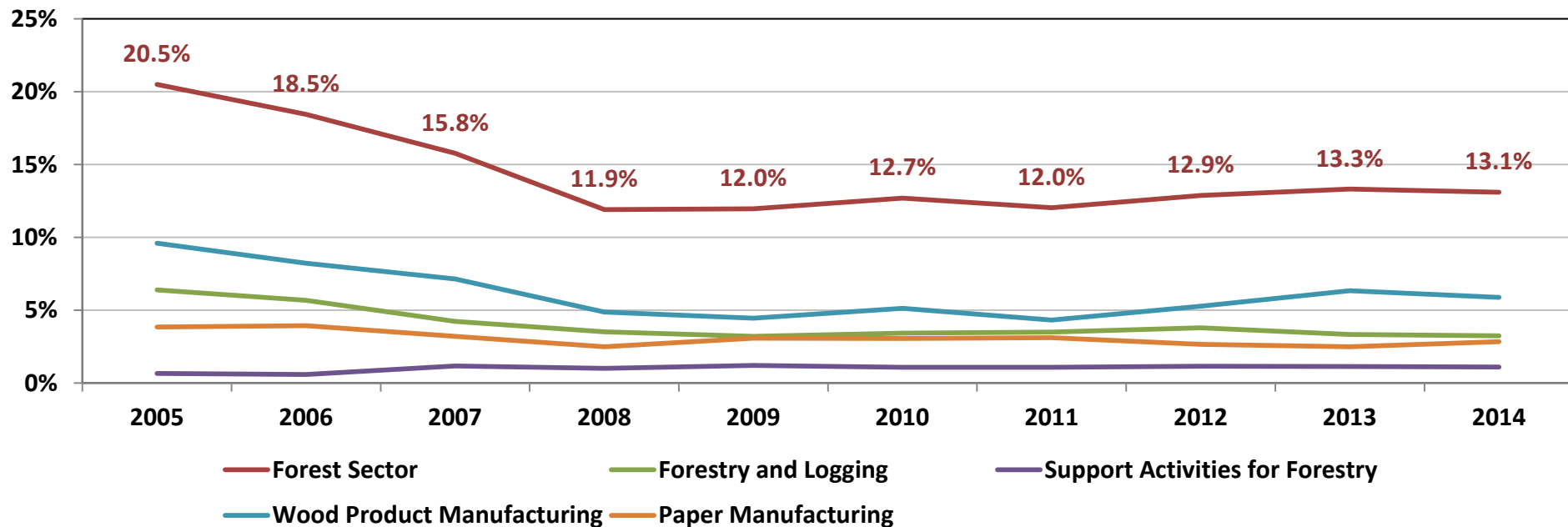
Forest Sector's Share of B.C. GDP, in Current Dollars



Data source: Statistics Canada. Source prior to 2007: [CANSIM 381-0015](#). For 2007 onwards: [CANSIM 379-0030](#). Based on current dollar data with 2014 being the latest available data.

Overview Indicator 2a – GDP in current dollars allows comparisons between sectors, industries (subsectors) and the provincial economy as a whole in a given year. It does not adjust for inflation. The decline in forestry's share over time is largely due to GDP growth of the B.C. economy as a whole (notably the service industry and real estate). Since 2009 the share has been fairly stable.

Forest Sector's Share of B.C. Goods Manufacturing GDP, in Current Dollars



Data source: Statistics Canada. Source prior to 2007: [CANSIM 381-0015](#). For 2007 onwards: [CANSIM 379-0030](#). Based on current dollar data with 2014 being the latest available data.

Overview Indicator 2b – GDP in current dollars allows comparisons between sectors, industries (subsectors) and other sectors, such as the Goods Manufacturing sector, in a given year. It does not adjust for inflation. Since 2008 the Forest Sector has made up 12-13% of Goods Manufacturing GDP.

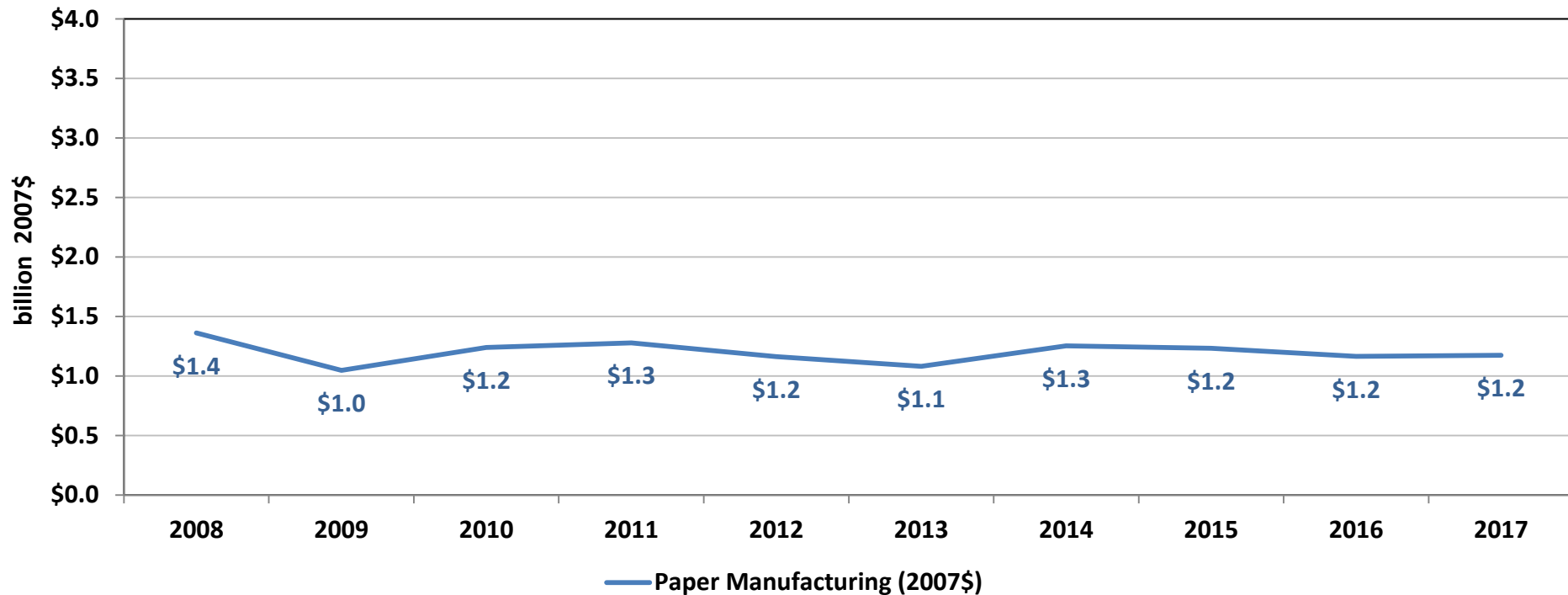
B.C. Wood Products Manufacturing GDP, in Chained Dollars



Data source: Statistics Canada; [CANSIM 379-0030](#).

Overview Indicator 2c – Wood Product Manufacturing GDP was climbing steadily since the low of 2009, but fell slightly in 2017. Chained dollar GDP adjusts for changes in prices and quantities, and shouldn't be compared across sectors, nor added across sectors.

B.C. Paper Manufacturing GDP, in Chained Dollars

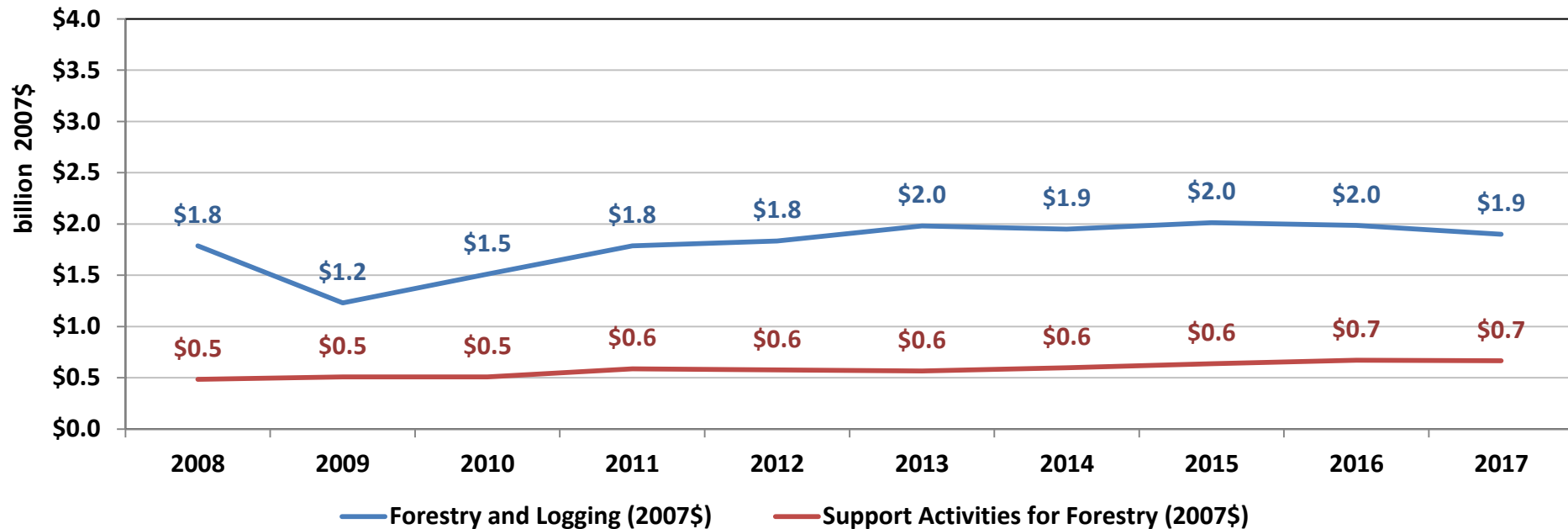


Data source: Statistics Canada; [CANSIM 379-0030](#). Paper Manufacturing includes the Pulp industry.

Overview Indicator 2d – This chart shows the GDP of the Paper Manufacturing industry has been relatively stable the last few years. Chained dollar GDP adjusts for changes in prices and quantities, and shouldn't be compared across sectors, nor added across sectors.



B.C. Forestry and Logging and Support Activities GDP, in Chained Dollars



Data source: Statistics Canada; [CANSIM 379-0030](#). [Examples of Support Activities](#) are cruising timber, hauling, pest control, firefighting, and reforestation.

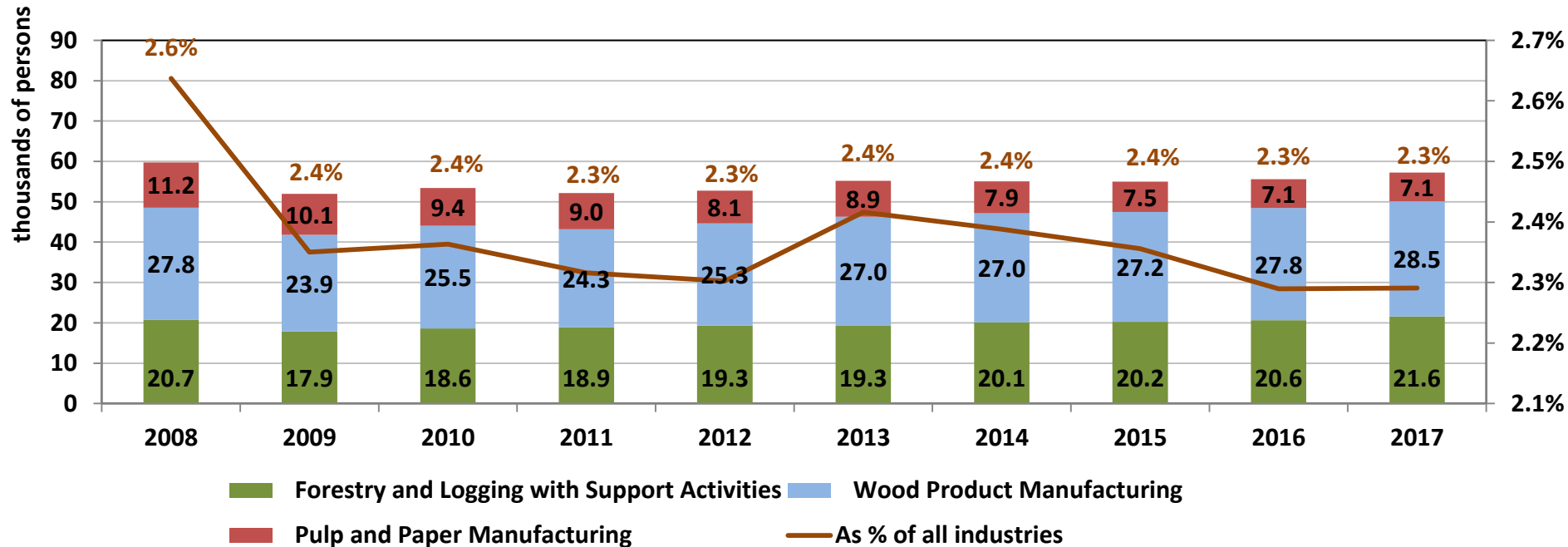
Overview Indicator 2e – The past few years GDP from Support Activities for Forestry has been relatively steady, and so has GDP from Forestry and Logging. Both industries have increased from their levels in 2009. Chained dollar GDP adjusts for changes in prices and quantities, and shouldn't be compared across sectors, nor added across sectors.

Multiple Employment Estimates

- ❖ **System of National Accounts (SNA):** Estimates based on multiple employment sources, including the LFS and SEPH. Part of the Canadian System of Macroeconomic Accounts (CSMA). Estimates are annual and released in the following year (2016 in 2017) making them the least timely source.
 - ❖ “Because these accounts [CSMA] all use a common set of definitions, concepts and classifications, and are explicitly related to each other, they form an integrated system. As a result, the economic stories assembled from the CSMA statistics are coherent and credible. The latter reflects the enhanced quality inherent in an integrated system” ([Source](#)).
 - ❖ This is the data source that forms the foundation of Input-Output Models, including [BC’s model](#).
- ❖ **Survey of Employment Payrolls and Hours (SEPH):** A monthly survey. Not as timely as LFS, SEPH is delayed roughly two months in comparison.
 - ❖ “The payroll survey (SEPH) provides a highly reliable gauge of monthly change in non-farm payroll employment”. “This survey does not have sampling error since it includes all payroll employees” ([Source](#)).
 - ❖ Excludes self employed and agriculture. Potentially a major setback for forestry and logging estimates, but probably less of an issue for most forest product manufacturing. SEPH is usually the lowest employment estimate.
- ❖ **Labour Force Survey (LFS):** A monthly survey of roughly 6,500 B.C. households out of nearly 2 million (0.3%). It’s released near the start of each month.
 - ❖ “The household survey (LFS) provides a broader picture of employment, including employment in agriculture and the number of self employed” ([Source](#)). It also measures unemployment.
 - ❖ Since it is the most timely release on employment it tends to be most widely quoted. This also makes it a useful leading indicator.
 - ❖ The LFS offers employment by Development Region and employment by industry, but the more detailed they become by Region and industry the less reliable they become.
 - ❖ LFS tends to be the upper estimate of the three employment estimates as it reflects all employment.



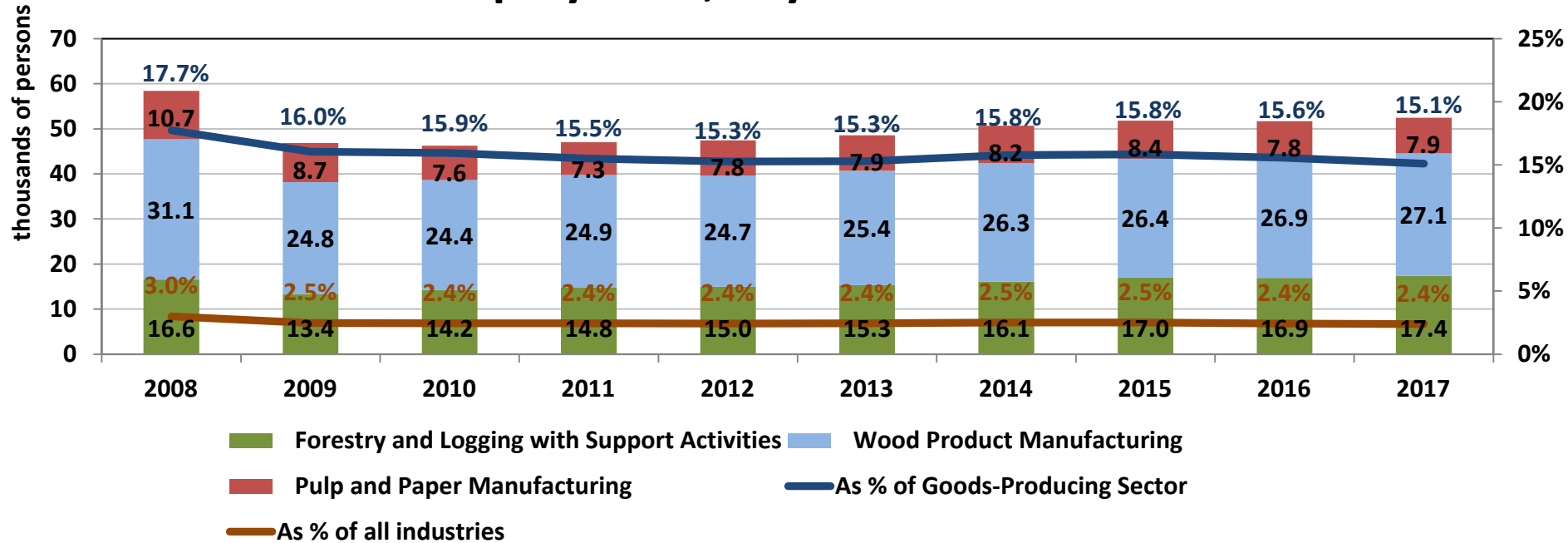
B.C. Forest Sector Direct Employment: System of National Accounts



Data source: Statistics Canada System of National Accounts (SNA): [CANSIM 281-0024](https://www150.statcan.gc.ca/n1/pub/281-0024).

Overview Indicator 3a – The System of National Accounts (SNA) offers another estimate of employment. According to this data B.C. forest sector direct employment increased to 57,210 in 2017. The employment in the System of National Accounts combines data from numerous sources.

B.C. Forest Sector Direct Employment: Survey of Employment, Payrolls and Hours

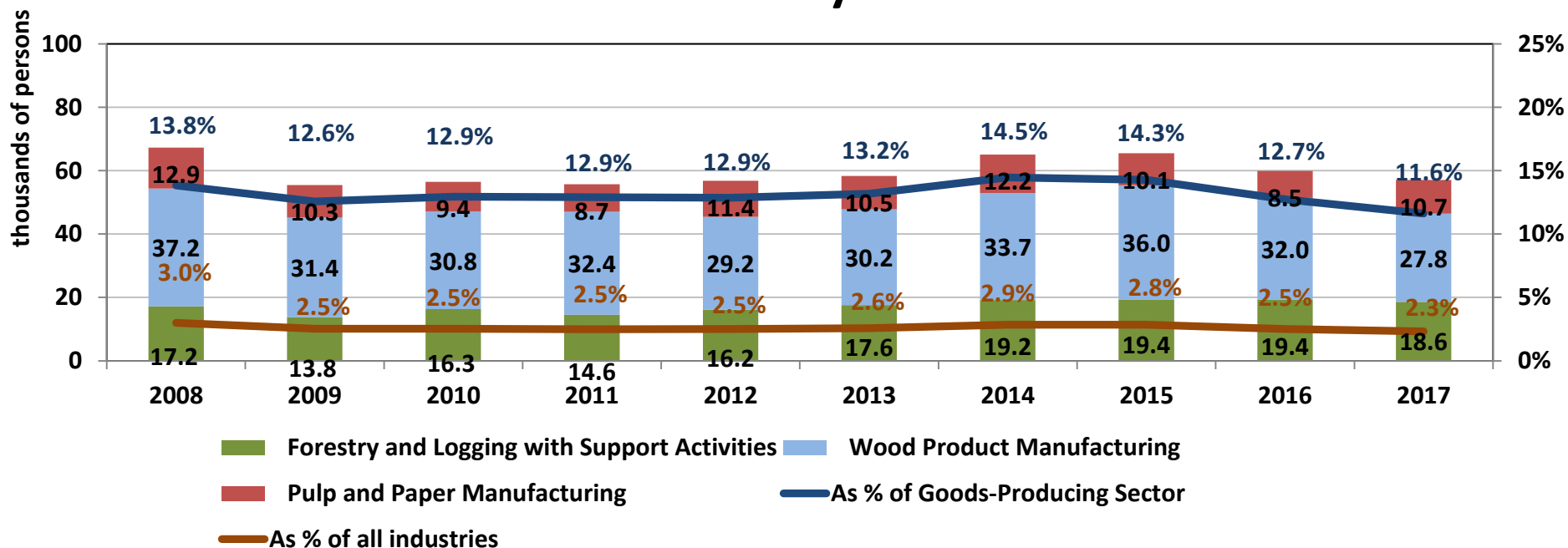


Data source: Statistics Canada Survey of Employment, Payrolls and Hours (SEPH): [CANSIM 383-0031](https://www150.statcan.gc.ca/n1/pub/28-601-x/2017001/article/00001-eng.htm).

Overview Indicator 3b – The Survey of Employment, Payrolls and Hours (SEPH) offers another estimate of employment. According to this survey B.C. forest sector direct employment increased to 52,435 in 2017. The SEPH survey only covers employees on payrolls, and so omits self-employed people. This means the estimate should be lower than the LFS.



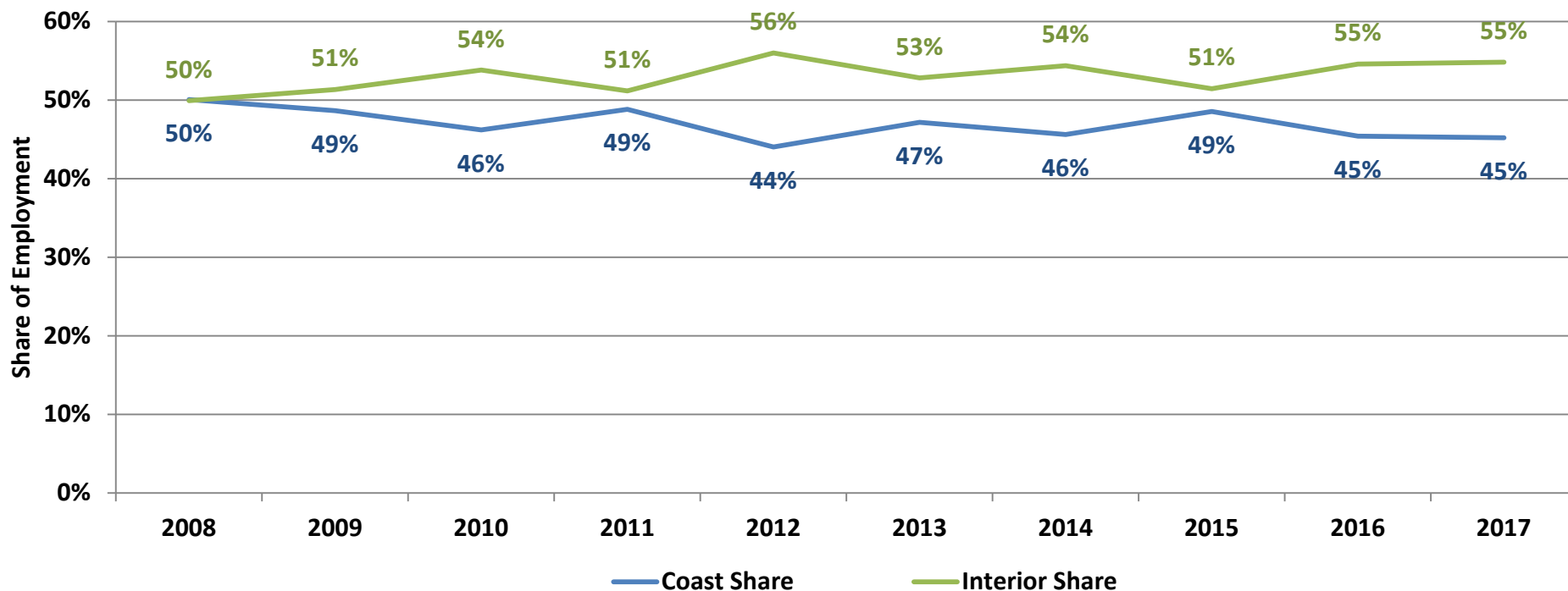
B.C. Forest Sector Direct Employment: Labour Force Survey



Data source: Statistics Canada Labour Force Survey (LFS) data via [B.C. Stats](#) (British Columbia Employment by Detailed NAICS Industry). The LFS samples 6,500 of B.C.'s roughly 2 million households (0.3% of households).

Overview Indicator 3c – According to the Labour Force Survey (LFS) B.C. forest sector direct employment decreased to 57,100 in 2017, a 4.7% decrease over 2016.

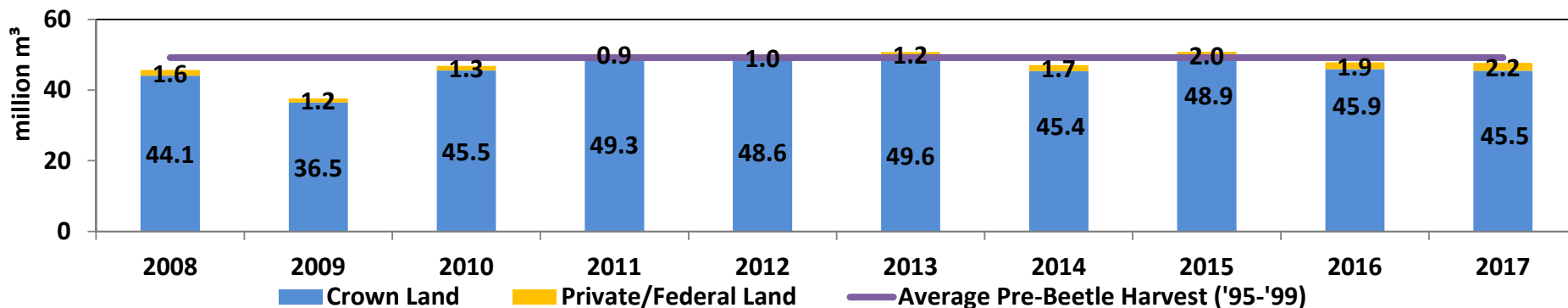
Forest Sector Employment Share by Coast and Interior



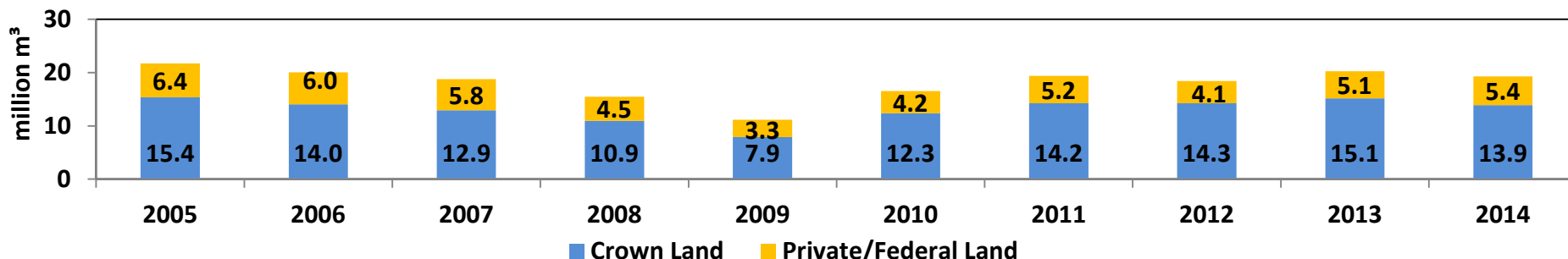
Data source: Statistics Canada Labour Force Survey (LFS) data via [B.C. Stats](#) (Employment and Unemployment by [Development Region](#)). In this data North Coast is combined with Nechako, and in this chart North Coast-Nechako is included in the Interior.

Overview Indicator 3d – According to the Labour Force Survey (LFS) the coast is usually around 45% of B.C. forest sector direct employment while the interior is around 55%.

B.C. Interior Harvest Volume



B.C. Coast Harvest Volume



Data source: [B.C. FLNR Harvest Billing System](#). All logs, special forest products, species and grades billed, excluding waste, reject and Christmas trees. Data extracted May 1, 2017. Volumes may not add to total harvest (slide 16) due to rounding.

Products – Logs – Total harvest volume (64.3 million m³) was down 2.9% from 2016. The Interior accounted for 74% of the harvest. Most of the harvest from private and federal lands comes from the Coast. Recent interior harvest is near pre-beetle, pre-housing boom levels (49.2 million m³, '95-'99).



Figure 1: Estimated British Columbia Primary Log Use - 2016

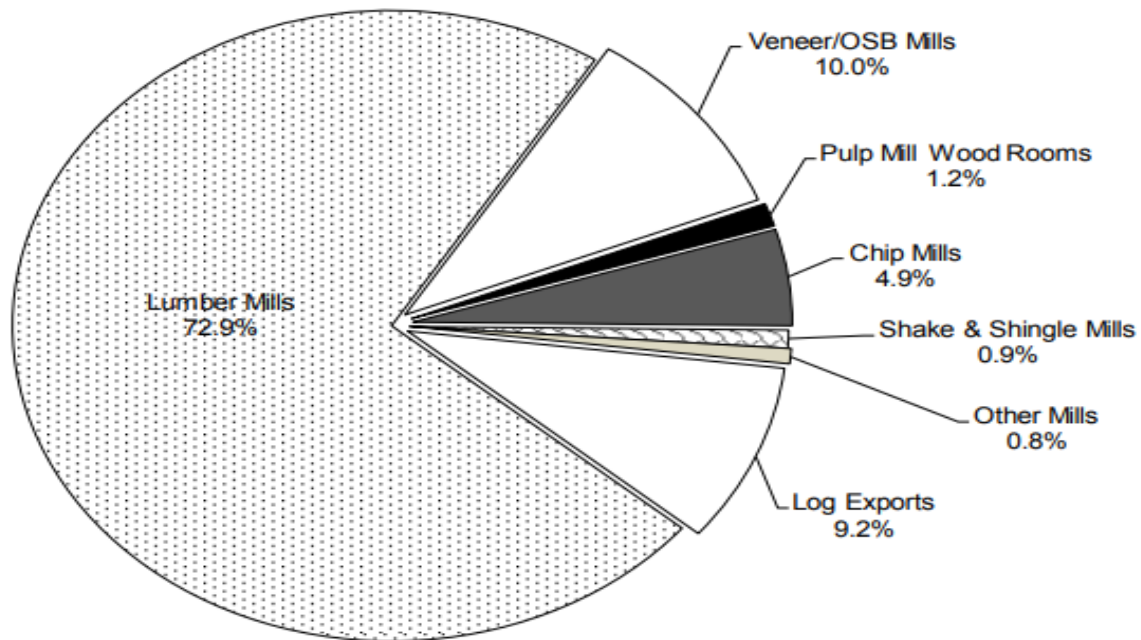
	Coast			Interior			Province		
	Number of Mills	Est. Volume Used (000 m ³)	Per Cent	Number of Mills	Est. Volume Used (000 m ³)	Per Cent	Number of Mills	Est. Volume Used (000 m ³)	Per Cent
Primary Log Use									
Lumber Mills	48	7,991	44.9%	91	41,452	82.8%	139	49,443	72.9%
Veneer/OSB Mills	5	2,091	11.8%	12	4,722	9.4%	17	6,813	10.0%
Pulp Mill Wood Rooms	2	498	2.8%	2	309	0.6%	4	807	1.2%
Chip Mills	10	1,172	6.6%	12	2,178	4.4%	22	3,350	4.9%
Shake & Shingle Mills	32	590	3.3%	9	40	0.1%	41	630	0.9%
Other Mills	15	119	0.7%	33	407	0.8%	48	526	0.8%
Log Exports		5,326	29.9%		932	1.9%		6,257	9.2%
TOTAL	112	17,787	100%	159	50,040	100%	271	67,826	100%
Log Availability									
Total Harvest		18,241			47,501			65,742	
Log Imports								19	
TOTAL		18,241			47,501			65,762	
Difference		455	2.5%		-2,539	-5.3%		-2,065	-3.1%

*Total harvest includes all logs, special forest products, species and grades billed to crown, private and federal land. Waste, reject and Xmas trees were excluded.

Data source: [B.C. Mill Report](#). 2016 is the latest year available. See page 9 for additional breakdown.

Products – Log use by Mill Type – This table shows estimated log use by mill type based on results from the B.C. Mill Survey. The vast majority of logs initially wind up at lumber mills (73%), then roughly 56% of that fibre goes to pulp and pellet mills as chips and sawdust. Note, the annual survey's estimated log use was 3.1% higher than harvest (2015 was 3% under harvest).

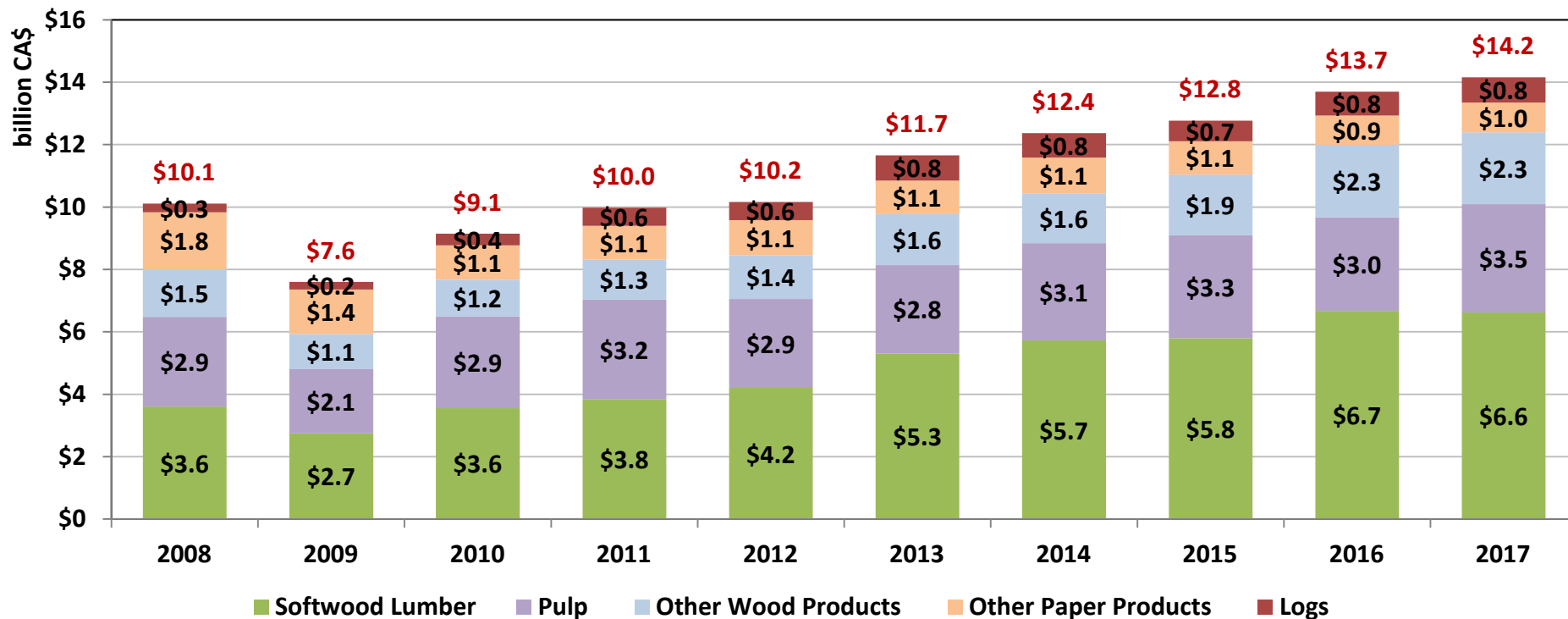
Total Primary Log Use 2016 - 67.826 million m³



Data source: [B.C. Mill Report](#). 2016 is the latest year available. See page 9 for additional breakdown.

Products – Log use by Mill Type – This is a summary of some of the data on the previous page.

B.C. Forest Product Exports by Main Product

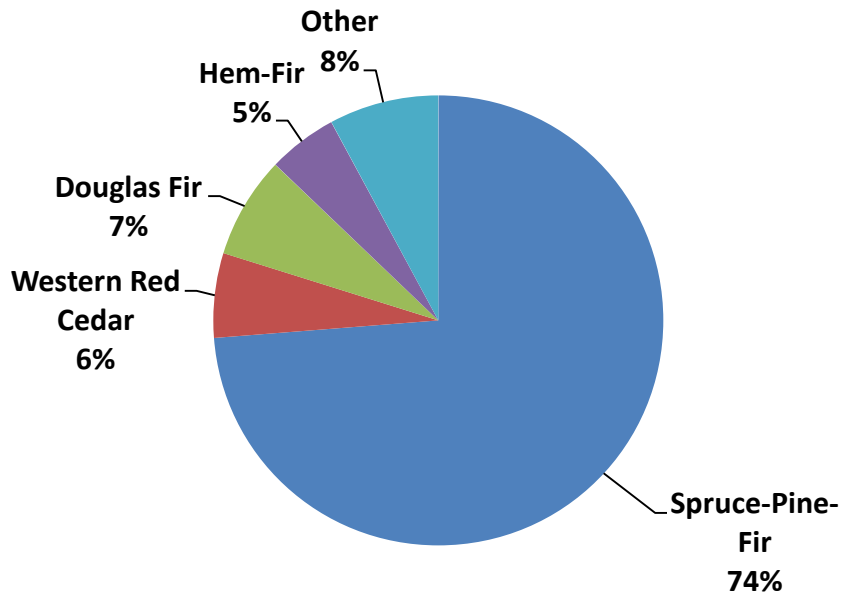


Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

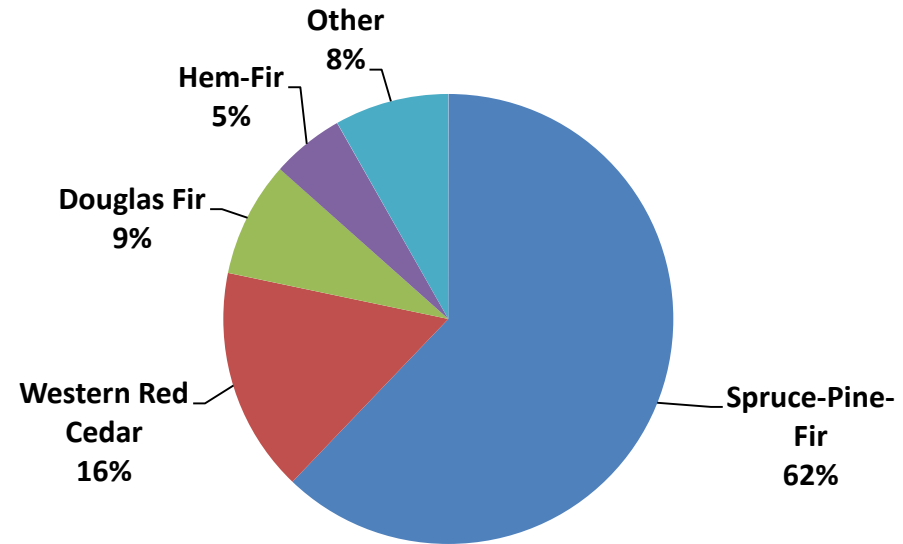
Products – Exports – Share of B.C. forest product export value by main product in 2017: Logs (5.7%), Softwood Lumber (46.8%), Other Wood Products (16.3%), Pulp (24.5%), and Other Paper Products (6.8%).



B.C. Softwood Lumber Export Volume (25.3 million m³) Share by Species, 2017



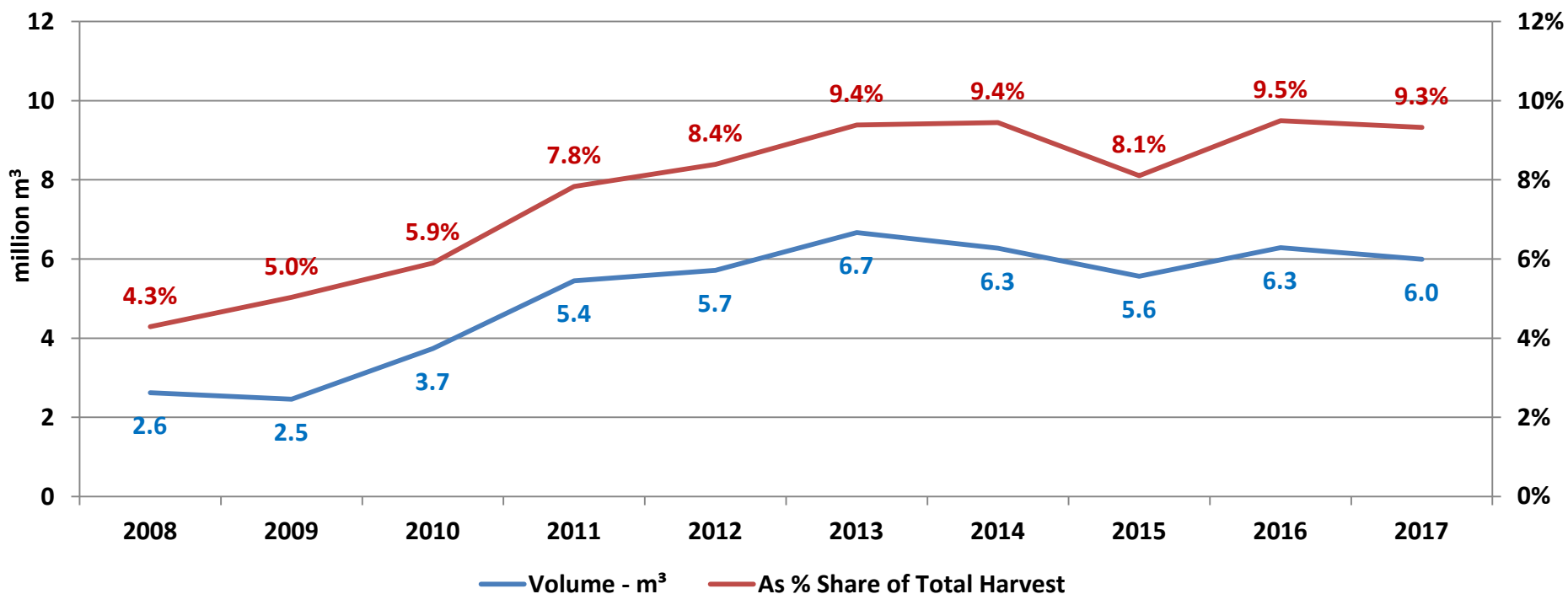
B.C. Softwood Lumber Export Value (CA\$6.6 billion) Share by Species, 2017



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Products – Exports – Softwood Lumber – Spruce-Pine-Fir (SPF) lumber is by far the highest-volume lumber product exported from B.C., followed by Douglas Fir, Western Red Cedar, and hemlock-fir (balsam). Non-SPF species tend to have higher lumber prices than SPF, as seen by their export value share being higher than their volume share.

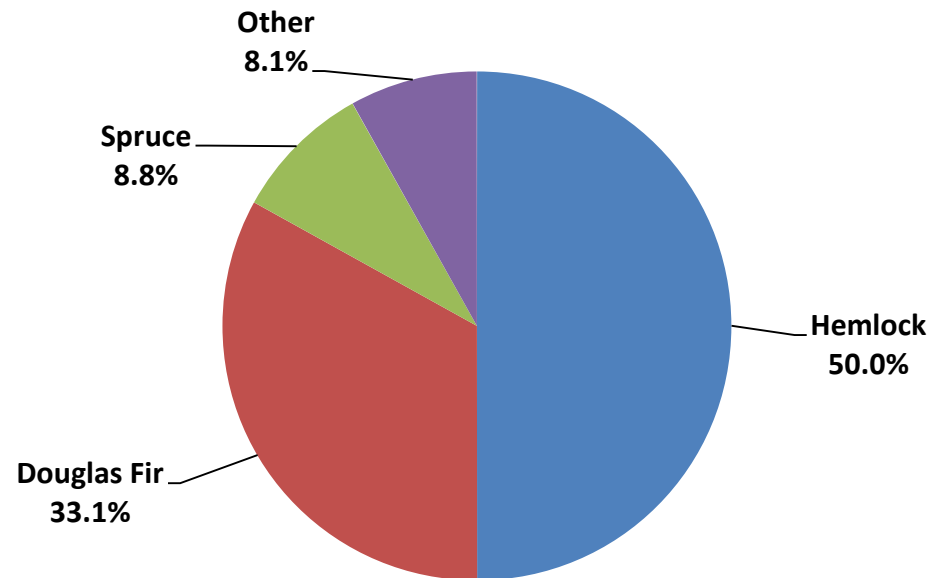
B.C. Log Export Volume and Share of Harvest



Data source: B.C. FLNRO Harvest Billing System, and [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Products – Exports – Logs – Log export volume declined by 4.6% in 2017. The vast majority of log exports came from the Coast, rather than the Interior.

B.C. Log Export Volume (6.0 million m³) Share by Species, 2017

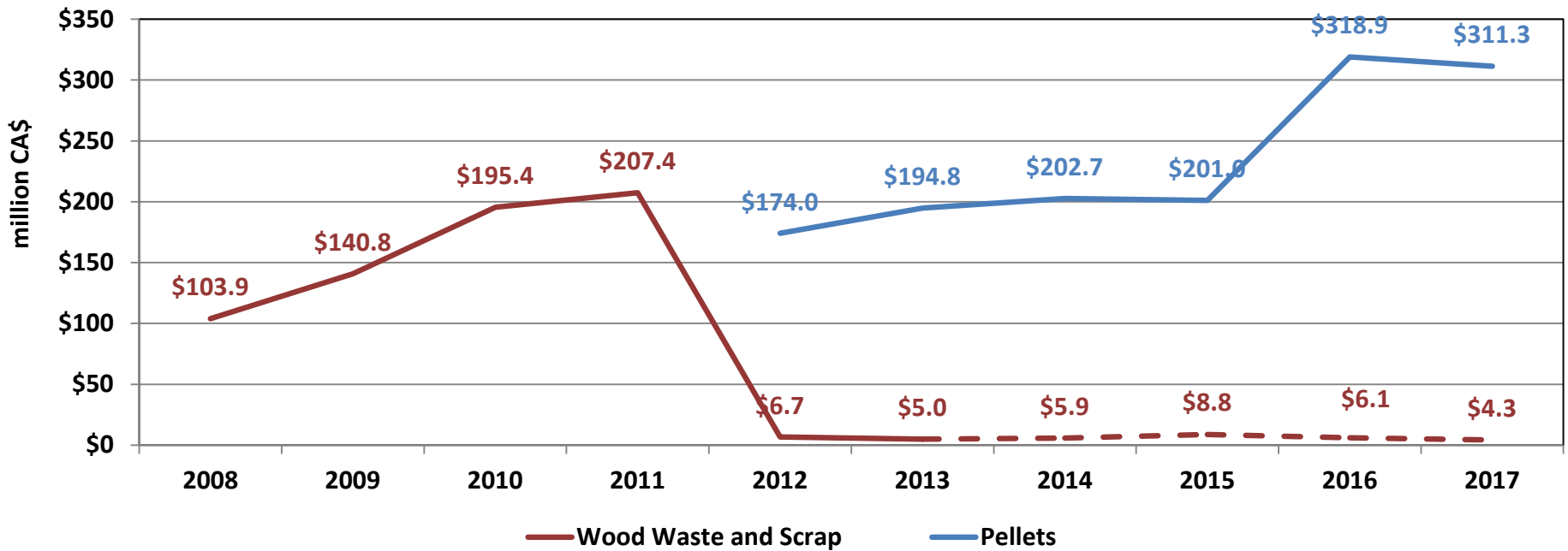


Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Other includes pulp logs of all species, plus saw logs of other softwoods and hardwoods. Note historic data is subject to revisions.

Products – Exports – Logs – Hemlock sawlogs accounted for around 50% of log exports in 2017, followed by Douglas Fir with 33%. Most of the hemlock went to China which is one of the few markets where the species is in strong demand.



B.C. Exports of Wood Waste and Scrap, and Pellets

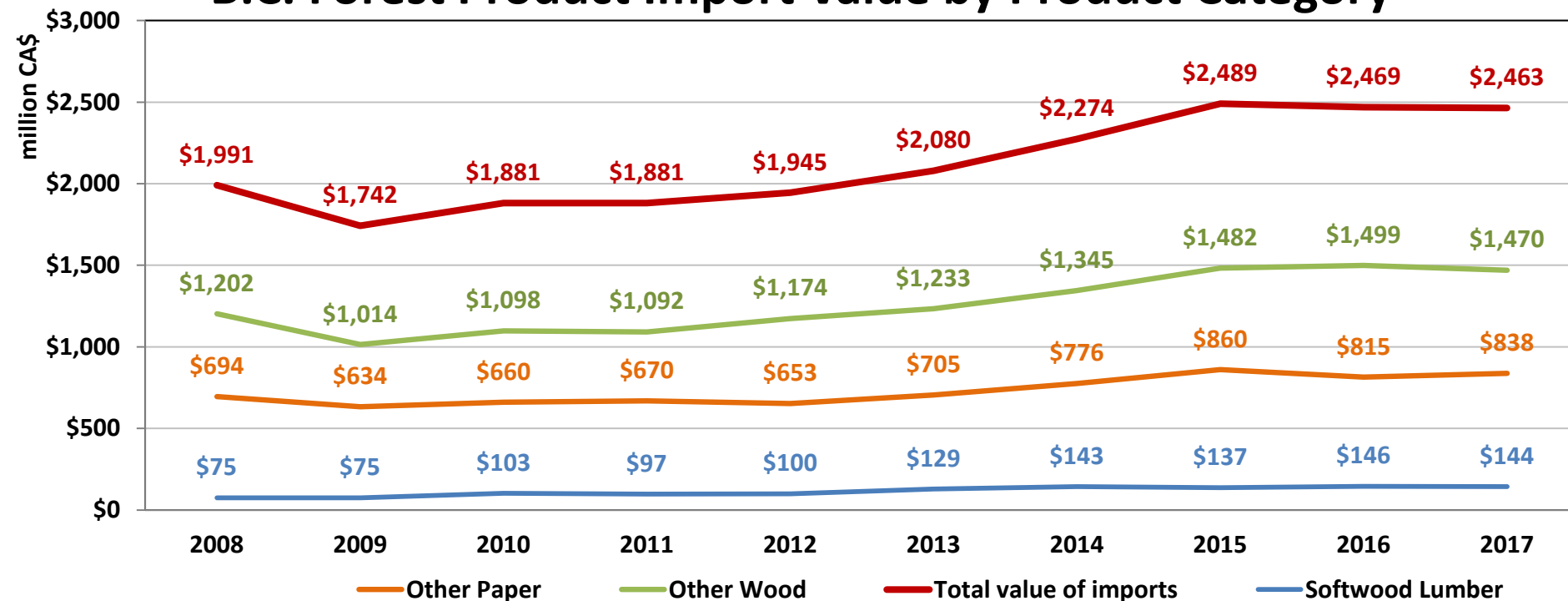


*Pellets were included in Wood Waste and Scrap until 2012. Now pellets are separate.

Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Products – Exports – Pellets – Exports of Wood Waste and Scrap grew rapidly up to 2011, probably almost entirely due to growth in Pellet exports. Pellet export value jumped over \$100 million from 2015 to 2016. 2017 was down slightly from 2016. The first year pellets were given their own product category in the export data was 2012.

B.C. Forest Product Import Value by Product Category



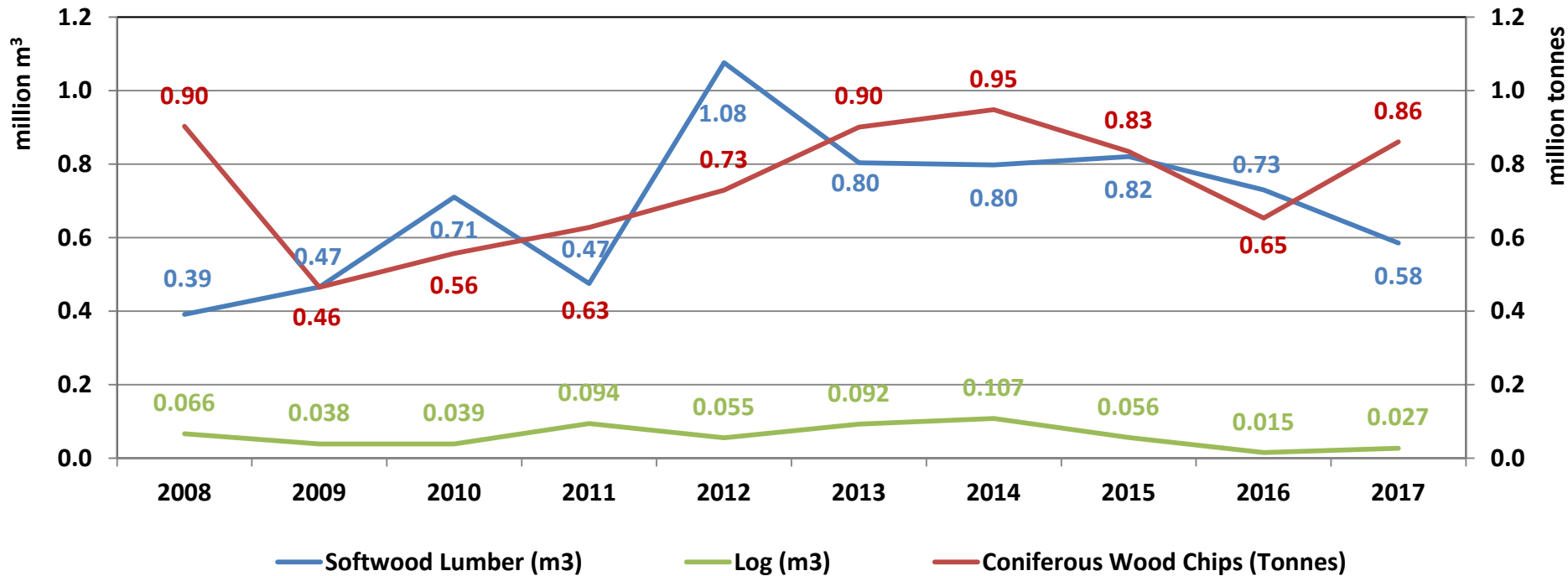
*Pulp and Log import value is minimal, so they don't have their own series, but are included in the total.

Data source: Special run of Statistics Canada data via BC Stats. Similar data can be viewed on [NRCAN's website](#). Note historic data is subject to revisions.

Products – Imports – Value – Total value of imported forest products was fairly consistent the past three years. Note the final destination of these imports may have been other provinces. Pulp and log imports are included in the total, but not given their own line due to the low overall value. Top imports of Other Wood products include furniture (especially chairs), particle board, siding and plywood. Top imports of Other Paper products include corrugated packaging, toilet paper, and paper towels.



Select B.C. Forest Product Imports by Quantity



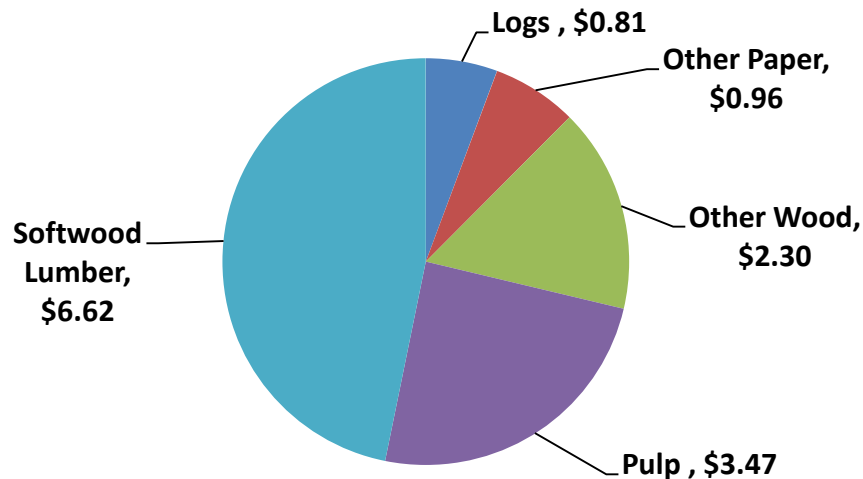
Data source: Special run of Statistics Canada data via BC Stats. Similar data can be viewed on [NRCAN's website](#). Note historic data is subject to revisions.

Products – Imports – Quantity – Imports of softwood lumber declined from 2016 to 2017. Comparing import volume to B.C. production it is only about 1.8%. Coniferous wood chip imports increased in 2017. Note the final destination of these imports may have been somewhere else in Canada.

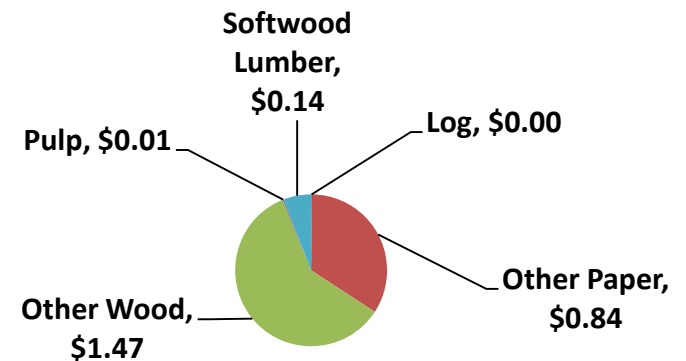


Comparison of BC Forest Product Exports and Imports

2017 Forest Product Exports - \$14.2 billion



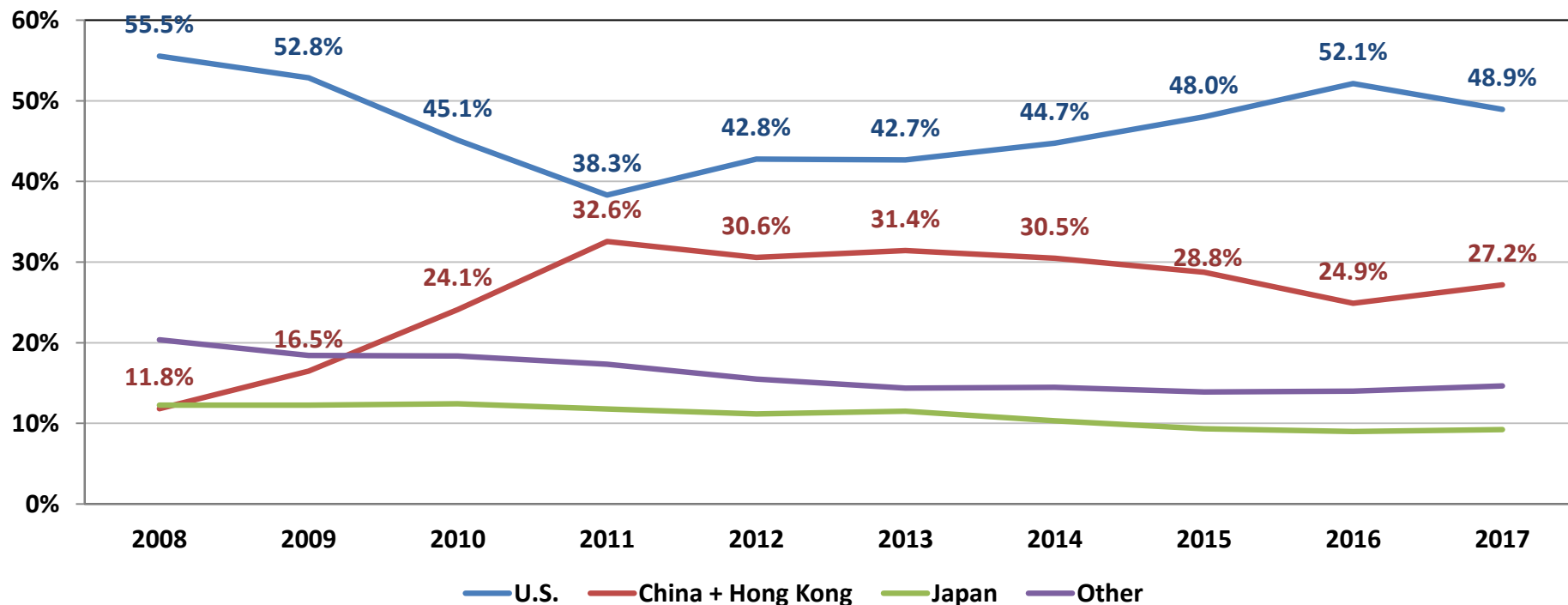
2017 Forest Product Imports - \$2.5 billion



Data source: Special run of Statistics Canada data via BC Stats. Similar data can be viewed on [NRCAN's website](#). Note historic data is subject to revisions.

Products – Import vs. Export Value – Other wood and other paper are the largest imports to B.C. Import value is about 18% the size of export value. Note the final destination of these imports may have been elsewhere in Canada, and that products imported to other provinces may have been used in B.C.

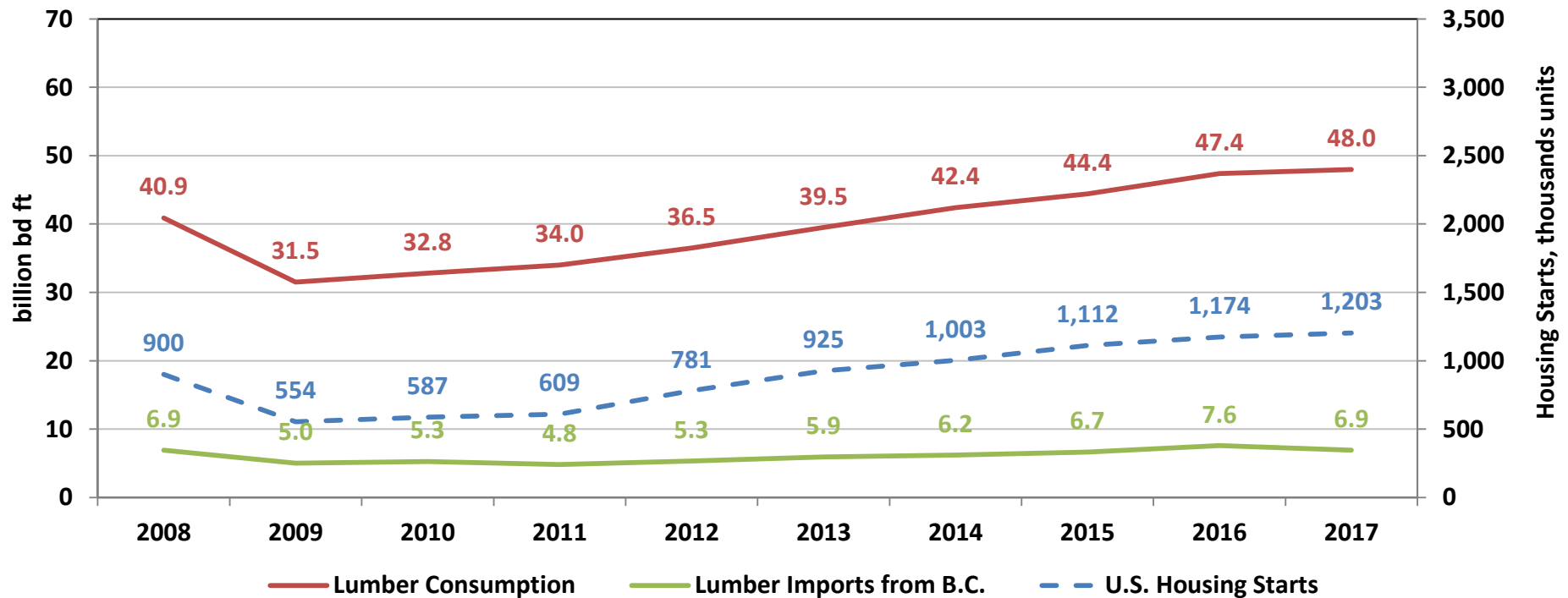
B.C. Forest Product Export Value Share by Market



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – Starting in 2005 the U.S. share of export value fell dramatically and China’s share grew rapidly. This trend ended in 2012 and their shares slowly diverged after that. In 2017 the U.S. lost share to China.

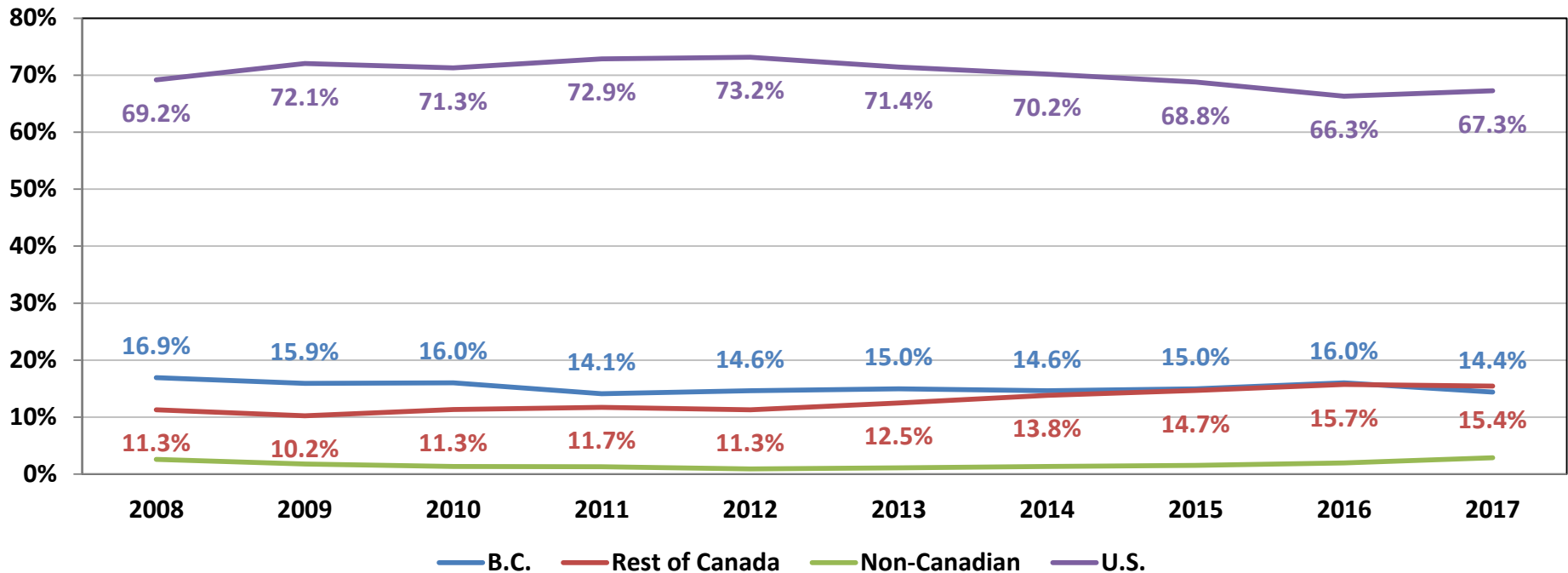
U.S. Softwood Lumber Consumption vs. Housing Starts



Data source: [Western Wood Products Association](#) and [U.S. Census Bureau](#).

Markets – U.S. – U.S. softwood lumber consumption and U.S. housing starts have increased steadily from the low in 2009, but both are still far from the peak level in 2005.

Supplier Share of U.S. Softwood Lumber Consumption



Data source: [Western Wood Products Association](#). The supply share from B.C. in 2016 was altered to match revised Statistics Canada data (no longer matches WWPA data).

Markets – U.S. – U.S. softwood lumber consumption relies primarily on U.S. domestic supply. The U.S. is still supplying a higher level of their consumption than during the housing boom, largely due to lower lumber demand resulting in less need for imports. Canada provided 29.8% of total U.S. consumption in 2017.



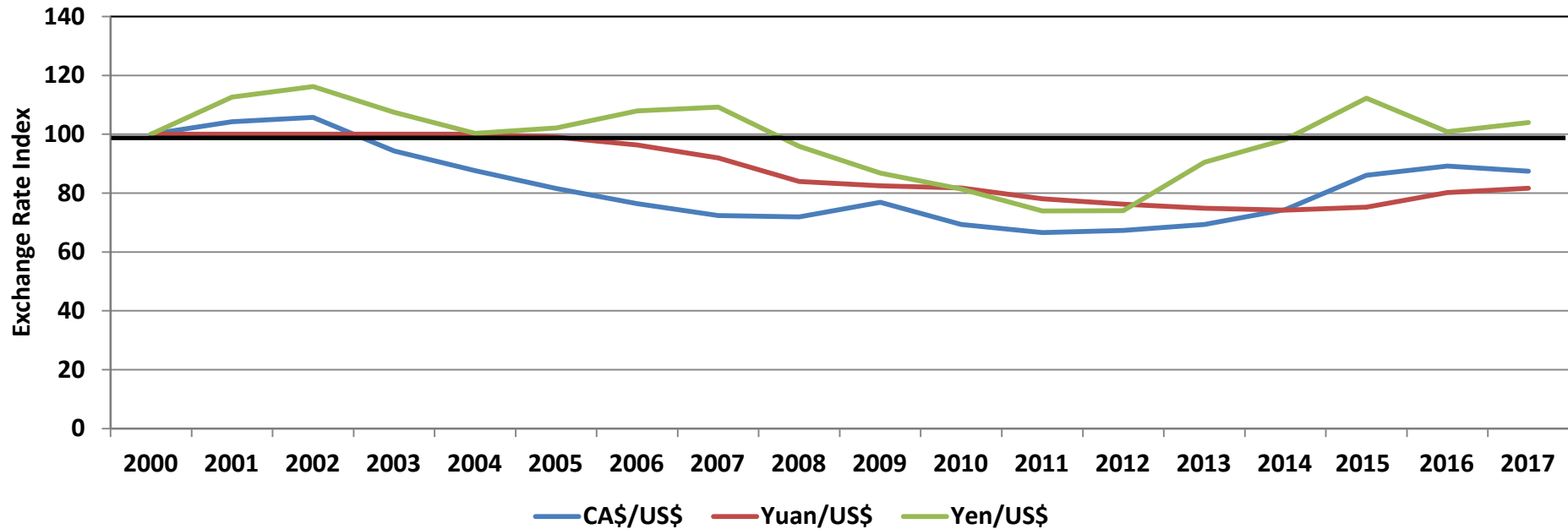
US\$ Exchange Rates Indexed to 2000

2000 Exchange Rates

1.48 CA\$/US\$
8.28 Yuan/US\$
107.82 Yen/US\$

2017 Exchange Rates

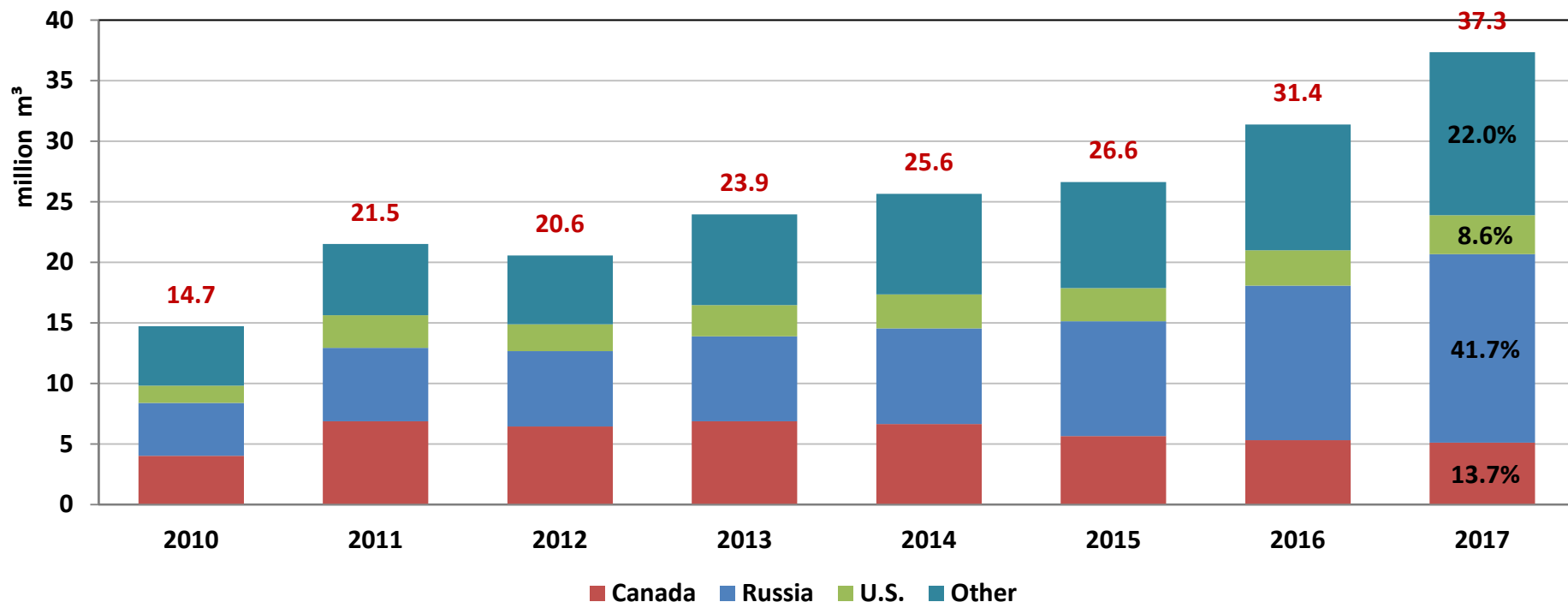
1.30 CA\$/US\$
6.76 Yuan/US\$
112.16 Yen/US\$



Data source: Organization for Economic Co-operation and Development (OECD).

Markets – Prices and Costs – From 2002 to 2011 the US\$ depreciated about 33% relative to the Canadian dollar. From 2011 to 2016 the US\$ appreciated against the CA\$, but 2017 had a slight depreciation. The exchange rate impacts product prices and mill revenue.

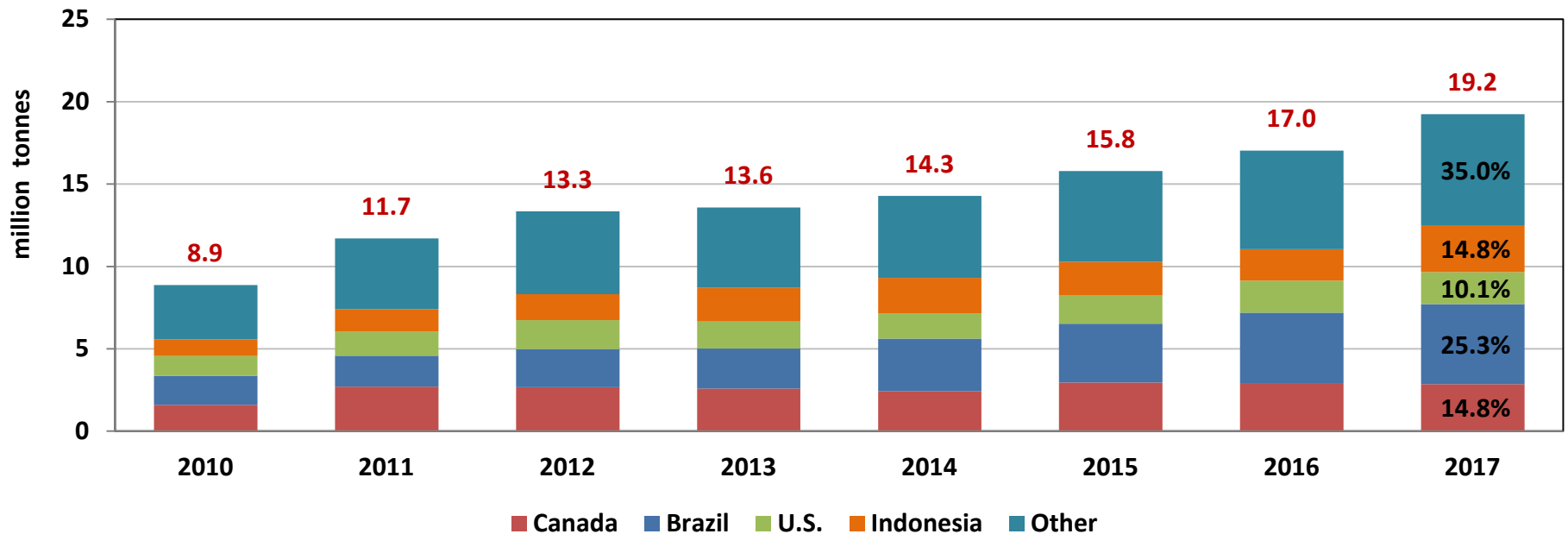
China Lumber Imports by Supply Country



Data source: [WOOD MARKETS China Bulletin](#). All species, including hardwoods.

Markets – China – In 2017, Russia’s share increased to 41.7% while Canada’s became 13.7%. Despite a large increase in lumber imports the volume from Canada declined slightly.

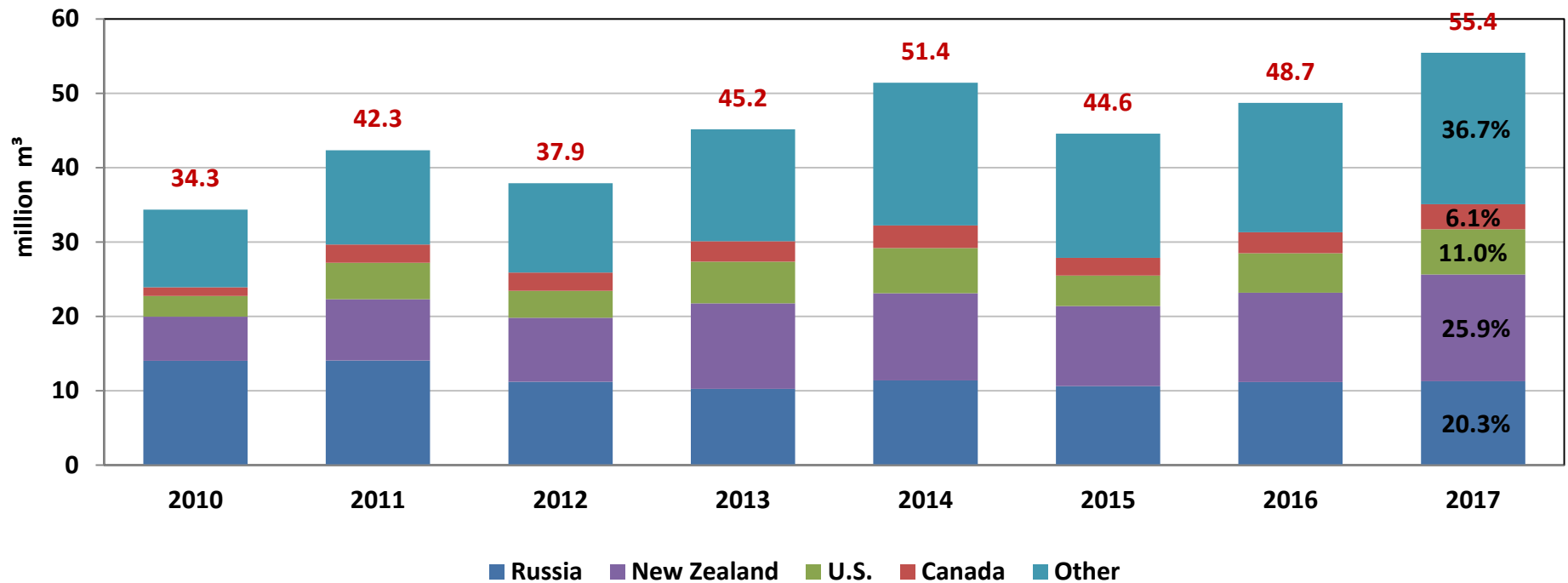
China Sulfate (Kraft) Wood Pulp Imports by Supply Country



Data source: [WOOD MARKETS China Bulletin](#).

Markets – China – In 2017 Canada (14.8%) was second behind Brazil (25.3%) as the leading supplier of China’s kraft market pulp imports. They were followed by Indonesia (14.8%), the U.S. (10.1%), and other countries (35.0%). China’s sulfate kraft pulp imports increased substantially in 2017.

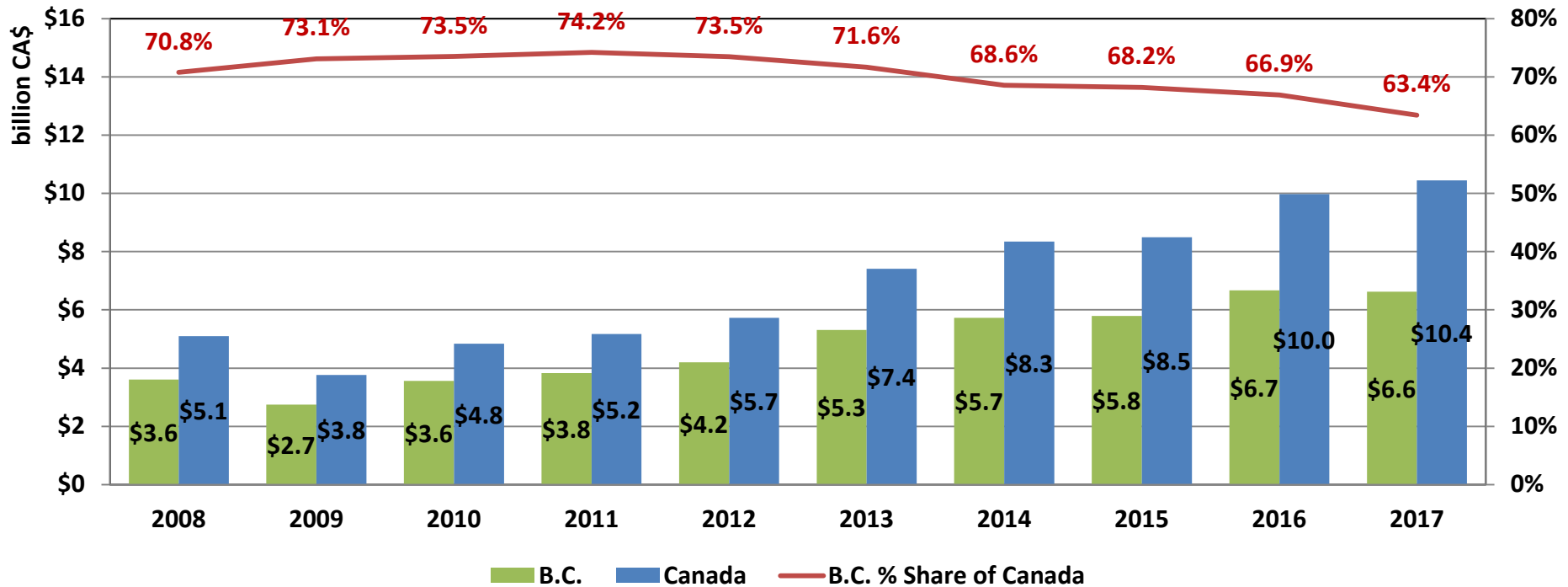
China Log Imports by Supply Country



Data source: [WOOD MARKETS China Bulletin](#). All species, including hardwoods.

Markets – China – In 2017 New Zealand continues as China’s largest log supplier (25.9%). They were followed by Russia (20.3%), the U.S. (11.0%), Canada (6.1%) and other countries (36.7%).

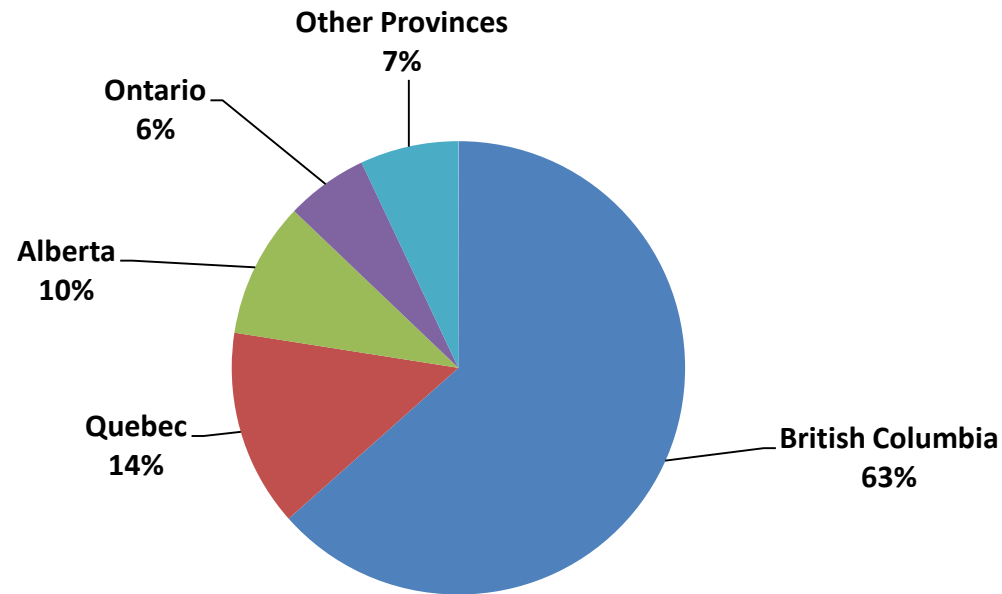
Softwood Lumber Exports: B.C. and Canada



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – B.C.’s Share – B.C.’s share of Canada’s total softwood lumber export value was 63.4% in 2017, decreasing from 2016.

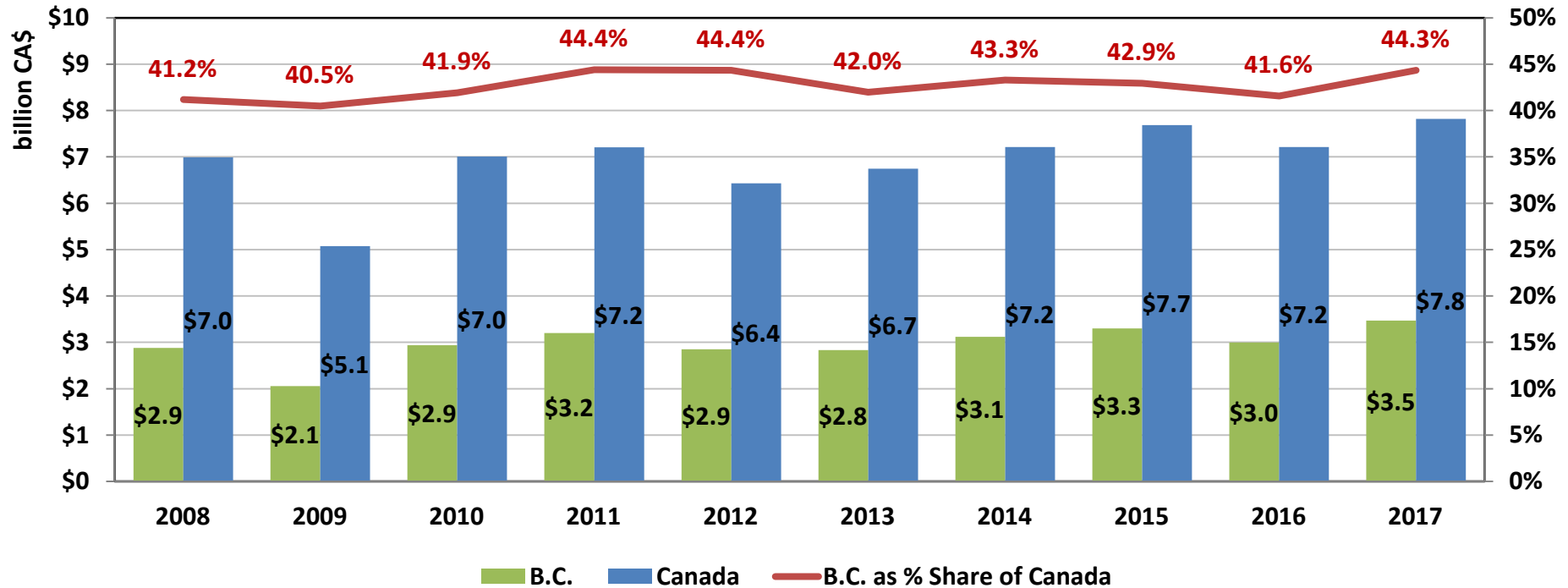
Canada Softwood Lumber Export Value (\$10.4 billion) by Province, 2017



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – B.C.’s Share – In terms of value B.C. is the dominant supplier of Canada’s softwood lumber exports, followed by Quebec, Alberta, Ontario and other provinces.

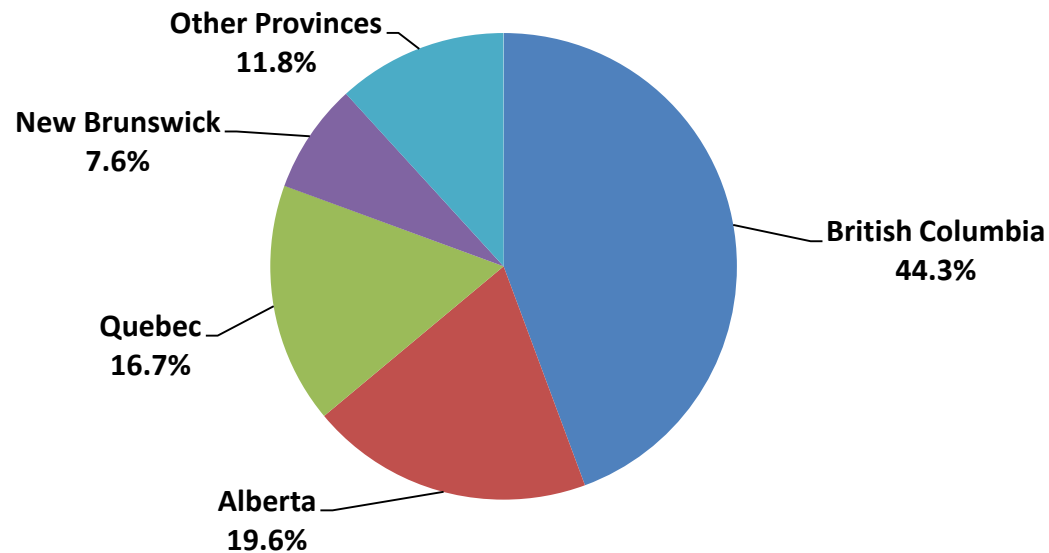
Pulp Exports: B.C. and Canada



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – B.C.’s Share – B.C. accounted for 44.3% of Canada’s total pulp export value in 2017. B.C. sells a greater proportion of its pulp production compared to other provinces which make more paper.

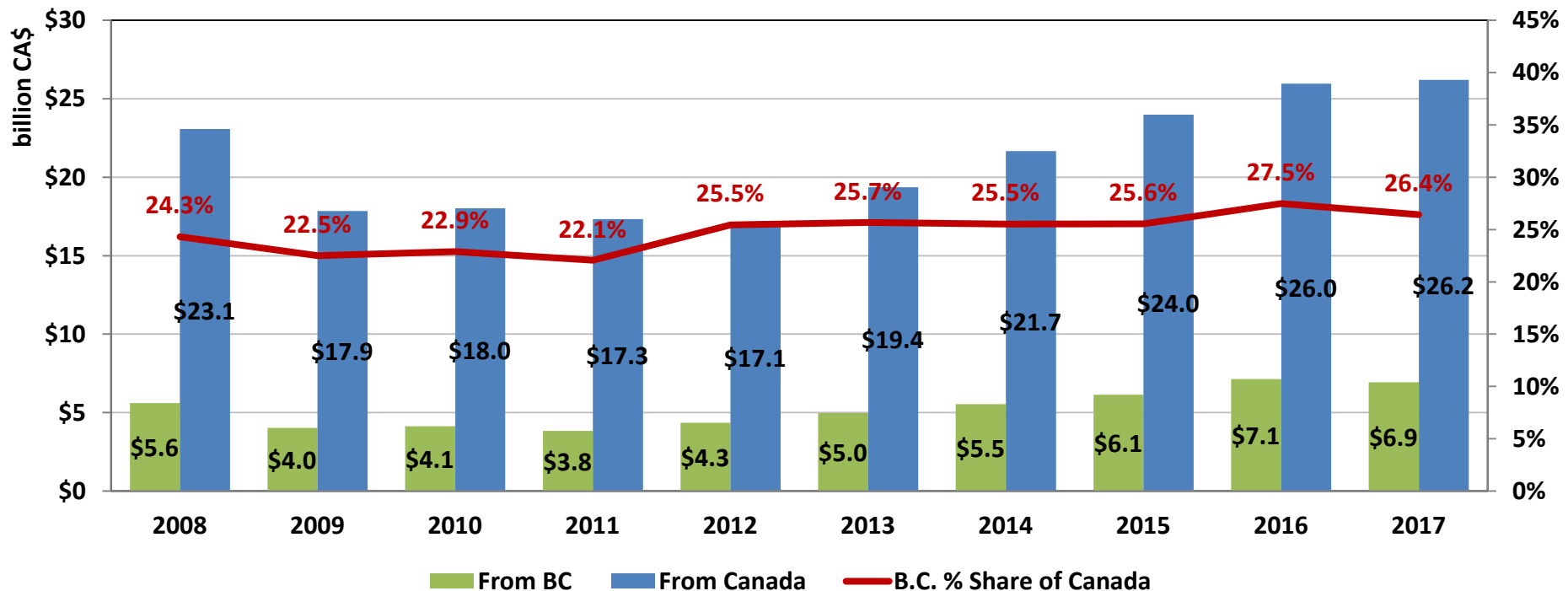
Canada Pulp Export Value (\$7.8 bil.) by Province, 2017



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – B.C.’s Share – B.C. is the largest supplier of Canada’s pulp exports in terms of value, followed by Alberta, Quebec, New Brunswick and other provinces. B.C.’s primary market is China. The two other large exporters, Alberta and Quebec, export large amounts to both China and the USA.

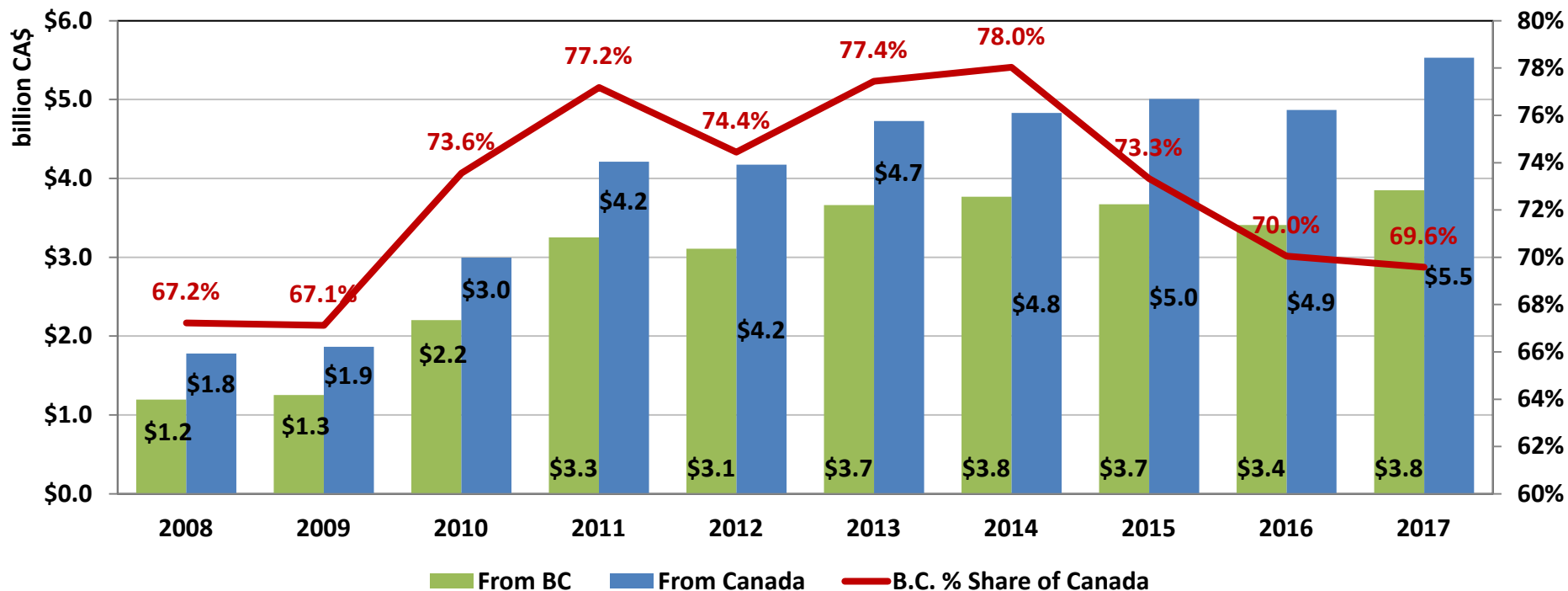
Forest Product Exports to U.S.: B.C. and Canada



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – B.C.’s Share – B.C. accounted for 26.4% of the value of Canada’s total forest product exports to the U.S. in 2017. B.C. exports declined by CA\$0.2 billion and exports from Canada as a whole rose CA\$0.2 billion.

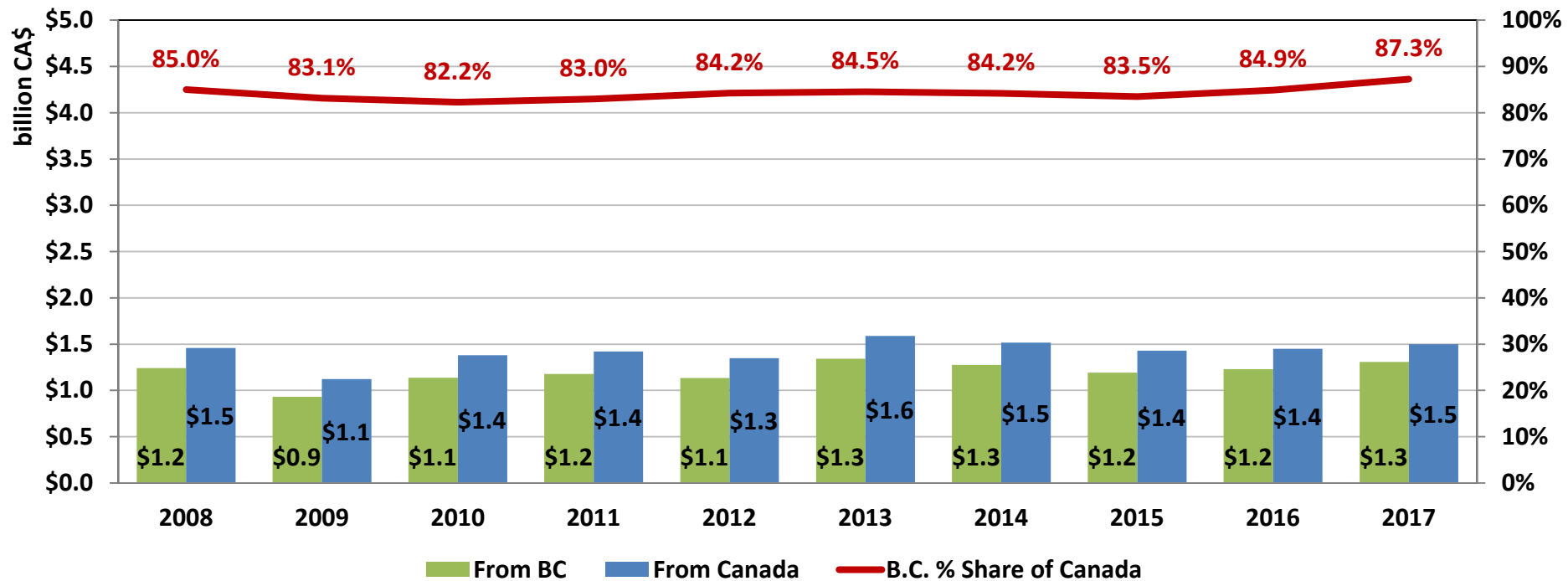
Forest Product Exports to China: B.C. and Canada



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – B.C.’s Share – B.C. accounted for 69.6% of Canada’s total forest product exports to China in 2017.

Forest Product Exports to Japan: B.C. and Canada



Data source: [B.C. Stats](#) extract from Statistics Canada data. Also available from Statistics Canada [CIMTD](#). Note historic data is subject to revisions.

Markets – B.C.’s Share – B.C. accounted for 87.3% of Canada’s total forest product exports to Japan in 2017.

Forest Sector Economic Multipliers

- ❖ The multipliers presented below are FLNRORD estimates of the contribution to key BC economic indicators of one million cubic metres of harvest. These estimates are based on a special run of the [B.C. Input-Output Model](#) (the IO Model). The Ministry uses these multipliers for economic impact analysis, such as the harvest impacts presented in Timber Supply Reviews.

Impact **per million m³** of Harvest (excludes waste and reject) - **dollar values in millions**

2011 Basis	Impact Type	Output	GDP	Household Income	Employment	Provincial Tax Revenue
Provincial	Direct	\$256	\$83	\$62	763	\$5.5
	Total (Direct + Indirect + Induced)	\$368	\$136	\$96	1,287	\$9.7

- ❖ The estimates combine impacts for the four forestry related industries reported by Stats Canada ([Forestry and Logging](#) with [Support Activities](#), [Wood Product Manufacturing](#), and [Paper Manufacturing](#)), and remove double counting of impacts that could arise because of inter-industry linkages (termed “delinking”)
- ❖ Impacts are presented for Output (sales value), Gross Domestic Product (GDP), Household Income, Employment, and Tax Revenue (corporate, income, and commodity taxes).
- ❖ Direct impacts and total impacts are shown. Total impacts include direct impacts, indirect impacts (on suppliers to the industry), and induced impacts (from direct and indirect employees spending their wages).
- ❖ These multipliers are calculated based on Statistics Canada’s information for 2011 and are currently being updated to the latest [National Accounts](#) data which is 2014.

Additional Sources for Data

- ❖ Canadian [National Forestry Database](#).
- ❖ Food and Agriculture Organization of the United Nations ([FAO](#))
- ❖ Natural Resources Canada [Forestry Statistics](#)