

Trends and Prospects
**UNECE Committee on Forests and the
Forest Industry**

October 2019

Prepared by:

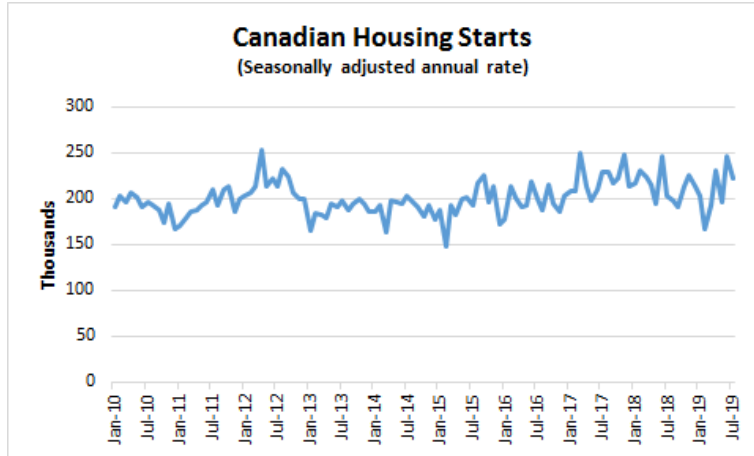
**Trade, Economics and Industry Branch
Canadian Forest Service
Natural Resources Canada**

October 2019

ABBREVIATIONS

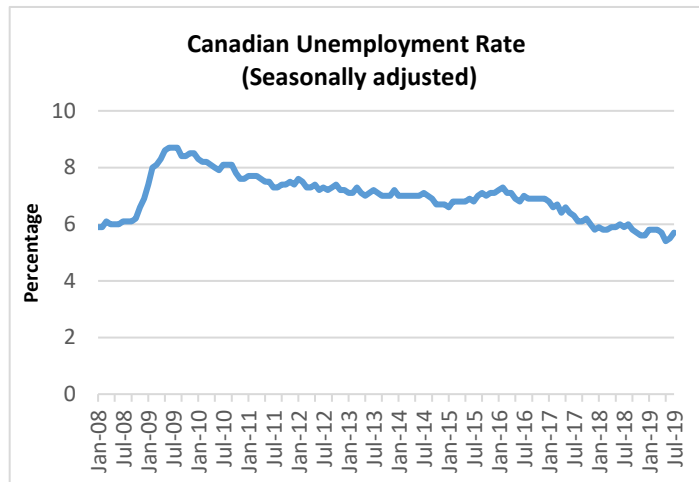
BEK	Bleached Eucalyptus Kraft
CCBFC	Canadian Commission on Building and Fire Codes
CCFM	Canadian Council of Forest Ministers
CCTF	Climate Change Task Force
CETA	Canada-European Union Comprehensive Economic and Trade Agreement
CFIA	Canadian Food Inspection Agency
CFS	Canadian Forest Service
CORSIA	Carbon Offsetting Reduction Scheme for International Aviation
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
CWC	Canadian Wood Council
ECCC	Environment and Climate Change Canada
EMO	Expanding Market Opportunities Program
FIP	Forest Innovation Program
GAC	Global Affairs Canada
GCWood	Green Construction through Wood Program
GHG	Greenhouse Gas
ICAO	International Civil Aviation Organization
IFI	Indigenous Forestry Initiative
IFIT	Investments in Forest Industry Transformation Program
ISPM	International Standards for Phytosanitary Measures
LCEF	Low Carbon Economy Fund
LNG	Liquefied Natural Gas
NAFTA	North American Free Trade Agreement
NBCC	National Building Code of Canada
NBSK	Northern Bleached Softwood Kraft
NDC	Nationally Determined Contribution
NRC	National Research Council Canada
NRCan	Natural Resources Canada
OPEC	Organization of the Petroleum Exporting Countries
OSB	Oriented Strand Board
PCF	Pan-Canadian Framework on Clean Growth and Climate Change
REDD+	Reduce Emissions from Deforestation and Forest Degradation
SBSK	Southern Bleached Softwood Kraft
SDG	Sustainable Development Goal
SFM	Sustainable Forest Management System
TWB	Tall Wood Building
UNFCCC	United Nations Framework Convention on Climate Change
UGW	Uncoated Groundwood Paper
WTO	World Trade Organization

Canadian housing starts have been steadily growing since the 2008 recession. However, the housing market cooled in 2018 due in part to interest rate hikes in 2017 and 2018 and new taxes on foreign investment in real estate. Housing starts climbed slightly in 2019 thanks to low mortgage rates and strong labour market conditions. In the near term, housing starts should continue to remain strong as these factors are expected to continue through the year's end.



Source: Statistics Canada

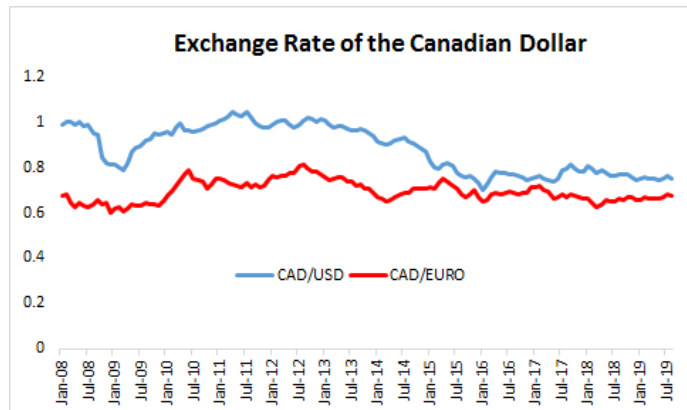
The labour market in Canada continues to improve. Employment was up 471,000 jobs (2.5%) in July 2018, compared to August 2017. The unemployment rate increased by 0.2 percentage points since June 2018 to 5.7%, after reaching a four-decade low of 5.4% in May. Unemployment for 2019 (from January to July) is currently at 5.7%.



Source: Statistics Canada

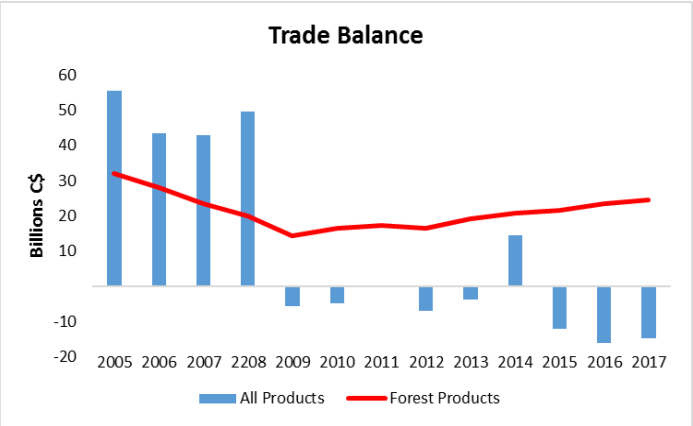
Growth in Canadian consumer spending has been slowing since the first quarter of 2017. The annual growth in consumer spending was 0.87% in 2017 and 0.34% in 2018. The reductions in 2018 can be largely attributed to the Bank of Canada's interest rate hikes. The first quarter of 2019 saw a growth in the spending rate to 0.71%, largely as a result of a falling unemployment and higher wages. However, growth in spending fell in the second quarter of 2019 to 0.14%, a rate not seen since 2012. This decrease has been attributed to risk aversion associated with a possible global economic recession.

The Canadian dollar has remained mostly unchanged against the U.S. dollar since January 2019. In contrast, the Canadian dollar has slightly strengthened against the Euro since the beginning of 2019, from €0.66 in January to €0.68 in August. Compared to last year, the CAD has weakened against the USD, falling from \$0.77 in 2018 to \$0.75 so far in 2019.



While this weakening dollar will help exports, it will also increase the cost of imported goods, which in turn slows consumer spending.

Canada’s forest product exports are a major contributor to Canada’s trade balance. While Canada’s total merchandise trade balance has been negative for eight of the last ten years, it has been positive for forest products for the last two and half decades. Forest products account for 7% of Canada’s total exports, totalling \$38.3 billion. Canada is the fourth largest forest product exporter in the world, behind the United States, China and Germany. Canada is the leading exporter of softwood lumber and newsprint.



Sources: Global Trade Atlas

II. Policy Measures in Canada Affecting Forest Management and Forest Product Trade

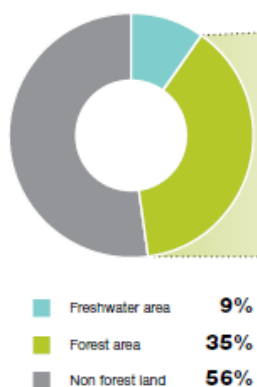
Commitment to Growth, Innovation, and to Sustainable Forest Management

Sustainable forest management (SFM) is a way of caring for forests to maintain their benefits over time. In Canada, SFM decisions and activities are based on scientific research, rigorous planning processes and public consultation.¹ Canada is a world leader in SFM, applying it across the country's publicly owned forests (94% of Canada's forestland). Most of Canada's forest (90%) is publicly owned and managed on behalf of Canadians by provincial and territorial governments. Another 2% is federally controlled, Indigenous Peoples own 2%, and the remaining 6% is under private ownership.

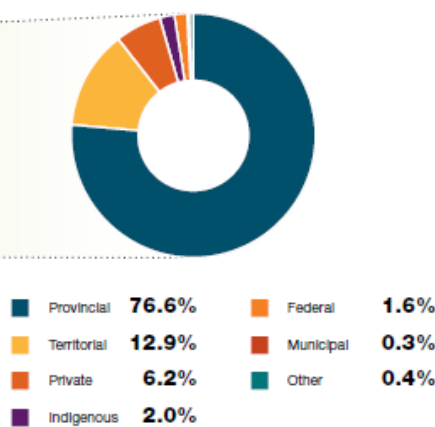
Canada's forests by the numbers

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

How much of Canada is forest?



Who owns Canada's forests?



Sources: *The State of Canada's Forests Annual Report 2018*

Canada is strongly committed to advancing economic growth through the development of forest resources based on long-standing SFM principles. All federal, provincial and territorial ministers responsible for forests work cooperatively on areas of common interest via the Canadian Council of Forest Ministers (CCFM). In May 2019, the CCFM endorsed *A Shared Vision for Canada's Forests: Toward 2030*, underlining their commitment to ensuring our forests continue to thrive over time. In support of the Vision, the CCFM will prioritize work that strengthens partnerships with Indigenous communities, increases forest resilience, fosters forest sector innovation, protects forests and communities from wildland fire and promotes Canada's environmental reputation.

Sustainable Forest Management Certification

¹ Canadian Council of Forest Ministers. *A Shared Vision for Canada's Forests: Toward 2030*. 2019

Canada has a comprehensive legislative and regulatory framework that governs forest management in each province and territory to provide assurances that Canada's forests are managed sustainably. These laws, regulations, and policies govern land use planning, forest management, public consultations, Indigenous participation, protected areas, forest tenure, allocation of wood for harvesting, and regeneration of forestland.

Additional third-party sustainable forest management certifications further demonstrate Canada's commitment to inclusive and sustainable forest management practices. Canada has 170 million hectares of forestland independently certified as sustainably managed by one or more of three globally recognized certification systems: the Canadian Standards Association, the Forest Stewardship Council and the Sustainable Forestry Initiative. The Sustainable Biomass Program, a certification program for woody biomass (e.g. wood chips and wood pellets), has also grown steadily in Canada since 2016.

Forests and Indigenous Communities

Forests are of tremendous value to communities across Canada – contributing not only economically but also providing important environmental, cultural, traditional, and spiritual benefits. This is particularly true for Indigenous communities, of which 70% are located in forested regions with a long history of forest stewardship. Changes in the forest sector are improving Indigenous Peoples' access to forest resources and increasing their involvement in decisions about how forests are and managed, and by whom.

Increasing participation of Indigenous groups in the forest sector labour force offers a key opportunity to mitigate localized labour scarcity, improve facility resiliency and support rural economic development. The forest sector is one of the largest employers of Indigenous people in Canada, with over 11,500 Indigenous workers, accounting for 6.2% of the sector's total workforce (higher workforce representation than any other industrial resource sector).

Forest Bioeconomy Framework for Canada²

To help catalyze innovation in the forest sector, the Canadian Council of Forest Ministers (CCFM)³ released the *Forest Bioeconomy Framework for Canada* in 2017, a comprehensive and systematic approach to developing Canada's forest sector. It aims to contribute to Canada's low carbon economy and support development of higher value forest products, services and processes. It envisions Canada as a global leader in the use of forest biomass for developing advanced bioproducts and innovative solutions. The framework also contributes to recognition of forests for the spiritual, cultural and recreational benefits they provide.

With new investment, more jobs, continued engagement with Indigenous Peoples, new technologies, and better supply inventory and modeling, the forest industry can sustain its history of innovation, sustainability, and competitiveness. The framework's four pillars and ten objectives are designed to address the challenges and opportunities facing the forest sector. The demand for

² <https://cfs.nrcan.gc.ca/publications?id=39162>

biomass supply and advanced bioproducts is poised to transform the industry into an active participant in the transition to a low carbon, highly innovative, and sustainable Canadian economy. The CCFM is currently establishing baseline data and beginning to track progress on the implementation of the framework across the country. The CCFM will release a report on progress in implementation of the Framework at its 2020 meeting.

Competitiveness Initiatives

The Government of Canada plays a key role in supporting the transformation and progression of the forest sector. In recent years, the federal government has implemented a number of initiatives to enhance the competitiveness of the forest industry by helping the sector develop new products and processes, and take action on new opportunities in both domestic and international markets.

To help Canada's forest sector continue to innovate and grow, Budget 2019 proposed to invest up to \$251.3 million over three years, starting in 2020–21, to Natural Resources Canada to extend existing innovation and diversification programs.

Innovation

Government of Canada support spans the innovation continuum from pre-commercial research and development in transformative technologies to later stage programs focusing on proving technologies at the commercial scale.

Forest Innovation Program⁴

The Forest Innovation Program (FIP) provides funding to four main areas: FPInnovations, the Canadian Wood Fibre Centre, Forest Biorefinery Collaboration and standards development.

FPInnovations⁵

The FIP provides funding to FPInnovations, Canada's principal forest industry research institute, to conduct collaborative, pre-commercial research and development in transformative technologies. Funded predominantly by over 200 industry members, the federal government and nine provinces, FPInnovations has developed some 40 new forest product or process innovations at various stages of technological readiness. From the promise of cellulose filaments and cellulosic nanocrystals, to mid-rise and tall wood buildings, to drones providing forest inventory data, to lignin extraction and biofuels, Canada's forest products industry is strongly positioning itself to capitalize on new, higher-value opportunities such as those in the emerging bioeconomy. These new uses will also provide valuable climate change mitigation tools and solutions for a low carbon economy, a key priority for the Government of Canada.

Canadian Wood Fibre Centre⁶

⁴ <https://www.nrcan.gc.ca/forests/federal-programs/13137>

⁵ <https://fpinnovations.ca/Pages/index.aspx>

⁶ <https://www.nrcan.gc.ca/forests/research-centres/cwfc/13457>

The Canadian Wood Fibre Centre is a collaborative effort between the Canadian Forest Service (CFS) and FPInnovations that conducts upstream research aligned with FPInnovations industry research efforts. Its work in forest inventory, fibre characterisation and production, and genomics is helping to ensure that the Canadian forest industry can get the right fibre to the right mill for the right product in a way that supports industry competitiveness and public confidence. The Centre's work on *Enhanced Forest Inventories* has redesigned the best practices for monitoring and managing Canada's forests. This work is recognized internationally in the United States, New Zealand and Australia.

Forest Biorefinery Collaboration⁷

The Forestry Biorefinery Collaboration brings together the research capacity of Natural Resources Canada, CanmetEnergy and FPInnovations, to further refine the technological solutions needed to support the forest industry's contribution to Canada's bioeconomy. Biorefinery technologies, including bioenergy (e.g. pyrolysis and gasification) and innovative uses of residues (e.g. lignin), support new revenue streams for Canada's mills, which increases their resilience and the security of the employment they provide. Three pulp and paper mills in Canada have added biorefinery applications to their operations, with many more expected. Extracted lignin is being used as an environmentally friendly adhesive in plywood. Gasification and liquefaction technologies are creating biogas and biofuels that can be used for heat, power, and transportation.

Standards Development

The development of national and international standards for novel biomaterials (cellulose nanocrystals, cellulose filaments, lignin, etc.) and their applications is facilitated through the Canadian Standards Association (CSA). This is being done in order to facilitate the regulatory approval and market acceptance of new products. Since 2014, the CSA has produced two national standards and led the development of one ISO standard for cellulose nanomaterials. The CSA also recently published a roadmap for the development of standards for lignin and the first standard is expected to be published in March 2020. This is a collaborative effort with the CSA, CFS, FPInnovations, National Research Council and the forest industry working together to produce both Canadian and international standards.

Forest Bioeconomy – Advanced Bioproducts

The development and deployment of advanced forest bioproducts as part of the Canadian forest bioeconomy continues to take shape, notably as attention has increased on plastic waste. In July 2019, the Government of Canada announced an investment totalling \$300,000 for the first phase of its Bioplastics Challenge. The Challenge aims at helping small businesses develop solutions for reducing pollution by turning forest-based residues into sustainable materials. A highly compostable packaging bioplastic made from paper mill sludge and wood fibre residue and a plant-based and compostable single-use coffee pod made from bioplastic and wood fibre will continue to be developed and refined.

⁷ <https://www.nrcan.gc.ca/energy/efficiency/industry/processes/systems-optimization/research-development/5603>

Reflecting the growing importance of the bioeconomy, Canada is co-chairing the International Bioeconomy Forum (IBF) between 2016-2020 with the European Commission. The IBF is a flexible, multilateral group that facilitates dialogue on key issues related to the development of a sustainable, global bioeconomy.

Investments in Forest Industry Transformation⁸

Since 2010, the Investments in Forest Industry Transformation (IFIT) program has been supporting the Canadian forest sector, and the communities that depend on it, to bring about first-in-kind innovation and transformation. The IFIT program has:

- **Improved environmental performance-** production of green electricity and renewable fuels, reduction of greenhouse gas emissions, increased energy efficiency, and carbon capture;
- **Diversified markets with new, higher value products-** new biomaterials, advanced building products and construction materials; and,
- **Increased competitiveness and economic sustainability-** jobs created, jobs secured, new revenue streams for companies, diversification of product portfolios.

To date, the program has funded 34 projects involving mostly world-first technologies, with 70% of projects creating new products or diversifying recipients' product offerings. For every \$1 invested by the IFIT program, \$5.06 is leveraged from other sources.

The additional \$55 million provided under the *Softwood Lumber Action Plan* will help bring the next wave of innovation to the market and further solidify Canada's position as a leader in forest industry transformation. Recently funded projects include:

- Establishment of the first industrial wood pellet and sawmill complex in Canada that will use a high content of bark in its production line;
- Installation and development of a new converting system for the manufacture of new corrugated products that can be replicated across the Canadian forest products industry;
- Construction of a commercial demonstration facility that will produce 300 tonnes per year of cellulose nano-crystals with state of the art equipment and processes; and,
- Installation and implementation of a waste heat recovery system that harnesses waste heat and uses it in the drying process, instead of being expelled into the atmosphere.

Indigenous Forestry Initiative and Clean Energy for Rural and Remote Communities⁹

Natural Resources Canada's Indigenous Forestry Initiative (IFI) is a proposal-based contribution program that encourages Indigenous participation in the forest economy. The IFI aims to increase Indigenous participation in forestry-related opportunities, businesses, careers and governance. Investments target Indigenous entry into markets such as clean technologies and participation in Canada's emerging forest bioeconomy, management and use of forest resources, and economic

⁸ <https://www.nrcan.gc.ca/forests/federal-programs/13139>

⁹ <https://www.nrcan.gc.ca/forests/federal-programs/13125>

opportunities from environmental stewardship. In 2019-20, the IFI is supporting 55 new and continuing projects, with First Nations, Métis, and Inuit communities.

The Clean Energy for Rural and Remote Communities (CERRC) – BioHeat Stream is helping communities across Canada reduce their reliance on diesel fuel used for heat and power through the installation, retrofit or investigation into the feasibility of biomass heating and combined heat and power systems. CERRC – BioHeat will receive \$55M over 6 years to deploy forest-based bioenergy technologies in rural and remote communities. In 2019-2020, CERRC-BioHeat is supporting 34 projects, with 19 agreements already signed.

Markets

Expanding Market Opportunities Program¹⁰

The Expanding Market Opportunities Program (EMO) helps to increase and diversify market opportunities for Canada's forest sector by promoting the broader use of Canadian wood products, both domestically and abroad.

Since the inception of the EMO program, Canadian export markets have shifted away from a reliance on the traditional US market. In 2001, 85.5% of all Canadian wood exports were to the United States. At the end of 2018, 76% of wood exports were shipped to the United States. Increased exports have been predominately to Asia, with the value of Canadian wood exports to China increasing nearly 10-fold between 2007 and 2018 to \$1.6 billion. In South Korea, they grew by over 63% to \$182 million during the same period. This increased growth in offshore exports have helped protect and create and estimated 5000 direct jobs, mostly in rural areas (predominantly in BC and Québec).

The EMO program has also supported industry efforts to increase wood use domestically in non-residential buildings such as schools, health care facilities and commercial outlets, as well as mid-rise buildings up to six storeys and tall wood buildings. As a result, industry efforts have led to wood being used in more than 1,890 non-residential construction projects in Canada, since 1998 representing an estimated \$1.1 billion in new wood sales for the wood product sector.

In addition, EMO also helps to advance public acceptance of tall wood buildings and achieved a number of milestones under a *Tall Wood Building Demonstration Initiative* such as the Origine Building¹¹ and the University of British Columbia's Brock Commons Tallwood House¹².

Results from research and development activities, funded by NRCan and used to support the design and approval process of the two TWB demonstration projects, have been shared widely with the National Building Code of Canada (NBCC) Code Committee in support of a code change proposal put forward by CWC to allow 12-storey encapsulated mass timber buildings in the 2020 edition of the NBCC. The construction of the two tall wood building demonstration projects funded by

¹⁰ <https://www.nrcan.gc.ca/forests/federal-programs/13133>

¹¹ <https://www.nordic.ca/en/projects/structures/origine>

¹² <https://www.naturallywood.com/emerging-trends/tall-wood/brock-commons-tallwood-house>

NRCan has also inspired interest in tall wood buildings by provincial governments in British Columbia and Québec and by the design and construction communities across the country.

The program is working with partners to identify potential demonstration projects in key Asian markets and to continue to showcase Canadian-style wood construction techniques and applications of mass timber materials.

Green Construction through Wood¹³

The Government of Canada is building on the success of the *Tall Wood Building Demonstration Initiative* by investing in new programs to facilitate greater market and regulatory acceptance of non-traditional mass timber structures. The Green Construction through Wood (GCWood) program, launched in October 2017, supports innovative wood demonstration projects and the adoption of tall wood buildings in Canadian building codes in addition to advancing wood education at Canadian engineering and architectural schools. GCWood has a budget of \$39.8M over four years (2018/19 – 2022/23) and funds projects that encourage:

- Adoption and commercialization of innovative wood-based products and systems in the construction of high-rise buildings, bridges, and low-rise non-residential buildings;
- Advanced training and education and the development of design tools targeted at designers, specifiers, architects, and building officials; and,
- Research that addresses the gap in technical information needed to facilitate and support revisions to the 2020 and 2025 National Building Code of Canada to allow tall wood buildings up to 12 storeys and beyond the current 6 storey limit.

Three calls for “Expressions of Interest” on tall wood buildings, low-rise non-residential construction and timber bridges were launched starting October 2017. Over 20 demonstration projects across the three categories have been selected for support, the majority of which now have funding agreements in place, with many demonstration projects at an advanced stage of design development and are ready for construction.

Climate Change

Adaptation

The CCFM Climate Change Task Force (CCTF) undertook collaborative work across provinces and territories on adaptation in forestry and completed its mandate after eight years of activity from 2008-2016. The CCTF developed climate change adaptation tools and techniques designed to be readily mainstreamed into day-to-day forest management planning and decision-making. The tools, which are currently being field-tested, include:

- An assessment of tree species vulnerability and management options for adaptation;
- A scalable, nationally-applicable vulnerability assessment framework for sustainable management under climate change;

¹³ <https://www.nrcan.gc.ca/forests/federal-programs/gcwood/20046>

- A number of adaptation knowledge syntheses; and,
- A guidebook for mainstreaming climate change into sustainable forest management.

In addition, the CCFM supports a Forestry Adaptation Community of Practice¹⁴ to facilitate the sharing of best practices and lessons learned in adaptation among researchers, policy-makers, and forest managers across Canada.

Within the Climate Change Adaptation Platform, the Forestry Adaptation Working Group, chaired by NRCan–CFS with members from Canada’s provinces, territories, forest industry and academia, produced a *State of Play* (2017) report¹⁵. This report describes the status of adaptation activities, forest policy and regulations across Canada, up to and including 2016. Since 2011, CFS in collaboration with various partners and stakeholders has continued to develop and apply science-based adaptation information and tools to help inform decision-making and support “climate-wise” landscape policy, planning, and sustainable forest management¹⁶. NRCan also disseminates adaptation information and tools such as maps, synthesis reports, guidebooks, climate projections and decision-support systems to the public, to improve social awareness of climate change impacts and options for adaptation.

International Efforts

With the adoption of the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) in December 2015, countries, including Canada, committed to putting forward their own emissions reduction targets, known as nationally determined contributions (NDCs), as well as raising the ambition of their climate change efforts over time.

Canada actively participates in UNFCCC negotiations, including on the development of guidance for the implementation of the Paris Agreement. In these negotiations, Canada supports the inclusion of forest and other lands in a manner that contributes to reducing anthropogenic emissions and enhancing anthropogenic carbon removals. Canada believes that sustainable forest management and better use of wood should play a key role in mitigating the effects of climate change.

Canada also participates in the development of methodological frameworks to Reduce Emissions from Deforestation and Forest Degradation and enhance sustainable forest management in developing countries (REDD+). The final REDD+ methodological guidance under the UNFCCC was adopted in 2015 and, since then, the focus of global REDD+ efforts has been on facilitating implementation. To that end, Canada supports multilateral REDD+ initiatives such as the Forest Carbon Partnership Facility, where Canada is a donor to both the Readiness and Carbon Funds. In 2017, Canada took a lead role in coordinating consultations for the operationalization of results-based payments for REDD+ under the Green Climate Fund, a part of the financial mechanism of the UNFCCC.

¹⁵ <https://cfs.nrcan.gc.ca/publications?id=38871>

¹⁶ <https://www.nrcan.gc.ca/climate-change/impacts-adaptations/climate-change-impacts-forests/forest-change-adaptation-tools/17770>

Canada provides international climate finance in support of mitigation and adaptation actions by developing countries. In 2015, Canada announced a new climate finance package valued at \$2.65 billion over five years, including a \$300 million contribution to the Green Climate Fund, which is aimed at supporting projects, programs, policies and other activities (including REDD+) to address climate change in developing countries. Canada announced a second \$300 million contribution to the Green Climate Fund in August 2019 as part of the second replenishment of the Fund.

Domestic Emission Reduction Efforts

In May 2017, Canada submitted its NDC to the UNFCCC, confirming its previous pledge to achieve an economy-wide reduction in GHG emissions by 30% below 2005 levels by 2030. This pledge is in addition to Canada's commitment to reduce GHG emissions by 17% by 2020.

Pan-Canadian Framework on Clean Growth and Climate Change¹⁷

In March 2016, Canada's First Ministers released the Vancouver Declaration in which the federal, provincial and territorial governments agreed to create a plan to reduce GHG emissions, create clean jobs, support economic growth, and increase Canada's resiliency to the impacts of climate change. In December 2016, the governments adopted the Pan-Canadian Framework on Clean Growth and Climate Change (PCF). This framework has four main areas:

1. Carbon pricing;
2. Complementary (mitigation) actions to reduce GHG emissions;
3. Adaptation and climate resilience; and
4. Clean technology and innovation.

There are four specific forest-related commitments:

1. **Increasing stored carbon-** protect and enhance carbon sinks, including in forests.
2. **Increasing the use of wood for construction-** encourage the increased use of wood products in construction, including through updated building codes.
3. **Generating bioenergy and bioproducts-** identify opportunities to produce renewable fuels and bioproducts.
4. **Advancing innovation-** enhance innovation to advance GHG-efficient management practices in forestry.

Federal Carbon Pollution Pricing Benchmark

The federal government has established a benchmark to ensure that carbon pricing applies to a broad set of emission sources throughout Canada. Provinces and territories have flexibility to implement a carbon tax, cap and trade, or alternative carbon pricing system, and all revenues raised will remain in the jurisdiction of origin. The federal benchmark has been implemented in 2019 and contains two parts – a regulatory charge on fuel (fuel charge) and a trading system for large industry (the output-based pricing system). The federal fuel charge has been in effect in Saskatchewan, Ontario, Manitoba, and New Brunswick since April 2019 and in Nunavut and

¹⁷ <https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework.html>

Yukon since July 2019. The federal fuel charge will also apply in Alberta beginning in 2020. The federal pricing system for industry took effect in January 2019 in Ontario, Manitoba, New Brunswick, Prince Edward Island, and Saskatchewan (electricity and natural gas transmission pipeline sectors only), and in Yukon and Nunavut since July 2019. Under the federal benchmark the carbon price started at \$20 per tonne CO_{2e} of emissions in 2019 and will rise by \$10 per year to \$50 per tonne in 2022. The overall carbon pricing approach will be reviewed by 2022 to assess the path forward. A federal GHG offset system to encourage cost-effective domestic GHG emission reductions from activities that are not covered by carbon pollution pricing is also under development.

Clean Fuel Standard

The Government of Canada is developing a Clean Fuel Standard to reduce the life cycle carbon intensity of fuels and energy used in Canada. The objective of the Clean Fuel Standard is to achieve 30 million tonnes of annual reductions in GHG emissions by 2030. In meeting its GHG reduction goal, the Clean Fuel Standard will aim to stimulate investments and innovation in low-carbon-intensity fuels while enabling low-cost compliance. The Clean Fuel Standard is one of the complementary policies under Canada's climate plan, which will work in concert with carbon pollution pricing to reduce emissions across the economy.

The Clean Fuel Standard regulations will cover all fossil fuels used in Canada, but will set separate requirements for liquid, gaseous and solid fossil fuels. It is being developed in a phased approach. The regulations for the liquid fossil fuel class are being developed first, with draft regulations planned for publication by early 2020 and final regulations by early 2021. Draft regulations for the gaseous and solid fuel classes are targeted for publication in mid-2021, with final regulations in 2022. The government intends to bring liquid class regulations into force in 2022 and the gaseous and solid classes in 2023.

The Low Carbon Economy Fund

To support new provincial and territorial actions under the PCF, the Canadian federal government launched the \$2 billion Low Carbon Economy Fund (LCEF) in June 2017. Enhancing carbon sinks and reducing GHG emissions from the forest sector is one priority area. The LCEF will support projects that meet the following criteria:

- Material reductions in GHG emissions;
- Incremental to existing actions;
- Contribute to meeting Canada's 2030 emission reduction target; and,
- Cost-effective.

The LCEF has two envelopes. One of the envelopes, the \$1.4 billion Leadership Fund, supports commitments by provinces and territories that have adopted the PCF, with each province or territory receiving a specific funding allocation. Among other things, efforts by five provinces and territories to enhance forest sinks are being supported - bilateral funding agreements are in place. A further \$450 million of LCEF funds supports the Low Carbon Economy Challenge, in which projects are selected from among those submitted by provinces and territories, municipalities,

Indigenous governments and organizations, businesses and not-for-profit organizations. Multiple project proposals involving forest sector facilities have been submitted. The approval of proposals and preparation of agreements under the Challenge Fund are being finalized.

The Role of Forests in a Changing Climate

In its NDC, Canada indicated its intent to account for the land sector, as well as for harvested wood products, and to exclude the impacts of natural disturbances. However, the impact of forest management activities on GHG emissions and carbon storage can be difficult to measure due to significant inter-annual variability caused by natural disturbances. Starting with its 2017 National GHG Inventory Report, Canada implemented a new approach for estimating anthropogenic emissions and removals in managed forests that separates forest stands impacted by anthropogenic and natural drivers. Under this approach, emissions and removals from managed forest stands that have been impacted in recent history by significant natural disturbances (e.g. wildfires, insect infestations) are tracked separately from anthropogenic emissions and removals, and only considered anthropogenic once again when the stands have reached commercial maturity or pre-disturbance aboveground biomass, depending on the type of disturbance. All emissions and removals from the managed forest are reported in the text of Canada's National GHG Inventory Report. For more information, please refer to Section 6.3.1 and Annex 3.5 of the 2019 National GHG Inventory Report¹⁸.

Canada expects that the land sector including forests will provide an important contribution to its broader climate change mitigation efforts. Federal, provincial and territorial governments are currently exploring how best to achieve forest-related mitigation, including through changes in forest management, increased afforestation, increased use of harvested wood as a substitute for emissions-intensive products, and increased use of harvest residues for bioenergy in place of fossil fuels. Canada's Greenhouse Gas and Air Pollutant Emissions Projections report¹⁹ published in December 2018 provided emission and accounting projections for the land sector. The emission projections focused on impacts of human activities. Canada's managed forest has been a carbon sink since 1990 (net removals of 210 MtCO₂e in 1990 and 150 MtCO₂e in 2016) and is projected to still be a carbon sink of 140 MtCO₂e in 2030.

Provincial & Territorial Actions

Many of Canada's provinces and territories are taking action to address climate change and reduce GHG emissions, but this section only summarizes actions of the four largest provinces. More details on provincial/territorial actions is available in Canada's Seventh National Communication to the UNFCCC²⁰, Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2018²¹, and

¹⁸ <https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2019>

¹⁹ <https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/projections-2018.html>

²⁰ https://unfccc.int/files/national_reports/national_communications_and_biennial_reports/application/pdf/82051493_canada-nc7-br3-1-5108_eccc_can7thncomm3rdbi-report_en_04_web.pdf

²¹ <https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/projections-2018.html>

the second annual Synthesis Report on the Status of Implementation of the PCF published in 2018²².

In 2017, a preliminary version of the Quebec's Wood Charter was published to increase the use of wood in non-residential and multi-family construction in Quebec. In 2018, Quebec announced its Wood Production Development Strategy to support 43 measures within five focus areas. One of these focus areas is the forest sector's contribution to the climate change mitigation goals and activities to increase carbon sequestration in the forest and in forest products. Quebec's Wood Innovation Program announced in 2016 supports the transformation and modernization of the forest products industry, with over \$95 million in government investments by 2024, as indicated in its budget plan 2019-2020.

In Ontario, the government released A Made-in-Ontario Environment Plan²³ in 2018 for public consultation. The new plan indicates that Ontario will reduce its GHG emission by 30% below 2005 levels by 2030. Two core measures to achieve this goal are the Clean Fuel policy and the Natural Gas Conservation Action in Ontario. The Environment Plan under consultation also aims to increase the use of Ontario timber in building, construction and renovation, promote the use of renewable forest biomass, as well as improve data and information on GHG emissions and carbon storage from forests, the changing landscape and permafrost. Ontario's 50 Million Tree Program is continuing, now with federal support. As of 2019, more than 27 million trees have been planted through the program, producing 15,000 hectares of new forest.

The Government of Alberta announced new measures in 2019, including regulating large emitters with the new Technology Innovation and Emissions Reduction (TIER) system starting in January 2020, and employing the Renewable Fuel Standard to enforce the use of renewable products in fuels. Alberta's Carbon Offset System is a regulatory program established in 2017 that continues to enable facilities regulated under the Carbon Competitiveness Incentive Regulation (CCIR) to purchase and retire emission offsets to meet compliance obligations.

In 2018, the Government of British Columbia (B.C.) released its CleanBC Plan²⁴ highlighting a set of across-sector actions to help meet British Columbia's emissions reduction target of an 80% reduction below 2007 levels by 2050. In addition to the actions in CleanBC, the government continues several initiatives and policies like the Carbon Neutral Government and carbon tax. The government is also taking specific actions to enhance the carbon storage potential of British Columbia's public forests. The \$290 million (co-funded with the federal government via LCEF) Forest Carbon Initiative uses a portfolio approach to enhance the carbon sequestration capacity of B.C.'s forests with the rehabilitation of wildfire and mountain pine beetle sites, and other areas where there is no legal obligation for replanting. The initiative aims to increase planting density and the use of residual wood, to improve the use of forest fibre for biofuels and longer-lived wood products, and to promote sustainable forestry practices. As well, B.C.'s Wood First Initiative encourages the innovative use of wood in buildings. In addition, British Columbia has also

²² <http://www.publications.gc.ca/site/eng/9.847802/publication.html>

²³ <https://prod-environmental-registry.s3.amazonaws.com/2018-11/EnvironmentPlan.pdf>

²⁴ https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_2018-bc-climate-strategy.pdf

developed policies and projects to increase the use of low carbon and renewable materials in all public sector infrastructure projects.

Update on Progress

In December 2018, Canada published the second annual Synthesis Report on the Status of Implementation of the PCF²⁵. The report indicated that, in the second year of implementation, work continued to implement over fifty actions introduced in the PCF. Continued collaboration between federal, provincial, and territorial governments as well as partnerships with Indigenous Peoples and engagement with stakeholders remained a cornerstone of PCF implementation. In 2018, the federal Greenhouse Gas Pollution Pricing Act was adopted, along with significant progress in implementing a suite of complementary actions to reduce GHG emissions, such as regulations for the coal-fired and natural gas-fired electricity generation and methane regulations for the oil and gas sector. Governments also continued to make progress on a range of adaptation initiatives designed to build resilience to the impacts of the changing climate.

Canada's GHG National Inventory Report²⁶ (published in April 2019) showed that emissions were 716 Mt CO₂e in 2017 or 2.0% below 2005 emissions. Canada's latest emissions projections were published in the Greenhouse Gas and Air Pollutant Emissions Projections report²⁷ released by Environment and Climate Change Canada in December 2018. By considering the impacts of federal, provincial and territorial policies and measures that have been announced but are not yet fully implemented, the report projects GHG emissions of 592 MtCO₂e across all sectors (including the land sector) in 2030. Additional efforts will be needed to achieve Canada's target of 513 Mt in 2030.

Major Forest Disturbances in Canada

Wildland Fire in Canada

Canada is experiencing the effects of climate change (warmer temperatures, unpredictable precipitation, more lightning strikes, drier forest conditions) that are resulting in longer fire seasons, an increase in the number of large forest fires and the total area burned. Since the 1970's, annual area burned has almost doubled and the number of large fires (greater than 200k hectares) has increased significantly. Since 1990, there has been an average of 7,500 wildfires burning approximately 2.4 million hectares per year, with these numbers trending upwards. Over the last decade, more than half of the years saw an area burned well above the annual average and experienced large fire events where wildfires grew to greater than 200k hectares in size. Experts predict that by 2100, the average annual area burned could double²⁸.

²⁵ <https://www.canada.ca/en/environment-climate-change/services/climate-change/pan-canadian-framework-reports/second-annual-report.html>

²⁶ <https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/inventory.html>

²⁷ http://publications.gc.ca/collections/collection_2018/eccc/En1-78-2018-eng.pdf

²⁸ <https://www.nrcan.gc.ca/forests/topics/fires-insects-and-disturbances/blueprint-wildland-fire-science-canada-2019-2029/21614>

This increase in annual area burned, combined with an increase in the number of people living, working, and recreating in our forests, has resulted in rising fire management costs, increased property and economic losses and higher post-event recovery costs for governments, citizens, and private industry. Total costs for wildfire management activities over the last decade have ranged between \$800 million and \$1.4 billion per year, depending on the level of fire activity. Costs have risen by about \$120 million per decade since the 1970s, and average annual costs for the country will continue to rise. Devastating fires like those in the province of British Columbia in 2017 and 2018, and in the province of Alberta in 2016, are extremely expensive to manage and result in evacuations, damage to homes and businesses, and huge losses of merchantable timber.

Given the rising costs, impacts to communities and the need to work collaboratively on wildfire management and research, Provincial, Territorial and Federal governments are working together to advance the *Canadian Wildland Fire Strategy*²⁹ through a range of actions. These include improving cross-jurisdictional preparedness and response capability, increasing investments in fire research innovation and enhancing commitments to resilient communities. The government of Canada has recently invested additional funding to increase wildfire risk assessment, to accelerate development of modernized management tools for more effective fire behaviour and monitoring support and to support research collaborations to address knowledge gaps.

Pests

Spruce Budworm in Eastern Canada

Spruce budworm is one of the most damaging pests in North America, with most regions of Canada reporting damage by defoliation each year. During major outbreaks, spruce budworm causes disruptions to the forest industry and affects jobs, recreation and tourism, especially for those communities and regions that are heavily forest-sector dependant. The last extensive outbreak of spruce budworm in Canada reached its peak in the 1970s, and covered more than 50 million hectares across Quebec, Ontario, and Atlantic Canada, resulting in fibre losses of approximately 500 million cubic metres of spruce and fir, with a commercial value of approximately \$12.5 billion in Quebec alone.

The most recent spruce budworm outbreak began in 2006 in Quebec. As of 2018, it had spread to cover more than 8 million hectares, with the potential to spread further through Canada's Atlantic provinces, Ontario and the eastern United States. Due to the potential negative effects of an outbreak in eastern Canada, the federal government is working with provincial partners, industry, and academia to test and evaluate early intervention strategies aimed at minimizing the extent of the epidemic by targeting low-population spruce budworm epicentres.

The Government of Canada is providing funding of up to \$74 million over 2019-2023 for the Spruce Budworm Early Intervention Strategy Phase II. It leverages an additional \$50 million from the provinces of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador, and industry. The strategy aims to equip the Canadian forest sector with an innovative,

²⁹ <https://www.ccfm.org/english/coreproducts-wildlandfires.asp>

science-based, and effective pest management approach that can be applied to impending outbreaks of spruce budworm across Canada. Natural Resources Canada researchers will continue to work closely with provincial governments and the forest sector across Canada to develop science-based solutions to protect forests and keep spruce budworm populations low. Research results to date are positive, indicating that an early intervention strategy may be a viable option to manage the spruce budworm.

Mountain Pine Beetle in Western Canada

The mountain pine beetle is a native insect that attacks pines in western North American forests. Since the current beetle epidemic started in the early 1990s, mountain pine beetles have killed more than 50% of British Columbia's commercial pine and caused widespread timber losses in dense stands of lodgepole pine in the central interior of the province. The beetle has now spread far beyond its historic range into northern British Columbia and eastward into the boreal forest of north-central Alberta. In addition, the infestation in and beyond Canada's national parks in the Rocky Mountains creates risks for surrounding provincial forests and forest industry operations. Scientists have recently completed a risk assessment of the risk that the beetle may continue to spread eastward across Canada's boreal forest³⁰.

The Government of Canada is concerned about the impact of the beetle infestation on forest communities and is working in collaboration with the provinces, territories, stakeholders and communities across Canada to respond to the challenges it poses. Research on mountain pine beetle in newly invaded ecosystems supports strategic approaches to slow the spread of the mountain pine beetle.

Emerging Issues

The emerald ash borer is an invasive insect that represents a serious threat to urban trees and natural forests in Canada. In the past year, emerald ash borer has been detected in the county of Halifax, Nova Scotia and new areas of New Brunswick. Prior to these announcements, emerald ash borer was found in Ontario, Quebec, Winnipeg (Manitoba), and Edmundston (New Brunswick). All native North American ash trees are susceptible to the emerald ash borer and it has killed millions of ash trees in southern Ontario, Quebec, Michigan and surrounding U.S. states. In infested areas, 99% of ash trees are expected to die within 10 years of the first detection of the insect. A study in Canada estimated that, over a 30-year time horizon, the potential costs of emerald ash borer to Canadian municipalities could be \$524 million or higher. Research helps improve the effectiveness of detection and management response to limit the economic and ecological impact of the insect.

Trade Policy

In addition to the *North American Free Trade Agreement* (NAFTA) (1994) with the United States and Mexico, Canada has free trade agreements in force with:

- The 11 parties of the *Comprehensive and Progressive Agreement for Trans-Pacific Partnership* (CPTPP) (2018)

³⁰ <http://cfs.nrcan.gc.ca/publications?id=39805>

- The European Union through the *Comprehensive Economic and Trade Agreement (CETA)* (2017);
- Ukraine (2017);
- Korea (2015);
- Honduras (2014);
- Panama (2013);
- Jordan (2012);
- Colombia (2011);
- Peru (2009);
- The European Free Trade Association (2009);
- Costa Rica (2002);
- Chile (1997); and,
- Israel (1997, modernized in 2019).

In 2018, Canada concluded negotiations of the *Canada-United States-Mexico Agreement (CUSMA)*. Once signed and entered into force, the CUSMA will supersede the NAFTA.

Canada is also negotiating free trade agreements with Mercosur, the Pacific Alliance, India, Japan, Morocco, the Caribbean Community, the Dominican Republic, Singapore, Guatemala, Nicaragua and El Salvador. Canada is engaged in exploratory trade discussions with ASEAN, China, Turkey, the Philippines, and Thailand. Canada is seeking to incorporate forests as part of these agreements.

Phytosanitary Measures

Canadian experts take an active role in international fora related to phytosanitary measures, including: the North American Plant Protection Organization, the International Plant Protection Convention and the International Forest Quarantine Research Group. Phytosanitary scientific research is conducted nationally and coordinated internationally to ensure that import regulations for internationally traded wood commodities are based on the best available science. The resulting phytosanitary tools and protocols help prevent the introduction of harmful pests into Canada and ensure Canada's export products meet international standards, minimizing the risk of spreading pests to other countries.

Within the International Plant Protection Convention, Canada is a global leader and is active in the development of regional and international phytosanitary standards (e.g. wood packaging standard, ISPM 15, and the international movement of wood standard, ISPM 39). The *Canadian Heat Treated Wood Products Certification Program* is the official certification system for the export of wood products to countries requiring heat treatment. The Canadian Wood Packaging Certification Program certifies that the wood packaging materials for export satisfies the international requirement of ISPM 15.

Facilitating Identification of Timber in Trade

Canada's *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act* and its enabling regulation (the *Wild Animal and Plant Trade Regulation*) prohibit the

import of timber and timber products into Canada that were taken, possessed, distributed or transported in contravention of any foreign laws.

Canada is interested in the application and development of science to better track forest commodities in trade and, through national and international collaboration, to contribute to global efforts to address illegality in forest harvesting and international forest product trade. Canada held two timber identification workshops in 2018. One focused on applying the latest scientific methods to identify CITES and non-CITES listed tree species and their geographic origins. The other workshop focused on hands-on tropical wood identification and assessing risk of wood shipments. Over the next two years, Canada will fund domestic research to address priorities identified during these workshops.

III. Market Drivers & Trends

The Canadian forest sector saw strong consecutive growth from 2013 until 2017; however, that growth has slowed annually since its peak in 2014. At the same time, the overall Canadian economy grew 2.3%. Production in 2018 declined for softwood lumber, newsprint and wood pulp.

The current wealth of the sector is still reliant on traditional trading partners (the U.S.) and on traditional uses of wood (pulp, paper and softwood lumber). However, the ongoing strength of emerging markets has contributed to significant market diversification over the past decade. In 2008, over 71% of forest product exports were destined to the U.S., by 2018 this dropped to 66.0%. The demand for wood products and wood pulp in Asia, and China in particular, has grown significantly over the past decade as economies expand. The share of forest product exports destined for China increased from 6% in 2008 to 15% in 2018, however this was unequally distributed across forest products. For example, the value of Canadian softwood lumber exports to China has increased by 500% over the last decade, while across the same period exports for wood pulp increased approximately 30%.

Sustainability

Increased global focus on climate change mitigation and environmental sustainability is driving demand for new, lower impact products and technologies to substitute conventional fossil-based products or energy and carbon intensive processes and technologies. For example: mass timber can be used as an alternative to concrete and steel when constructing tall buildings, bioplastics as a substitute for plastics derived from fossil fuels, biomass liquid fuels as an alternative to fossil fuels, and wood pellets to create thermal energy.

Energy Prices

Lower energy costs have had a mixed impact on the competitiveness of the forest industry. The low cost of natural gas puts many bioenergy producers, as well as pulp and paper mills, running on bioenergy at a pricing disadvantage. In contrast, lower priced transportation fuels would assist the sector in lowering the cost of transportation, which accounts for 15-30% of total delivered product cost.

Exchange Rates

Following the end of the 2008/09 global recession, the Canadian dollar (CAD) has been steadily declining against the US Dollar (USD) and returning to historical levels. However, the US Federal Reserve's recent interest rate decline combined with the Bank of Canada's decision to keep the Canadian interest rate steady will have a strengthening effect on the CAD. Given the fact that 65% of forest products in Canada are exported, a weak CAD will generally benefit the Canadian forest sector. However, there are some negative impacts of a weaker CAD, such as Canadian companies holding debt in USD will have higher debt servicing costs.

Outside of the U.S. market, the exchange rate has been less beneficial to Canadian forest products' competitiveness. In recent years, other countries' currencies—such as the Russian Ruble and the

Euro—have depreciated against both the Canadian and U.S. dollars, which gave those nations a competitive boost in some international markets, such as China.

U.S. Housing Market

The U.S. housing market is a major driver of softwood lumber and wood panel demand in North America. While the U.S. housing market has strengthened considerably from the depths of the 2008 recession, recovery continues to be slower than anticipated. In the first seven months of 2019, annualized starts averaged 1.2 million units, down from the 1.3 million in 2018. This level of housing starts is slightly below the long-term (20-year) average of 1.3 million annual starts. Another feature of the housing recovery is a greater proportion of multi-family starts, which has been steadily rising over the last decade from 20% of total starts in 2009 to 30% so far in 2019. As single-family homes use about three times the amount of structural lumber as multi-family units, the growth in the share of multi-family starts has contributed less to softwood lumber demand than would have been seen with similar growth in single family starts.

National Building Code Changes

NRCan has funded critical research that led to the successful adoption of mid-rise 5- and 6- storey wood frame construction in the 2015 Edition of the National Building Code of Canada (NBCC). These provisions have been crucial for the construction of larger and taller wood buildings, and have been helping in fostering greater use of wood in public and private buildings across Canada. For example, over 650 mid-rise wood frame buildings have been constructed, currently under construction or at the design/development stage across Canada since the adoption of mid-rise building code revisions.

Building on the successful adoption of the mid-rise provisions in the 2015 edition of NBCC, NRCan has been working closely with the Canadian Wood Council, the National Research Council and FPInnovations to support code changes that would facilitate the construction of even taller and larger wood buildings (up to 12 storeys) targeting the 2020 edition of the NBCC. NRCan has been providing funding under the Green Construction through Wood Program to support the code change process itself (i.e., developing the code change proposal and facilitating code committee meetings) and research needed to fill knowledge gaps identified by the code committee. The technical information has been critical for the development of the proposed code changes and in supporting the discussions and addressing some of the concerns raised at the code committee and in the various public reviews on the proposed provisions. The technical information is also intended to support performance-based building codes planned for 2025 and 2030, which will not differentiate between materials, but rather focus on their performance to meet the building code intent.

IV. Developments in Forest Products Markets Sectors

Bioenergy

In 2016, bioenergy accounted for the second largest share of renewable energy production (heat and electricity) after hydroelectricity in Canada. The Canadian forest sector provides over 80% of biomass-based energy in Canada, mainly for cogeneration of heat and power for use in industrial processes and sale to third- parties.

The wood pellets industry continues to expand rapidly. Between 2012 and 2018, Canada's pellet production capacity grew from 3.0 million tonnes (Mts) to 4.5 Mts, an increase of 50.4%. In 2018, Canada produced 3.0 Mts and exported 2.7 Mts. Growing demand from new markets, especially Japan and South Korea, are driving the market and Canada's exports to Japan and South Korea have increased significantly over the past five years. For example, export value to Japan has increased 826% over the past five years. Further, several new Canadian pellet mills are slated to begin production within the next five years, increasing Canada's production capacity by 27% and many of the companies have already announced long-term contracts with utilities in Japan and South Korea.

Developing liquid fuels from biomass is an important focus for Canada, including ethanol, biodiesel, and other wood-based biofuels. Since 2010, the Federal Fuel Regulation has required a minimum of 5% ethanol in gasoline. Provincial mandates may exceed the 5% minimum requirement.

Biojet fuel could play an important role in reducing GHG emissions in Canada. In 2016, Canada became a signatory to the International Civil Aviation Organization (ICAO) Carbon Offsetting Reduction Scheme for International Aviation (CORSA). The agreement requires the aviation industry to become carbon neutral by 2020 and reduce total carbon emissions by 50% by 2050. The forest sector can contribute to GHG reduction efforts through innovation in clean energy as well as by providing a source of emissions reductions/removals for trading in compliance markets such as ICAO's CORSA.

Value-Added Wood Products³¹

In 2018, Canada exported about \$5.3B of value-added products, mainly to the U.S. (96%). Exports of value-added wood products increased 5% compared to the previous year. Mass timber products are part of Canada's growing segment of value-added wood products. This growth is exemplified by the surge in 2018 of mass timber products all across the globe and this is expected to continue as countries (Canada included) continue to promote the use of mass timber in tall buildings. Part of this increase in demand is attributed to recent changes to building codes which will make it

³¹ In Canada, value-added wood products include wood windows and doors, factory-built homes, millwork and joinery products, shingles and shakes, containers and pallets, wooden furniture, engineered wood products such as I-beams, roof trusses, Cross-Laminated Timber and other structural products.

³¹ Figures above have been adjusted to reflect actual volumes as opposed to nominal.

easier for builders to use mass timber in their construction projects, as well as interest in taller and larger wood buildings due to the environmental benefits and speed of construction.

Sawn Softwood (also known as Softwood Lumber)

In 2018, Canada produced 45.2 million cubic metres³¹ of sawn softwood, a 20% increase compared to 2010. However, production is still below pre-recession levels. North American sawn softwood prices were very strong in the first half of 2018 and then weak into the first half of 2019 due to trade barriers, supply-side issues, and market conditions. American duties on Canadian sawn softwood continue to bring volatility to the market.

The U.S. is the primary destination for Canadian sawn softwood exports. In 2018, Canada exported 23.1 million cubic metres³¹ of sawn softwood to the U.S., a decrease of 4% over 2017 levels. On November 1, 2017, the U.S. Department of Commerce issued final countervailing and anti-dumping duty determinations on certain softwood lumber products from Canada. These combined duties, averaging 20.23%, have caused instability in softwood lumber prices and export levels, and are expected to continue to do so, especially as Canada brings challenges through the WTO and NAFTA.

China is a significant offshore market for Canadian sawn softwood products and exports have increased tremendously over the last decade. From 2007 to 2017, sawn softwood exports to China increased by 760% on a volume basis. However, Canadian sawn softwood export volumes to China decreased by 6% in 2017 compared to 2016, which was followed by a further decline of 8% in 2018 compared to 2017. In the first six months of 2019, exports rebounded and increased by 21% compared to the same period in 2018. Slower growth in China and increased competition from Russian and European producers have contributed to the decline of Canada's sawn softwood market share in China. Nonetheless, with continued urbanization and economic growth, as well as increasing environmental conscientiousness, China will likely remain a key market for sawn softwood in the years to come.

Oriented Strand Board (OSB)

OSB represents 90% of Canada's total structural panel exports. In 2018, almost all (95%) of Canada's exported OSB exports were destined for the U.S. (up from 94% in 2017), where it is mainly used in housing construction. OSB exports increased 26% in 2018 thanks in part to higher prices for OSB in the U.S., which were up 5% in 2018. However, prices in the U.S. for OSB have so far plummeted in 2019, down nearly 40% from its price in 2018.

Paper and Paperboard

The total value of Canadian paper and paperboard products exports increased 11% in 2018 after declining in both 2016 and 2017 by 3.8% and 1.7%, respectively. The 2018 increase was due mainly to increased demand from China which drove up paper and paperboard prices around the world, while the 2016/2017 declines were a result of U.S. duties on paper and paperboard imposed on Canada. The U.S. is by far the largest market for Canadian paper and paperboard products, importing 80% of Canada's paper and paperboard products.

While 2018 was a relatively good year for Canadian paper and paperboard exports, 2019 is expected to be less strong: Chinese demand for paper and paperboard has declined dramatically, and as of July 6, 2019, India (the second largest market for Canadian paper and paperboard) began applying tariffs on Canadian newsprint.

Wood Pulp

As with paper and paperboard, 2018 was a good year for Canadian wood pulp exports, with the total value of exports growing 18%, as compared to 2017 when growth was 9% and 2016 when the total value of exports declined 5%. The large growth in total export value seen in 2018 was attributed to price increases Canadian exporters received, which were 25% higher than in 2017 while at the same time the total quantity of wood pulp exported out of Canada declined 6%. The largest purchaser of Canadian wood pulp was China, which makes up 40% of the total value of Canadian wood pulp exports.

China is the main destination for Canadian wood pulp exports, and growth of exports to China slowed somewhat in 2018 compared to 2017 (13% in 2018 and 14% in 2017). At the same time, growth to other major importers of Canadian wood pulp (the U.S. in second and Indonesia in third) grew significantly in 2018 as compared to 2017 (16% in 2018 up from -5% in 2017 for the U.S., and 28% in 2018 up from 23% in 2017 for Indonesia). This slowdown of growth in China was largely attributed to Chinese duties placed on Canadian dissolving pulp, which expired in April 2019.

While the expiration of Chinese duties bodes well for Canadian exports of wood pulp, the outlook for 2019 is poor. Chinese demand for wood pulp stalled late in 2018, and this trend has continued into 2019, with pulp prices in China dropping over 20% so far in 2019 as compared to the average annual price in 2018. Furthermore, high pulp inventories and new production capacity coming online globally are expected to further dampen prices for the next few quarters.