

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

October 2020

Prepared by:

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

October 2020

ABBREVIATIONS

| | |
|--------|---|
| CCFM | Canadian Council of Forest Ministers |
| CCTF | Climate Change Task Force |
| CETA | Canada-European Union Comprehensive Economic and Trade Agreement |
| CFS | Canadian Forest Service |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| CORSIA | Carbon Offsetting Reduction Scheme for International Aviation |
| CPTPP | Comprehensive and Progressive Agreement for Trans-Pacific Partnership |
| CUSMA | Canada-United States-Mexico Agreement |
| CWC | Canadian Wood Council |
| ECCC | Environment and Climate Change Canada |
| EMO | Expanding Market Opportunities Program |
| FIP | Forest Innovation Program |
| 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 |
| NAFTA | North American Free Trade Agreement |
| NBCC | National Building Code of Canada |
| NDC | Nationally Determined Contribution |
| 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 |
| SFM | Sustainable Forest Management |
| TWB | Tall Wood Building |
| UNFCCC | United Nations Framework Convention on Climate Change |
| WTO | World Trade Organization |

CANADA

I. Economic Overview

General Economic Conditions

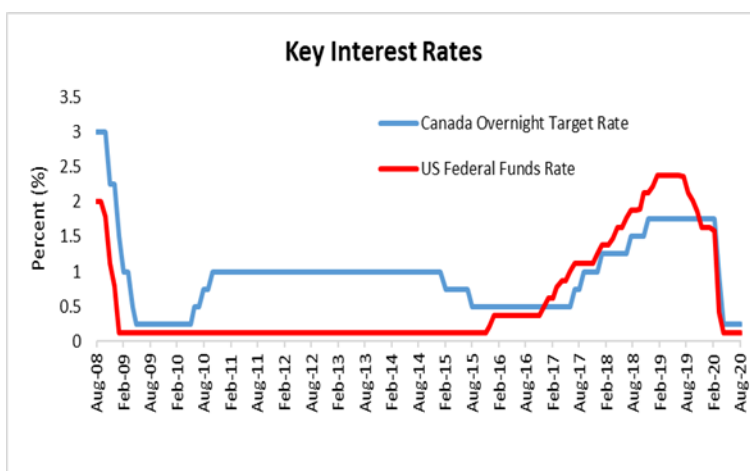
Canada's economy shrank significantly in the first half of 2020 driven by the unprecedented impact of COVID-19. The Canadian economy, measured by real Gross Domestic Product (GDP), fell 2% in the first quarter of 2020 and nearly 12% in the second quarter of 2020. This is after posting average quarterly growth of 0.4% in 2019. The sharp decline was driven by both supply and demand factors. From the supply side, global and domestic measures to control the spread of COVID-19 forced many businesses to reduce or halt their operations which compounded disruptions in global supply chains and trade. From the demand side, a reduction in household confidence also led to decreased consumer spending.



Source: Statistics Canada

Annual Canadian GDP is projected to shrink 7.8% in 2020 before growing 5.1% and 3.7% in 2021 and 2022 respectively. Reasons for this gradual recovery are the persistent effects of ongoing physical distancing measures, a slow rebound in foreign demand and subdued confidence from households and businesses.

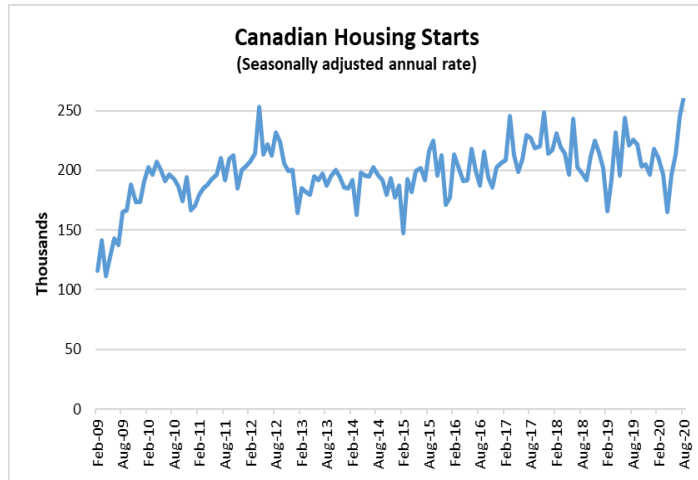
The Bank of Canada's key interest rate remained unchanged from November 2018 until March 2020, when the rate was significantly lowered in response to the pandemic. In March 2020, the Bank lowered the interest rate three times, ultimately reducing it from 1.75% to 0.25%. It has remained stable at this low rate, but the Bank continued to adjust or create other measures to provide additional support to Canada's financial system. The US Federal Reserve also began



Source: Bank of Canada, U.S. Federal Reserve

lowering their key interest rate in February 2020 and it now sits at 0.125%. Unlike the Bank of Canada, the Federal Reserve has cut their rates since July of 2019.

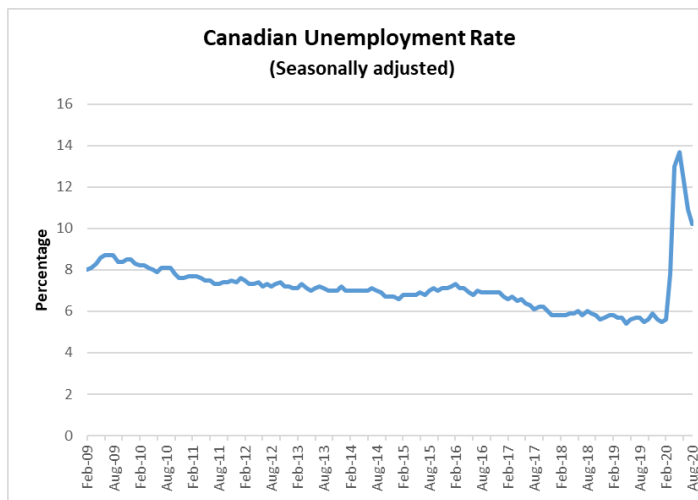
Following the 2008 recession, Canadian housing starts followed an upward trend until 2018. The housing market cooled in 2018 and again in 2019 in part due to interest rate hikes in 2017 and 2018 following stricter mortgage lending requirements and new taxes on foreign investment in real estate. Following the onset of the COVID-19 pandemic, housing starts began falling (7% in March and 16% in April). However, starts began increasing significantly by May due to low mortgage rates and pent up demand following delayed housing purchases.



Source: Statistics Canada

As of August 2020, starts are up over 25% from their annual 2019 levels. In the near term, Canadian housing starts should remain strong, however there is a risk that housing demand will weaken following subdued economic activity due to the impact of COVID-19.

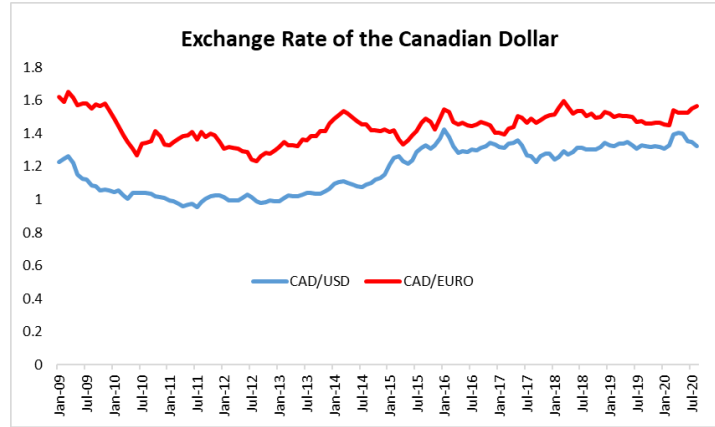
The labour market in Canada improved slightly in 2019 as evidenced by the unemployment rate, which declined by nearly 0.2 percentage points to 5.7% from 2018. In March, following the onset of the pandemic, the unemployment rate began rising significantly. Unemployment peaked in May at 13.7%, the highest rate ever recorded since comparable data became available in 1976. Since May, the unemployment rate has been falling and as of August 2020 currently sits at 10.2%. Going forward, employment could be restrained by subdued confidence from businesses amid uncertainty as to how the economic recovery will progress.



Source: Statistics Canada

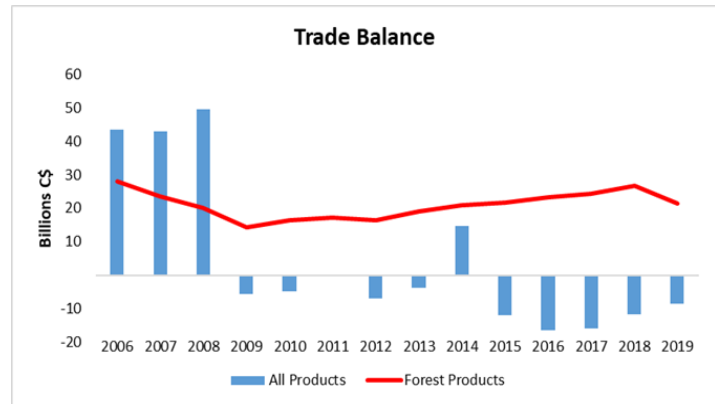
Growth in Canadian consumer spending has been slowing since the second quarter of 2017. In the first quarter of 2020, consumer spending fell over 3%, and in the second quarter of 2020, consumer spending fell more than 13%, the largest decline ever recorded. This reduction in spending was attributable to substantial job losses, limited opportunities to spend because of store and consumer business closures, and restrictions on travel and tourism.

The Canadian dollar strengthened slightly against both the U.S. dollar and the Euro in 2019 due in part to the Bank of Canada keeping interest rates unchanged throughout the year whereas the Federal Reserve and the European Central bank lowered their key interest rates. Following precipitous falls in oil prices and the onset of the pandemic, the CAD weakened against both the USD and the Euro. A rebound in oil prices, due partly to supply cuts by the Organization of Petroleum Exporting Countries (OPEC) since May, has partly allowed the CAD to appreciate against the USD. Conversely, the CAD has continued to weaken against the Euro, which is gaining strength against virtually all other currencies thanks to a strong recovery in Europe, solid investor confidence in the currency, and increased borrowing from the European Commission – the latter two arising from the E.U. Recovery Fund.



Source: Bank of Canada, U.S. Federal Reserve

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 at least the last two decades. In 2019, forest products accounted for 6% of Canada’s total exports, totalling \$33.3 billion. Canada is the fourth largest forest product exporter in the world, behind China, the United States, 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

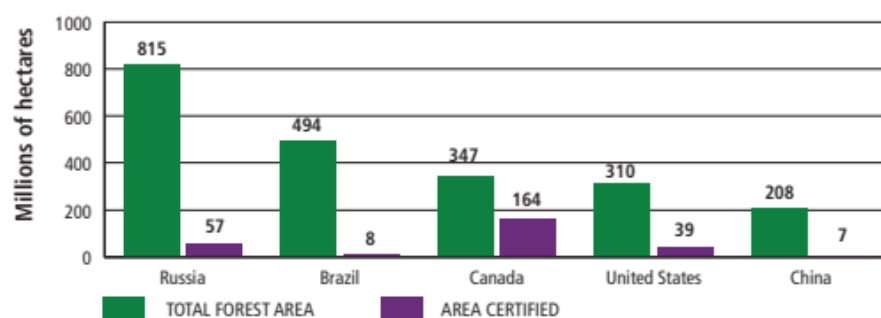
Sustainable forest management (SFM) is a way of caring for forests to maintain their benefits over time. In Canada, SFM decisions and activities are based on scientific research, rigorous planning processes and public consultation.¹ Canada is a world leader in SFM, applying it across the country’s publicly 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 2%, and the remaining 6% is under private ownership.

Canada is the third most forested country in the world, with **347 million ha** of forest land (2017).

Canada has **168 million ha** (47%) of forests certified to third-party standards of sustainable forest management – more than any other country (2018).

Nearly **30 million ha** (or about 9%) of Canada’s forests are in legally established protected areas (2016).

Forest area and area certified for the five most forested countries



Source: *The State of Canada’s Forests Annual Report 2019*

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 continues to 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.

The emergence of the COVID-19 pandemic had an immediate impact on major elements of the forest sector in Canada, resulting in curtailments, employment impacts, and delaying capital investments. As a result of the pandemic, forest sector firms also faced significant incremental

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

costs associated with the implementation of health and safety measures in facilities and operations necessary to keep workers and local communities safe (e.g. sanitizing stations, additional accommodations and/or transportation, facilities and services to maintain social distancing, personal protective equipment). In response, the Government of Canada is implementing a program to provide up to \$30 million to help to offset these costs for forest sector small and medium-sized enterprises (SMEs), including for tree planting. As an emergency support measure, the program is set to end by March 2021.

Sustainable Forest Management Certification

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 forest land.

Third-party sustainable forest management certification further demonstrates Canada's commitment to sustainable forest management practices. As of December 2019, Canada had 168 million hectares of forest land 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) is also now well established in Canada.

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 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 *A 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

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

³ <https://www.nrcan.gc.ca/forests/federal-programs/13137>

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 to meet energy needs. 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 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. To account for advancement in the implementation of the framework, the CCFM presented a progress report in September 2020. This progress report affirms that CCFM members, and the CCFM as a whole, are taking action to stimulate the forest bioeconomy as part of a Canadian effort to shift our society toward a low-carbon, sustainable, and innovation-based economy.

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 Program

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

FPInnovations⁴

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

⁴ <https://fpinnovations.ca/Pages/index.aspx>

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 Centre⁵

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 Collaboration⁶

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 forest biomaterials (cellulose nanocrystals, cellulose filaments, lignin, etc.) and their applications is facilitated through the Canadian Standards Association (CSA). This was identified by the industry as a priority area for standard development in order to facilitate the regulatory approval and market acceptance of new products. Since 2014, the CSA has produced three national standards and led the development of one ISO standard for cellulose nanomaterials. To provide guidance, the CSA published a roadmap for the development of standards for lignin and has developed and published two Canadian standards in 2020: 1) CSA W206:20, Kraft lignin — Glass transition temperature by differential scanning calorimetry and 2) CSA W207:20, Kraft lignin — Determination of thermal stability by thermogravimetry.

Currently CFS is in the process of working with the CSA and other partners (FPInnovations, National Research Council, and the forest industry) to continue producing both Canadian and international forest biomaterial standards.

⁵ <https://www.nrcan.gc.ca/forests/research-centres/cwfc/13457>

⁶ <https://www.nrcan.gc.ca/energy/efficiency/industry/processes/systems-optimization/research-development/5603>

Forest Bioeconomy – Advanced Bioproducts and the circular economy

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 and transitioning to more circular economies. In order to pursue our goal to reduce plastic waste and promote sustainable solutions, the government of Canada launched in fall 2018 its first Plastic Challenge to improve composability of bioplastics. This challenge aims to support small businesses develop solutions for reducing pollution by turning forest-based residues into sustainable materials. Phase one winners were announced in July 2019 with a total investment of \$300,000. As the work is progressing, phase two would include a one million funding investment to the grand winner.

In February 2020, the government of Canada announced the winners of another plastic challenge aiming at developing the next generation of bio-based foam insulation. The two winners were granted \$150,000 each to fulfill the development of a viable solution that will result in a foam insulation products that are predominantly derived from Canadian forest residues – that offer similar insulation properties and comparable costs to petroleum-based products.

Reflecting the growing importance of the bioeconomy, Canada helped launch and co-chair 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. The IBF will be taking part in the Global Bioeconomy Summit, to be held virtually in November 2020.

Investments in Forest Industry Transformation⁷

Since 2010, the Investments in Forest Industry Transformation (IFIT) program has been supporting transformational capital projects by forest sector firms to diversify into new product streams and implement innovative process improvements to ensure industry competitiveness. IFIT projects has led to:

- **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 43 projects involving world-first technologies, producing a range of new bioproducts and generating new revenues for forest sector companies. These projects have secured an estimated +5,000 jobs in the forest sector and led to the creation of 500 new direct

⁷ <https://www.nrcan.gc.ca/forests/federal-programs/13139>

innovation-related jobs. Results show that for every dollar invested by the IFIT program, other sources leveraged over 5 dollars.

Indigenous Forestry Initiative and Clean Energy for Rural and Remote Communities⁸

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 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 Program⁹

The Expanding Market Opportunities (EMO) program 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.

The EMO program supports a wide range of domestic and offshore market diversification activities. These measures include codes and standards development, technical research, technology transfer and training, demonstration projects, market research, and marketing. The funding provided to forest industry associations and other stakeholders supports an integrated suite of activities that increase the market opportunities available to the forest sector and provides the capacity to take advantage of them.

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 2019, 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 more than 8-fold between 2007 and 2019 to \$1.4 billion. In South Korea, they grew by 8% to \$121 million during the same period. This increased growth in offshore exports have helped protect and create an estimated 5000 direct jobs, mostly in rural areas (predominantly in BC and Québec).

⁸ <https://www.nrcan.gc.ca/forests/federal-programs/13125>

⁹ <https://www.nrcan.gc.ca/forests/federal-programs/13133>

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 2,100 non-residential construction projects in Canada since 2007, representing an estimated \$1.3 billion in new wood sales for the wood product sector.

Green Construction through Wood¹⁰

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 become more performance-based. Currently wood buildings are limited to 6 storeys in height under prescriptive code provisions.

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 several demonstration projects under construction and several others at an advanced stage of design development.

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

¹⁰ <https://www.nrcan.gc.ca/forests/federal-programs/gcwood/20046>

In addition, the CCFM supports a Forestry Adaptation Community of Practice¹¹ and collaborates with the Canadian Institute of Forestry to facilitate the sharing of best practices and lessons learned in adaptation among researchers, policy-makers, and forest managers across Canada. In 2019, the CCFM established a Climate Change Working Group with members from Canada's provinces and territories to mainstream adaptation into forest management planning and decision-making.

Since 2011, the 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 management¹². 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.

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

¹¹ <https://www.ccadaptation.ca/en/facop>

¹² <https://www.nrcan.gc.ca/climate-change/impacts-adaptations/climate-change-impacts-forests/forest-change-adaptation-tools/17770>

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. In December 2019, the federal government committed to strengthening existing and introducing new GHG reducing measures to exceed Canada's 2030 emissions reduction goal. The federal government also committed to develop a plan to set Canada on a path to achieve a prosperous net-zero emissions future by 2050. These ambitious goals will be supported by a continued commitment to ensuring a price on carbon pollution is in place in all jurisdictions in Canada, as well as prioritization of measures including green buildings and communities, support for zero-emission vehicles, clean electricity, clean technology, and nature-based climate solutions, which includes a specific commitment to planting additional 2 billion trees over the next ten years.

Pan-Canadian Framework on Clean Growth and Climate Change¹³

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 an alternative carbon pricing system, and all revenues raised will remain in the jurisdiction of origin. The federal benchmark has been implemented in

¹³ <https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework.html>

2019 and contains two parts – a regulatory charge on fuel (fuel charge) and a trading system for large industry. The federal fuel charge has been in effect in Saskatchewan, Ontario, Manitoba, and New Brunswick since April 2019 and in Nunavut and Yukon since July 2019. It also applies in Alberta as of 2020. The federal pricing system for industry (the output based pricing system) 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, particularly activities related to forestry, agriculture and waste, is also under development. In June 2019 and July 2020, Environment and Climate Change Canada (ECCC) released two discussion papers to outline the general structure and key design considerations of the federal offset system, as well as the proposed priority project types to be considered in the first phase of protocol development. The proposed priority project types include afforestation/reforestation and improved forest management projects. Proposed regulations for the federal offset system are targeted for publication in fall 2020. An initial list of two recognized offset programs (Alberta Emission Offset System and British Columbia Greenhouse Gas Emission Offset System) and associated protocols has also been released: offset credits from these recognized programs/protocols can be used by entities to meet their obligations under the federal output based pricing system.

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 fall 2020 and final regulations by late 2021. Draft regulations for the gaseous and solid fuel classes are targeted for publication in late 2021, with final regulations in late 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 supports 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 with continuous intake running between June 2017 and March 2024. Among other things, efforts by five provinces and territories to enhance forest sinks are being supported - bilateral funding agreements are in place, and several additional proposals have been submitted by jurisdictions for remaining allocated funding and are currently under evaluation. 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 were submitted. The approval of proposals and preparation of agreements under the Challenge Fund occurred starting in 2019.

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 2020 National GHG Inventory Report¹⁴.

Canada expects that the land sector including forests and forest products 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 Fourth Biennial Report to the UNFCCC¹⁵ published

¹⁴ <https://unfccc.int/ghg-inventories-annex-i-parties/2020>

¹⁵ <https://unfccc.int/BRs>

in December 2019 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 200 MtCO₂e in 1990 and 140 MtCO₂e in 2018) 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 are available in Canada's Fourth Biennial Report to the UNFCCC¹⁶, Canada's Greenhouse Gas and Air Pollutant Emissions Projections 2018¹⁷, and the third annual Synthesis Report on the Status of Implementation of the PCF published in 2019¹⁸.

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 Plan¹⁹ in November 2018. 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 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 29 million trees have been planted through the program, producing 16,500 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 the generation of Alberta Emission Offsets as a method of compliance under TIER. The TIER regulation was amended in July 2020 to allow additional sectors to voluntarily opt-in to the regulation and reduce administrative burden for regulated conventional oil and gas facilities.

¹⁶ <https://unfccc.int/documents/209928>

¹⁷ <https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/projections/2019.html>

¹⁸ <http://www.publications.gc.ca/site/eng/9.847802/publication.html>

¹⁹ <https://www.ontario.ca/page/made-in-ontario-environment-plan>

In 2018, the Government of British Columbia (B.C.) released its CleanBC Plan²⁰ 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 February 2020, B.C. released its 2019 Climate Change Accountability Report²¹. In addition to the actions in the CleanBC plan, the government is continuing 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 developed policies and projects to increase the use of low carbon and renewable materials in all public sector infrastructure projects.

Update on Progress

In July 2020, Canada published the third annual Synthesis Report on the Status of Implementation of the PCF²². The report indicated that, in the third 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. Significant developments in 2019 occurred in the industrial sector, with work on equivalency agreements between several provinces and the federal government with respect to regulations designed to accelerate the phase-out of coal-fired electricity and reduce methane emissions from the oil and gas sector. The federal, provincial, and territorial governments will work toward completing an interim review of carbon pollution pricing in 2020 in advance of the full review scheduled for 2022.

Canada's GHG National Inventory Report²³ (published in April 2020) showed that emissions were 729 Mt CO₂e in 2018 (same level as 2005 emissions). Canada's latest emissions projections were published in the Fourth Biennial Report²⁴ (BR4) submitted to the UNFCCC in December 2019. 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 588 MtCO₂e across all sectors (including the land sector) in 2030. Additional efforts will be needed to achieve Canada's target of 511 Mt in 2030. The federal government recently committed to implementing nature-based climate solutions, including planting two billion incremental trees by 2030, and helping cities expand and diversify their urban forests.

²⁰ https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_2018-bc-climate-strategy.pdf

²¹ <https://cleanbc.gov.bc.ca/app/uploads/sites/436/2020/03/2019-ClimateChange-Accountability-Report-web.pdf?2>

²² <https://www.canada.ca/en/environment-climate-change/services/climate-change/pan-canadian-framework-reports/overview-third-annual-report.html>

²³ <https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/inventory.html>

²⁴ <https://unfccc.int/BRs>

Major Forest Disturbances in Canada

Wildland Fire in Canada

Canadian wildland fire agencies demonstrated their commitment to wildland fire readiness through active hiring of fire personnel, adjusting training practices to minimize contact and slow COVID-19 spread potential, and assessing prescribed burning operations. In preparation for the 2020 fire season and to address the potential impact of COVID-19 on wildland fire management and resource exchange, research, coordinating, and wildland fire agencies across the country consulted with public health recommendations and others. Multiple sources of information were unified into a single *Mitigation Strategies and Best Practices* planning document specifically related to importing international resources to support Canadian Fire Management Agencies for the 2020 fire season. Fortunately, in the 2020 fire season, no international resources were required to assist with wildland fire in Canada.

Nonetheless, 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 double²⁵.

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*²⁶ 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

²⁵ <https://www.nrcan.gc.ca/forests/topics/fires-insects-and-disturbances/blueprint-wildland-fire-science-canada-2019-2029/21614>

²⁶ <https://www.ccfm.org/english/coreproducts-wildlandfires.asp>

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 2019, it had spread to cover more than 9.6 million hectares, with the potential to spread further through Canada's Atlantic provinces, Ontario and the eastern United States. The Government of Quebec has led an active management program since 2009, which has included tree foliage protection through spraying of a biological insecticide. Because of physical-distancing measures imposed by the COVID-19 pandemic, only 16% of the area initially identified for treatment in 2020 has been sprayed this year. This reduction should not accelerate mortality in otherwise healthy trees attacked by spruce budworm or compromise the survival of stands that were not sprayed in 2020.

Due to the potential negative effects of a larger outbreak in eastern Canada, the federal government is working with provincial partners, industry, and academia to test and evaluate early intervention strategies aimed at managing spruce budworm populations while they are still below an outbreak threshold.

The Government of Canada is providing funding of up to \$74 million over 2019-2022 for the Spruce Budworm Early Intervention Strategy Phase II. It leverages up to \$50 million from the provinces of New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, and industry. The strategy aims to equip the Canadian forest sector with an innovative, science-based, and effective pest management approach that can be applied to impending outbreaks of spruce budworm across Canada. NRCan 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 trees and have 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 forest²⁷. The Government of Alberta has led an active management program since 2006.

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. Canada's Economic and Fiscal Snapshot 2020, identified \$68 million over three years to help control, research and mitigate the impacts of the mountain pine beetle on Canada's forests. More specifically, funding will help address the outbreak in Alberta and the Rocky Mountain National Parks while mitigating negative impact on the forest sector and communities. Ongoing research on mountain pine beetle in newly invaded ecosystems supports strategic approaches to slow the spread of this pest.

Emerging Issues

The emerald ash borer is an invasive insect introduced in some parts of Canada that represents a serious threat to urban trees and natural forests. Emerald ash borer is now found in southern Ontario and the City of Thunder Bay, Ontario, as well as southern Quebec, southern and western New Brunswick, Manitoba (City of Winnipeg), and Nova Scotia (Halifax County). All native North American ash trees are susceptible to the emerald ash borer and it has killed millions of ash trees in Canada and the U.S. In infested areas, 99% of ash trees are expected to die within 10 years from 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 *Canada-United States-Mexico Agreement (CUSMA)* (2020) that superseded NAFTA when it came into force, Canada has free trade agreements in force with:

- Six of the parties of the *Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)* (Australia, Japan, Mexico, New Zealand, and Singapore (2018) and Vietnam (2019));
- The European Union through the *Comprehensive Economic and Trade Agreement (CETA)* (2017);
- Ukraine (2017);
- Korea (2015);
- Honduras (2014);
- Panama (2013);

²⁷ <http://cfs.nrcan.gc.ca/publications?id=39805>

- Jordan (2012);
- Colombia (2011);
- Peru (2009);
- The European Free Trade Association (2009);
- Costa Rica (2002);
- Chile (1997); and,
- Israel (1997, modernized in 2019).

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, Turkey, the Philippines and Thailand. Canada is seeking to address the trade in forest products and the sustainable management of forests in its suite of modern trade 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. forest products systems approach standard RSPM 41, 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. Since 2019, the *Canadian Green Sawn Wood Program* has been recognized internationally and provides the basis for phytosanitary certification of green sawn wood through a systems approach.

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 developing science tools 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 products trade. Over the next three years, Canada will continue funding domestic research to operationalize innovative tools for species identification in order to

bring efficiency and scientific robustness to the identification of CITES tree species and other species common in trade in Canada. This research will be done in collaboration with international partners, such as the U.S. Forest Service, the Global Timber Tracking Network and several universities.

III. Market Drivers & Trends

The Canadian forest sector grew steadily from 2013 until 2017. In 2018, the forest sector contracted 1% and in 2019 by 7%. So far in 2020 and on an annualized basis, the forest sector has contracted 8%. By contrast, the overall Canadian economy grew 2% in both 2018 and 2019. Production in 2019 declined for nearly all forest products. In 2020, production of most forest products is expected to decline with the exception of softwood lumber and wood pellets.

The economic contribution of the sector is heavily influenced by that of 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 2009, over 71% of forest product exports were destined to the U.S., by 2019 this dropped to 68%. Much of this is due to the increased demand for wood products and wood pulp in Asia, and China in particular. The share of forest product exports destined for China increased from 8% in 2009 to 16% in 2019. Over the last decade, exports of wood pulp to China has increased 160% and exports of wood products increased 110% (155% for softwood lumber).

Sustainability

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

Energy Prices

The relatively low energy costs of the past decade have had a mixed impact on the competitiveness of the forest industry. The low cost of natural gas puts many bioenergy and biofuel producers at a pricing disadvantage. While the pulp and paper sector meets the majority of its energy needs with wood waste and pulping liquor, some facilities use natural gas and low prices help them maintain competitive total energy costs. Transportation fuels prices remain lower than highs observed between 2013 and 2015, but have nevertheless increased since the lows of 2016-2017 to remain at the same levels as in 2018. Relatively low diesel prices assist the sector in keeping the cost of transportation in check, 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 weakening against the US Dollar (USD) and returning to historical levels. This decline accelerated in the first part of 2020 after a significant drop in oil prices which further weakened the CAD. Recently oil prices have recovered, which has somewhat strengthened the CAD. As of August 2020, the value of the CAD against the USD is nearly equal to what it was in 2019. Given that nearly 70% of Canada's forest products are exported to the U.S, a weaker CAD relative to the

USD will generally benefit the Canadian forest sector. However, there are some negative impacts of a weaker CAD. For instance, 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—depreciated against both the Canadian and U.S. dollars, which gave those nations a competitive boost in some international markets, such as China. However, this trend has somewhat reversed in 2020.

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, the onset of the pandemic temporarily slowed this recovery. Housing starts fell 20% in March 2020 and over 30% in April when they reached a low of 891 thousand units at a seasonally-adjusted annual rate (SAAR). This level of housing starts is well below the long-term (20-year) average of 1.3 million annual starts. However, between April and July 2020, housing starts climbed over 60% to nearly 1.5 million units (SAAR). Another feature of the housing recovery is a greater proportion of multi-family starts, which has been steadily rising over the last decade from nearly 23% of total starts in 2009 to over 30% in 2020. 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 fostering greater use of wood in public and private buildings across Canada.

Building on the successful adoption of the mid-rise provisions in the 2015 edition of NBCC, the Government of Canada 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). It is anticipated that the 2020 Edition of the NBCC will be published in 2021 allowing mass timber construction up to 12 storeys. The provinces of British Columbia and Alberta have adopted the NBCC proposed provisions for tall wood buildings up to 12 storeys in their building codes, ahead of the NBCC.

IV. Developments in Forest Products Markets Sectors

Bioenergy

In 2018 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, are driving the market and Canada's exports to Japan have increased significantly over the past five years. For example, Canadian pellet exports to Japan increased 430%, from 105,640 tonnes in 2012 to 560,817 tonnes in 2019. 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. The Canadian pellet industry was minimally impacted by the COVID-19 pandemic. The forest sector was deemed essential in Canada allowing pellet mills to continue operating and since they provide fuel for other essential industries such as heat and electricity, the industrial demand did not decrease. Further, most of the pellets produced in Canada are under long-term contracts ensuring long-term sales and demand for the industry.

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. The Clean Fuel Standard, which is planned to come into force in 2022 for the liquid stream, is expected to further increase demand for liquid biofuels. However, the production of drop-in liquid biofuels from woody biomass has not reached commercial-scale yet, with production in Canada still mostly from agricultural feedstocks.

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 Products*²⁸

In 2019, Canada exported about \$4.7B of value-added products, mainly to the U.S. (96%). Exports of value-added wood products decreased 12% compared to the previous year. The decrease was

²⁸ 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.

caused almost entirely by particle board; most other value-added wood product exports increased in 2019. 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 non-traditional construction sectors such as tall buildings. Part of this increase in demand is attributed to recent changes to building codes which will make it 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. The availability of new generation of engineered mass timber products and implementation of certain wood-friendly policies is also contributing to this.

Sawn Softwood (also known as Softwood Lumber)

In 2019, Canada produced 56.7 million cubic metres²⁹ of sawn softwood, a 9% increase compared to 2010. North American sawn softwood prices showed a slight upward trend throughout 2019 and into the first quarter of 2020, however in response to the COVID-19 pandemic, stay-at-home orders resulted in a significant increase in demand for lumber from the repair and remodeling segment, and this, combined with North American supply constraints due to COVID-19 related mill curtailments led to unprecedented price increases in mid-2020, with lumber prices reaching levels never seen by experienced traders.

The United States is the primary destination for Canadian sawn softwood exports. In 2019, nearly 80% of Canada's sawn softwood exports, by volume, went to the U.S., a decrease of 4% over 2018 levels. Beginning in May 2017, the U.S. Department of Commerce began levying countervailing and anti-dumping duties on certain softwood lumber products imported from Canada. Final combined duty rates, averaging 20.23%, have caused instability in softwood lumber prices and export levels. Canada has challenged the U.S. duties before WTO and NAFTA panels and on August 24, 2020, the WTO panel reviewing Canada's challenge of the U.S. countervailing duties issued its Final Report, finding overwhelmingly in Canada's favour. While the results are positive for Canada, they will not alter the current duty rates.

China is the second largest destination for Canadian sawn softwood products and exports have increased significantly over the last decade. From 2000 to 2013, the volume of sawn softwood exports to China increased on average by more than 50% per year. However, since 2013, export volumes have decreased at an average rate of nearly 10% annually. In 2019, sawn softwood export volumes to China decreased by 11% over 2018 levels. In the first six months of 2020, exports continued to decline, falling by more than 34% compared to the same period in 2019. Slower growth in China and increased competition from Russian and European imports have contributed to the decline in Canada's share of China's import market. Nonetheless, with continued urbanization and economic growth, as well as increasing environmental conscientiousness, China will likely remain a key market for Canadian sawn softwood in the years to come.

²⁹ Figures above have been adjusted to reflect actual volumes as opposed to nominal.

Oriented Strand Board (OSB)

OSB represents nearly 80% of Canada's total structural panel exports by value. In 2019, almost all (93%) of Canada's OSB exports were destined for the U.S. (down from 94% in 2018), where it is mainly used in housing construction. OSB exports decreased 32% in 2019 by value, largely as a result of lower prices for OSB in North America, which fell nearly 40% in 2018. However, OSB prices have been increasing in 2020, up nearly 160% in August 2020 from December 2019 following increased demand from the housing sector.

Paper and Paperboard

In 2019, nearly 80% of paper and paperboard products that Canada exported (by value) were destined for the U.S. Total exports of paper and paperboard products fell 8% in 2019, due largely to the reduction of newsprint exports, which fell 18%. The reduction in newsprint exports is due in part to declining global demand following the rise of digital media coupled with a drop in newspaper sales and reduced print advertising. Since the onset of the pandemic, the trend in declining demand for newsprint has accelerated.

Canadian exports of paper and paperboard products will continue to face challenges going forward, and this is especially true for newsprint. Demand across the globe continues to decline for newsprint. Furthermore, rising protectionism will also put a negative pressure on the export markets. India, the second largest market for Canadian newsprint, imposed a 10% tariff in July 2019 on newsprint and some other paper products coming from Canada. These tariffs will not lead to a trade dispute as they are within India's WTO commitments. Following the imposition of these tariffs, exports of newsprint to India declined nearly 25% in 2019.

In addition to these tariffs, in early 2020, India's Department of Commerce has announced the initiation of an anti-dumping investigation concerning imports of newsprint from seven countries, including Canada. Preliminary findings were expected in late June 2020, but are delayed due to COVID-19 (no confirmed date yet). The findings will determine whether the Indian government will impose antidumping duties on newsprint imports.

Wood Pulp

As with paper and paperboard, 2019 was a challenging year for Canadian wood pulp exports, with the total value of exports falling nearly 20% from 2018. The 2019 decrease in wood pulp exports followed weak global demand for end use products, combined with domestic fibre supply challenges.

China is the main destination for Canadian wood pulp exports; 45% of the wood pulp Canada exported was destined for China. The U.S. is the second largest destination for Canadian wood pulp, importing nearly 35% of Canada's exported wood pulp in 2019. While exports of Canadian wood pulp declined for all countries in 2019, the declines were relatively lower for China (-15%) and the U.S. (-8%) than for the next 10 largest importers of Canadian wood pulp, where exports fell on average nearly 25%.

The outlook for Canadian wood pulp exports is mixed as challenges remain. The pandemic has placed an upward pressure on wood pulp prices since it has driven up demand for packaging and hygiene products, which use wood pulp to produce. At the same time, demand for paper and paperboard products which also require wood pulp to produce continue to decline, creating a negative pressure on prices. The result is that pulp prices have remained virtually unchanged in 2020. Lastly, natural disturbances (e.g. pests, wildfires) and changes to forest management practices have led to fibre supply challenges for some pulp mills which, combined with the demand declines mentioned above, have caused multiple curtailments and closures across Canada.