Trends and Prospects

UNECE Committee on Forests and the Forest Industry

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ABBREVIATIONS

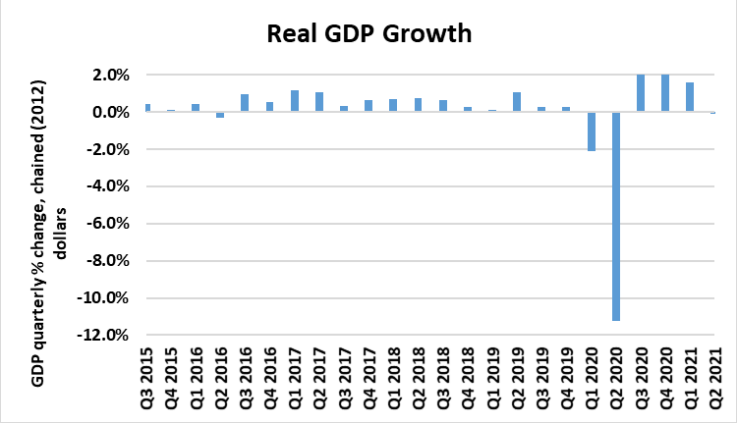
CCFM	Canadian Council of Forest Ministers
CCTF	Climate Change Task Force
CETA	Canada-European Union Comprehensive Economic and Trade Agreement
CFS	Canadian Forest Service
CIFFC	Canadian Interagency Forest Fire Centre
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
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 slowed considerably in Q2 2021, coinciding with the third wave of the COVID-19 pandemic. The Canadian economy, measured by real Gross Domestic Product (GDP), increased 1.6% in the first quarter of 2021 and declined 0.1% in the second. This is after notable growth in Q3 and Q4 of 2020 (9.3% and 2.0%, respectively). The decline in Q2 this year was mainly driven by supply-side factors. In fact, the third wave of the pandemic affected the operations of businesses, which led to reduced employment, although to a lesser magnitude compared to 2020. Moreover, softer housing activity and supply chain issues also weighed on growth.

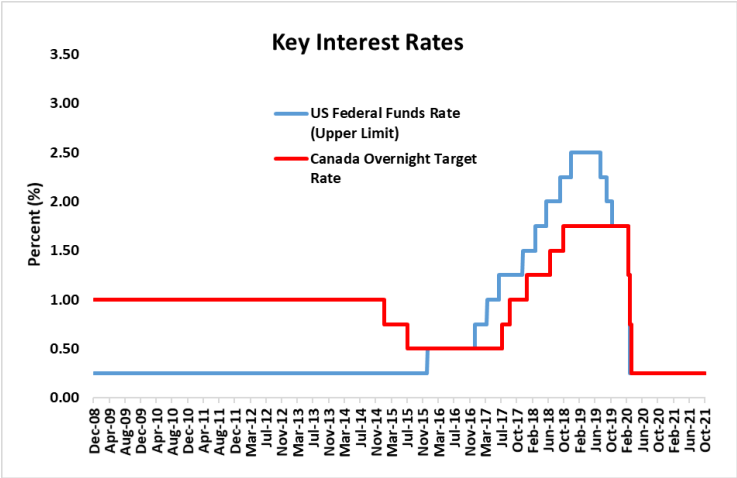


Source: Statistics Canada

According to Bank of Canada, annual Canadian GDP is projected to grow 6.0% in 2021 before slowing to 4.6% and 3.3% in 2022 and 2023 respectively. Reasons for this recovery are the return of consumer confidence to pre-pandemic levels.

Growth in Canadian consumer spending has been slowing since the second quarter of 2017. In the first quarter of 2020, consumer spending fell nearly 2%, and in the second quarter of 2020, consumer spending fell more than 14%, 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.

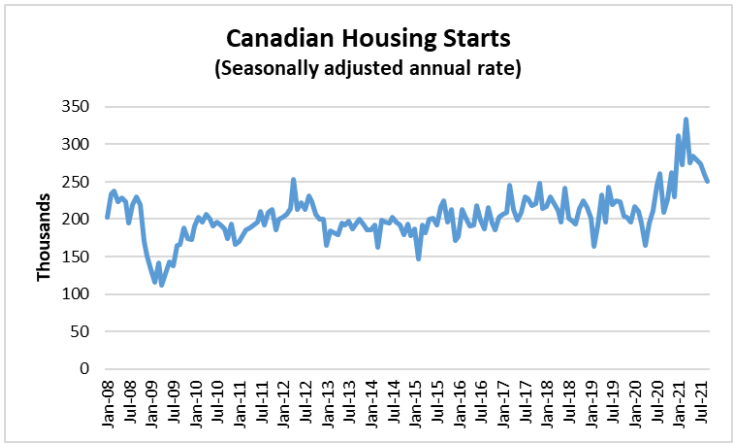
However, with consumer confidence reportedly back to pre-pandemic levels, consumption is forecasted to significantly contribute to the rebound of economic activity in Q3 2021, with an increase in spending on various services, such as transportation, recreation, and food and accommodation. This is complimented by high vaccination rates, the easing of restrictions, and the growth in foreign demand.



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

The Bank of Canada's key interest rate was significantly lowered in response to the pandemic. Beginning in March 2020,

the Bank lowered the interest rate three times, ultimately reducing it from 1.75% to 0.25%. The rate has remained stable at 0.25% since March 27, 2020; however, the Bank continued to create other measures to provide additional support to Canada's financial system. The U.S. Federal Reserve also began lowering their key interest rate in February 2020 and it has been sitting at 0.25% since March 15, 2020.



Source: Statistics Canada

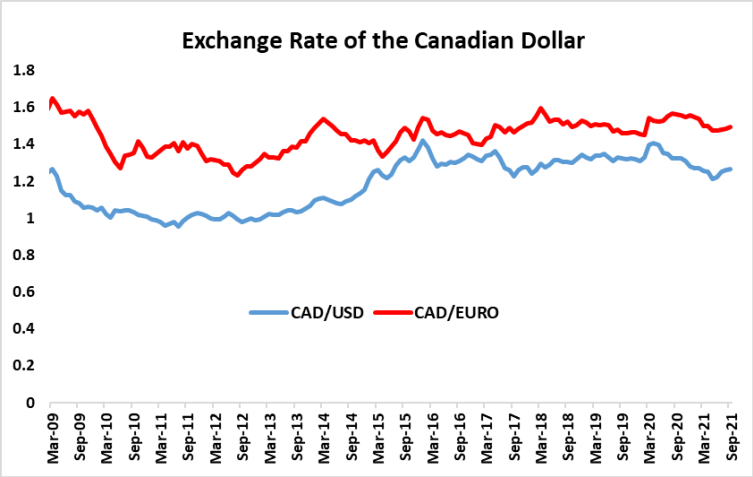
Following the onset of the COVID-19 pandemic, housing starts began falling, decreasing 7% in March and 16% in April 2020. However, they began to increase significantly in May 2020 due to low mortgage rates and pent up demand following delayed housing purchases. Since June 2020, starts have stayed above 200,000 units at a seasonally adjusted annual rate. As of September 2021, housing starts are more than 18% above their 2020 level. In the near term, Canadian housing starts are expected to remain elevated over historic levels.

The labour market in Canada has significantly improved following the initial shock of the COVID-19 pandemic, where the unemployment rate ballooned to 13.7% in May 2020; the highest rate ever recorded since comparable data became available in 1976. Since then, the economy has been recovering and the unemployment rate has mostly tracked downward, with slight upticks coinciding with the tightening of public health restrictions. As businesses reopened and vaccinations became readily available to Canadians, the unemployment rate has been falling.

Source: Statistics Canada

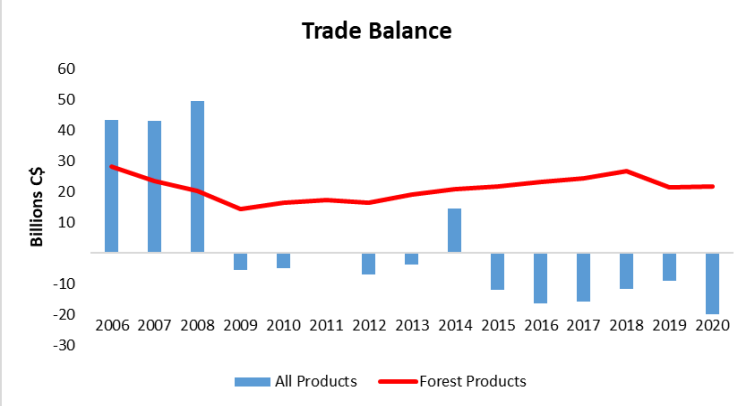
As of September 2021, the unemployment rate is at the lowest rate since the onset of the pandemic (6.9%). Going forward, the labour market continues to face a number of challenges and uncertainties, including: some industries are still looking to fully resume activities, people in the ranks of the long-term unemployed are seeking to find their way back to employment, and as both employers and workers adjust to proof-of-vaccination initiatives.

The Canadian dollar weakened against both the U.S. dollar and the Euro following precipitous falls in oil prices at the onset of the pandemic in 2020. A rebound in oil prices, due partly to supply cuts by the Organization of Petroleum Exporting Countries (OPEC) since May 2020, has partly allowed the CAD to appreciate against all other currencies, including the Euro and the USD. In August 2020, the CAD recovered against the USD, reaching its pre-pandemic level. Conversely, the CAD against the Euro has yet to fully recover to pre-pandemic levels by September 2021.



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 2020, forest products accounted for 7.1% of Canada's total exports, totalling almost $34 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.



Source: Global Trade Atlas

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

Commitment to Growth, Innovation, and to Sustainable Forest Management

Canada is the third most forested country in the world, with 347 million hectares of forest. It is also a world leader in Sustainable Forest Management (SFM), applying it across the country's publicly owned forests. 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] 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. Nearly 30 million hectares (or about 9%) of Canada's forests are in legally established protected areas.

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 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 implemented a program providing up to $30 million to help to offset these costs for small and medium-sized enterprises (SMEs) in the forest sector, including for tree planting. This emergency support program ended in 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 2020, Canada had 164 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.

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

Source: The State of Canada's Forests Annual Report 2020

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 approximately 12, 000 Indigenous workers, accounting for 7% of the sector's total workforce (higher workforce representation than any other industrial resource sector).

Forest Bioeconomy Framework for Canada[2]

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 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

[2] https://cfs.nrcan.gc.ca/publications?id=39162
[3] https://www.nrcan.gc.ca/forests/federal-programs/13137

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. The Forest Innovation Program (FIP) provides funding to four main areas: FPInnovations,[4] the Canadian Wood Fibre Centre,[5] Forest Biorefinery Collaboration[6] and standards development.

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.

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 the transition to more circular economies. 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 for foam insulation products that are predominantly derived from Canadian forest residues while offering 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) since 2016 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 took part in the November 2020 virtual Global Bioeconomy Summit. Plenary meetings are held annually with all members; the next IBF Plenary will be held in November 2021.

Investments in Forest Industry Transformation[7]

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 have led to:

[4] https://fpinnovations.ca/Pages/index.aspx
[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
[7] https://www.nrcan.gc.ca/forests/federal-programs/13139

- **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 innovation-related jobs. Results show that for every dollar invested by the IFIT program, other sources leveraged over 5 dollars. Budget 2021 proposed to provide $54.8 million over two years, starting in 2021-22, to Natural Resources Canada, to enhance the capacity of the IFIT program, including working with municipalities and community organizations ready for new forest based economic opportunities.

Markets

Expanding Market Opportunities Program[8]

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 increases 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 U.S. market, even though U.S. remains the primary market for wood exports. In 2001, 85.5% of all Canadian wood exports were to the U.S. At the end of 2019, 76% of wood exports were shipped to the United States, as trends saw increasing market share in China over the ten previous years. However, in 2020, exports to the U.S. surged to 84%.[9] This was due to the COVID-19 pandemic coupled with strong housing starts and home renovations.[10] Notwithstanding the pandemic, increased exports have been mainly to Asia, with the value of Canadian wood exports to China increasing almost 8-fold between 2007 and 2020 to $950 million. In South Korea, exports grew by over 6% to $104 million during the same period. This increased growth in offshore exports has helped protect and create an estimated 5000 direct jobs, mostly in rural areas (predominantly in British Columbia 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 2,335 non-traditional construction projects in Canada since 2007, representing an estimated $1.5 billion in new wood sales for the wood product sector.

[8] https://www.nrcan.gc.ca/forests/federal-programs/13133
[9] Global Trade Atlas, 2021; accessed September 9, 2021.
[10] Forest Economic Advisors, Lumber Advisor, 2021.

Green Construction through Wood[11]

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, all of which now have funding agreements in place, with several demonstration projects either completed or currently 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.

The Canadian Forest Service's Forest Climate Change Program undertakes work on regional integrated assessments and science-based adaptation tools, in collaboration with end-users to facilitate climate change adaptation planning and decision-making in the forestry sector and forest-based communities. Since 2016, scientists have been undertaking regional integrated assessments to investigate the effects of climate change on forested landscapes in five vulnerable regions across Canada: Newfoundland and Labrador, the Maritimes, the Eastern Boreal, the Northwest Territories and the Western Boreal. These regional integrated assessments develop baseline data, knowledge and tools that can be used by forest

[11] https://www.nrcan.gc.ca/forests/federal-programs/gcwood/20046

sector decision-makers to adapt to a range of climate change impacts. The Adaptation tools developed cover a wide range of topics, including forest composition and productivity, disturbances and extreme weather events, forest regeneration, assisted migration, genomics and adaptive silviculture.

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 carbon removals. Forests play an important role in climate change mitigation and adaptation as natural climate solutions. For example, when carefully planned, actions such as afforestation, reforestation and sustainable forest management can increase carbon sequestration and improve forest resilience to climate change. As well, GHG emissions can be reduced by storing carbon in long-lived wood products that substitute for more emissions-intensive products, and using waste wood to replace fossil fuels.

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+). Canada supports multilateral REDD+ initiatives such as the Forest Carbon Partnership Facility, where Canada is a donor to both the Readiness and Carbon Funds.

Canada provides international climate finance in support of mitigation and adaptation actions by developing countries. Canada has delivered on its $2.65 billion climate finance commitment from 2015 to 2020, including providing $600 million to the Green Climate Fund. At the 2021 G7 Leaders' Summit, Canada announced a doubling of its international climate finance commitment, to $5.3 billion over the next five years. The new commitment includes increased support for natural climate solutions like protecting biodiversity and planting trees.

Domestic Emission Reduction Efforts

In July 2021, Canada submitted its enhanced NDC to the UNFCCC, committing the country to reduce economy-wide emissions by 40-50% below 2005 levels by 2030. The updated NDC is a substantial increase of ambition beyond Canada's original NDC, to reduce GHG emissions by 30% below 2005 levels by 2030. Additionally, Canada has committed to achieving net-zero emissions by 2050. Progress towards Canada's emission reductions targets is supported by the Pan-Canadian Framework on Clean Growth and Climate Change (PCF) and Canada's Strengthened Climate Plan (SCP).

Pan-Canadian Framework on Clean Growth and Climate Change[12]

The Government of Canada launched the Pan-Canadian Framework on Clean Growth and Climate Change launched in 2016 focusing on carbon pricing; complementary (mitigation) actions to reduce GHG emissions; adaptation and climate resilience; and clean technology and innovation. More specifically, it had several forest-related commitments including increasing stored carbon, increasing

[12] https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework.html

the use of wood for construction, and generating bioenergy and bioproducts. Building on the PCF, the Government of Canada released the Strengthened Climate Plan in December 2020**.**

Canada's Strengthened Climate Plan (SCP)[13]

Canada's Strengthened Climate Plan includes federal policies, programs and investments to accelerate emissions reductions and build a stronger, cleaner, more resilient and inclusive economy. The plan builds on the PCF, with $15 billion in new investments, to put Canada on a path to achieve its GHG reduction targets for 2030 and 2050. The plan includes 64 measures falling under five pillars of action:

1. Make the places Canadians live and gather more affordable by cutting energy waste;
2. Make clean, affordable transportation and power available in every Canadian community;
3. Continue to ensure that pollution isn't free and that households get more money back;
4. Build Canada's clean industrial advantage; and,
5. Embrace the power of nature to support healthier families and more resilient communities.

The fifth pillar includes a commitment to advancing natural climate solutions, including investing up to $3.2 billion over 10 years to partner with provinces, territories, non-Government organizations, Indigenous communities, municipalities, private landowners, and others to plant two billion trees. These trees will be planted across Canada, on provincial and federal Crown lands, in cities and communities, on farms and on private rural and urban lands, with a focus on achieving co-benefits for biodiversity and human wellbeing.

Federal Carbon Pollution Pricing Benchmark

The Government of Canada has established a benchmark to ensure that carbon pricing applies to a broad set of emission sources throughout the country. Provinces and territories have flexibility to implement their own pricing system (e.g. a carbon tax, cap and trade) or can choose the federal pricing system. The federal benchmark has been implemented in 2019 and contains two parts – a regulatory charge on fuel (fuel charge) and a performance-based system for industries (Output-Based Pricing System, or OBPS). 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 OBPS 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. New Brunswick and Ontario have proposed provincial output-based pricing systems that align with the current federal benchmark. Under the federal benchmark, the carbon price started at $20 per tonnes CO_2e of emissions in 2019 and will rise by $10 per year to $50 per tonnes in 2022. Canada's SCP proposes to implement annual carbon price increases of $15 per tonnes from 2023-2030, reaching $170 per tonnes in 2030.

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

[13] https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/healthy-environment-healthy-economy.html

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 improved forest management. In March 2021, the proposed Greenhouse Gas Offset Credit System Regulations[14] were published in the Canada Gazette. Publication of final regulations is targeted for fall 2021. Several provincial governments have established, or are in the process of establishing, offset systems to support their carbon pollution pricing programs and policies. The federal offset system is intended to complement these systems.

Clean Fuel Regulations

The Government of Canada is developing a Clean Fuel Regulations to reduce the life cycle carbon intensity of fuels and energy used in Canada. The objective of the Clean Fuel Regulations is to achieve 30 million tonnes of annual reductions in GHG emissions by 2030. In meeting its GHG reduction goal, the Clean Fuel Regulations will aim to stimulate investments and innovation in low-carbon-intensity fuels while enabling low-cost compliance. The Clean Fuel Regulations 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 Regulations will require liquid fossil fuel primary suppliers to reduce the carbon intensity of the liquid fuels they produce in and import into Canada. The draft regulations are planned for final publication in 2022.

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.

[14] https://canadagazette.gc.ca/rp-pr/p1/2021/2021-03-06/html/reg1-eng.html

The Role of Forests in a Changing Climate

The UNFCCC requires countries to report emissions and removals resulting directly from human activity such as harvesting or land-use changes. In keeping with this, Canada's NDC focuses on the emissions and removals that are a direct result of the management of our forests. 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 (including those originating from significant natural disturbances) are reported in Canada's National GHG Inventory Report. For more information, please refer to Section 6.3.1 and Annex 3.5 of the 2021 National GHG Inventory Report.[15]

Canada expects that the land sector, including forests and harvested wood 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 Greenhouse Gas and Air Pollutant Emissions Projections 2020 report[16] published in February 2021 provided emission and accounting projections for the land sector, focused on impacts of human activities. Canada's managed forest and associated harvested wood products are projected to provide an accounting credit of 30 $MtCO_2e$ toward Canada's 2030 emission reductions target, and an accounting credit of 25 $MtCO_2e$ toward Canada's 2050 net zero target. Mitigation actions taken, such as the 2 Billion Trees program and provincial and territorial actions, are not included in these estimates.

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 Greenhouse Gas and Air Pollutant Emissions Projections 2020, and the third annual Synthesis Report on the Status of Implementation of the PCF published in 2019.[17]

Quebec has set a target of reducing its GHG emissions to 37.5% below 1990 levels by 2030. In addition, Quebec has announced its intention to become carbon neutral by 2050. Launched in November 2020, the 2030 Plan for a Green Economy[18] (PGE) is Quebec's climate road map (policy framework) for this decade. In terms of forests, in 2020 Quebec released its Timber Production Strategy[19] which includes plans to increase the forest sector's contribution to climate change mitigation through increasing carbon sequestration in the forest and in forest products. This includes a $75 million government investment to restore poorly regenerated or unproductive forests areas. Quebec's Wood Innovation Program, announced in 2016, supports the transformation and

[15] https://unfccc.int/documents/271493
[16] https://publications.gc.ca/site/eng/9.866115/publication.html
[17] http://www.publications.gc.ca/site/eng/9.847802/publication.html
[18] https://www.quebec.ca/en/government/policies-orientations/plan-green-economy
[19] https://mffp.gouv.qc.ca/the-forests/quebec-timber-production-strategy/?lang=en

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 Plan[20] 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. In 2020, Ontario released *Sustainable Growth: Ontario's Forest Sector Strategy*,[21] a new 10-year forestry strategy to encourage economic growth while protecting Ontario's forests. It identifies actions related to climate change mitigation and adaptation, including: (1) seeking additional opportunities for forests to mitigate climate change; (2) increasing climate change information to forest managers; and (3) reducing emissions from forestry activities and increasing carbon storage. Ontario's 50 Million Tree Program[22] is continuing, now with federal support. As of 2020, more than 30 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. In terms of forests, Alberta continues to implement its Enhanced Reforestation of Legacy Disturbance Program[23] which provides funds to reforest public lands that have been disturbed by wildfire, increasing carbon sequestration. Alberta also continues to address mountain pine beetle outbreaks[24] through early intervention and monitoring, reforestation, and treatment of affected areas to limit the damage on forest health and productivity.

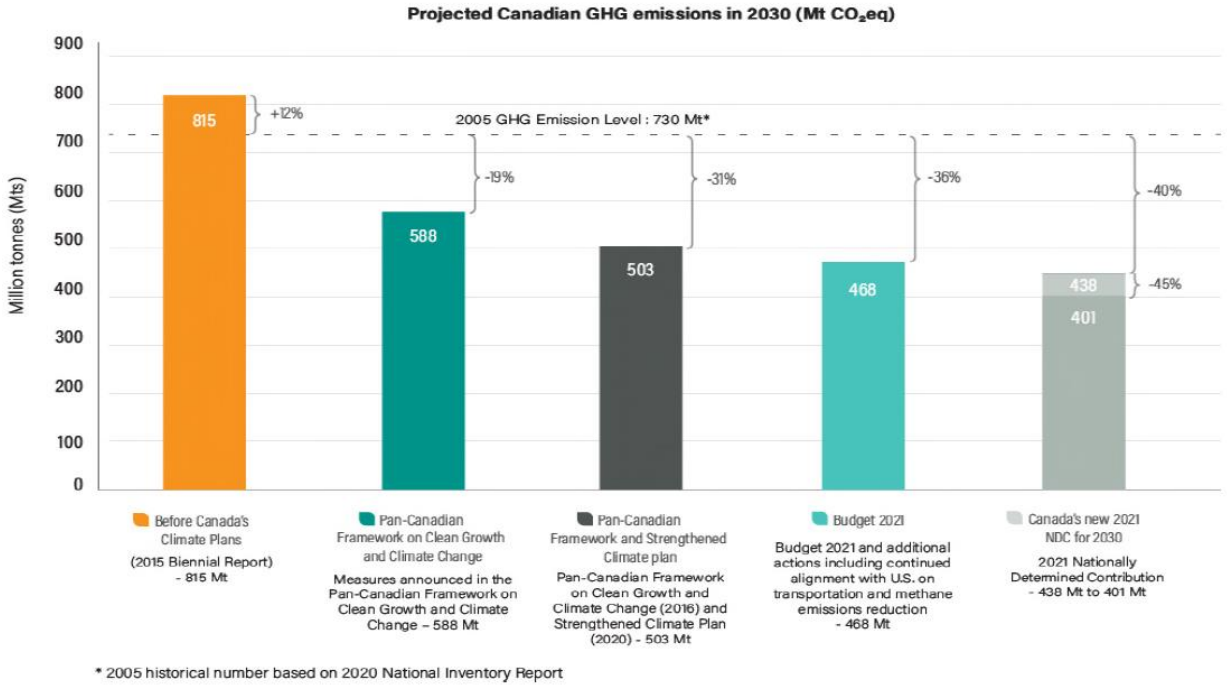
In 2018, the Government of British Columbia (B.C.) released its CleanBC Plan[25] highlighting a set of across-sector actions to help meet B.C.'s legislated emissions reduction targets, including a 40% reduction below 2007 levels by 2030 and an 80% reduction below 2007 levels by 2050. In December 2020, B.C. released its 2020 Climate Change Accountability Report, summarizing the province's actions and process to date toward its emission reduction targets.[26] 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[27] uses a portfolio approach to enhance the carbon sequestration capacity of B.C.'s forests. As well, B.C.'s Wood First Initiative[28] encourages the innovative use of wood in buildings. In addition, B.C. has also developed policies and projects to increase the use of low carbon and renewable materials in all public sector infrastructure projects.

[20] https://www.ontario.ca/page/made-in-ontario-environment-plan
[21] https://www.ontario.ca/page/sustainable-growth-ontarios-forest-sector-strategy
[22] https://forestsontario.ca/en/program/50-million-tree-program
[23] https://friaa.ab.ca/programs/enhanced-reforestation-of-legacy-disturbance-enrld/
[24] https://www.alberta.ca/mountain-pine-beetle-in-alberta.aspx
[25] https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_2018-bc-climate-strategy.pdf
[26] https://cleanbc.gov.bc.ca/app/uploads/sites/436/2020/03/2019-ClimateChange-Accountability-Report-web.pdf?2
[27] https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/natural-resources-climate-change/natural-resources-climate-change-mitigation/forest-carbon-initiative
[28] https://www2.gov.bc.ca/gov/content/industry/forestry/supporting-innovation/wood-first-initiative

Update on Progress

Over the past five years, an intensive national effort has been made to put in place the measures needed to put Canada on a path to significantly reduce emissions. The PCF has guided this progress, reducing national emissions that were on a steady upward trend prior to its implementation. While the progress and foundation set by the PCF have been vital to Canada's GHG emission reductions, Canada strives to do more to address the ever-increasing impacts of climate change. Canada released its SCP to demonstrate the federal Government's commitment to exceeding Canada's original 2030 target of a 30% reduction below 2005 levels.

Canada's latest GHG National Inventory Report[29] (published in April 2021) showed that emissions were 730 Mt CO_2e in 2019. Based on the Government's emission projections in the SCP, the proposed actions outlined in the SCP – once fully implemented – enable Canada to exceed its previous 2030 target of 511 Mt CO_2e (a 30% reduction below 2005 levels). The SCP projects GHG emissions of 503 Mt CO_2e in 2030, providing a 31% reduction below 2005 GHG emission levels. In terms of the land sector, the SCP modeling projects that land use, land-use change and forestry (LULUCF), plus the expected impact of its proposed natural climate solutions and the measures in the plan to reduce emissions from fertilizer use in agriculture account for 27 Mt CO_2e of this reduction.



(*Source: Canada's Enhanced NDC submission*)

Canada's enhanced NDC requires emissions to reach 401-438 Mt CO_2e by 2030 – a 40-45% reduction below 2005 levels. Factoring in the Government of Canada's 2021 budget measures and additional actions, such as continued alignment with the United States, Canada's 2030 emissions would fall to 468 Mt CO2e by 2030 (equivalent to 36% below 2005 levels). Canada's modeling likely underestimates emission reductions because it does not capture the full range of innovative technologies that are in early stages of the commercialization process nor does it reflect the likely

[29] https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/inventory.html

improvements in technology performance or cost reductions. Further, additional provincial and territorial measures will build on the impacts of the proposed federal measures in the SCP, leading to further emission reductions. The Government of Canada is committed to continue working with its partners to identify and support new climate actions.

Major Forest Disturbances in Canada

Wildland Fire in Canada

Canadian wildland fire agencies demonstrated their commitment to wildland fire preparedness and response through active hiring of fire personnel, adjusting training practices to minimize contact and slow COVID-19 spread potential, and assessing prescribed burning operations. 2021 has been one of Canada's busiest wildfire seasons in recent years with over 6,100 wildfires (33% more than the 5-year average)[30] impacting five provinces and territories across Canada. High level of fire activity led to multiple wildland fire related business interruptions in the wood manufacturing industry. A combination of factors such as unfavourable market conditions, transportation delays and limited supply of lumber suggests that over 165 million broad feet of lumber production may have been forgone due to wildfire related evacuations. For historical comparison, wildfires in 2017 led to the lost production of over 98 million board feet of softwood lumber. During the 2021 wildfire season, Canada received international resources from Mexico, South Africa and Australia. The COVID-19 pandemic continued to be a widespread health risk that resulted in some international partners being unable to assist due to ongoing restrictions. All parties involved undertook vaccinations, PCR testing, and all planned precautions.

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 8,000 wildfires burning approximately 2.5 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 double.[31]

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 wildland 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.

[30] Up to August 31, 2021: https://ciffc.net/en/ciffc/sitrep/2021-08-31
[31] https://www.nrcan.gc.ca/forests/topics/fires-insects-and-disturbances/blueprint-wildland-fire-science-canada-2019-2029/21614

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*[32] 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. Recently, the CCFM has identified that a greater emphasis on wildland prevention and mitigation is needed to increase wildland fire resilience in Canada and reduce future wildfire risk. Positive steps have been taken to advance on this priority, such as CCFM endorsing the CIFFC mandate in September 2020 to include emergency management pillars prevention and mitigation in addition to CIFFC's current mandate on preparation and response. The Government of Canada has recently invested additional funding to expand mapping of wildfire risk in northern forests of Canada and increased capacity support for CIFFC to increase wildfire risk assessment and continue to build resiliency to wildland fire.

Pests

Spruce Budworm in Eastern Canada

Spruce budworm is one of the most damaging pests in North America, with most regions of Canada reporting defoliation damage 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 about 500 million cubic metres of spruce and fir, with a commercial value of about $12.5 billion in Quebec alone.

The most recent spruce budworm outbreak began in 2006 in Quebec. As of 2020, it had spread to cover more than 13.5 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. Quebec has earmarked $55 million for these treatments in 2021. Spruce budworm populations are also rising in Ontario with visible damage starting to appear in northeastern forests of the province. Ontario has delivered a treatment program for the first time in 2021, which is expected to continue and increase in future years

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

[32] https://www.ccfm.org/english/coreproducts-wildlandfires.asp

populations low. Research results to date are positive, indicating that an early intervention strategy may be a viable option to manage 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 beetle has 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 forest.[33] 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. The Government of Canada is providing up to $68 million over three years (2020-21 to 2022-23) to help control, research and mitigate the impacts of the mountain pine beetle on Canada's forests. More specifically, this new funding is helping address the outbreak in Alberta and the Rocky Mountain National Parks while mitigating negative impacts on the forest sector and communities. Ongoing research on mountain pine beetle in newly invaded ecosystems is also supported to assist with strategic approaches to slow the spread of this pest eastward across Canada.

Emerging Issues

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 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:

- Canada-UK Trade Continuity Agreement (2021)
- Six of the parties of the *Comprehensive and Progressive Agreement for Trans-Pacific Partnership* (CPTPP) (Australia, Japan, Mexico, New Zealand, and Singapore and Vietnam (2018), not yet in force for Brunei Darussalam, Chile, Malaysia and Peru);

[33] 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).

Canada is also negotiating free trade agreements with Indonesia, 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.

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 2016. In 2017, the forest sector contracted 2.4% and in 2018 by 0.6%, before a greater decline of 8.3% in 2019. In 2020 and on an annualized basis, the forest sector has contracted 3%. By contrast, the overall Canadian economy grew 1.7% in 2019 and contracted by 5.3% in 2020. While demand for solid wood products is expected to remain strong in 2021, further increases in production will be limited by fibre supply challenges, most notably in British Columbia. Production of both newsprint and printing and writing paper is expected to continue its downward trend in 2021.

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 growth of emerging markets had contributed to significant market diversification over the past decade. Between 2010 and 2019, exports of wood pulp to China increased 66% and exports of wood products increased 64%. However, the COVID-19 pandemic disrupted global economies and interfered with the transportation of goods. As a result, Canada refocused its shipments of forest products to the U.S. (share of exports to the U.S. increased to 75% in 2020, a growth of nearly 11% year/year).

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.

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 approximately 75% 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 over 40% between February and April 2020, reaching a low of 938 thousand units at a seasonally adjusted annual rate (SAAR). This level of housing starts was well below the long-term (20-year) average of 1.3 million annual starts. However, between April and July 2020, housing starts climbed 60% to nearly 1.5 million units (SAAR). Starts have remained well above the long-term average through the first half of 2021, up 24% from the same period in 2020 driven by strong demand for housing after years of underbuilding. The impacts of COVID-19 have increased demand for single-family homes. The share of multi-family starts has declined from almost 35% in Q1 2020 to 28% in Q2 2021. As single-family homes use about three times the amount of structural lumber as multi-family units, strength in the single-family segment has contributed to increased demand for softwood lumber than would have been seen with similar growth in multi-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. NRCan is also working closely with NRC, provincial partners and with the design and construction industry to transition the NBCC to become more performance-based which will support the adoption of innovative design and construction technologies and help mitigate some of the challenges associated with the current regulatory environment.

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. Since 2011, Canada's production capacity has increased 37.5% with year-over-year increases between 5-10% each year since 2014. Increased production was first driven by demand from Europe and today new markets in Asia account for increased demand. 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. More recently, Canadian pellets are being purchased for use in combined bioenergy and carbon capture and storage (BECCS) facilities. Notably, in 2021, Pinnacle Renewable Energy in western Canada was acquired by Drax Group in the UK, who will begin construction of their first BECCS facilities in 2024.

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 Regulations, 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 (CORSIA). 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 CORSIA.

Bioenergy and Carbon Capture, Utilization and Storage

The Intergovernmental Panel on Climate Change, the International Energy Agency, and the International Renewable Energy Agency, all recognize bioenergy with carbon capture and storage (BECCS) as essential for limiting global warming to 1.5 °C by 2050, reducing as much as 52% of necessary global emissions by 2050. With decades of carbon capture and storage expertise, favourable geological formations and an abundance of forest residues, Canada is well positioned to become a global leader in BECCS. In 2021, the Government of Canada invested $319 million over seven years

to advance the commercial viability of carbon capture, utilization and storage (CCUS) technologies. This funding could support BECCS deployment in Canada through indirect advancement of CCUS technologies and direct funding of BECCS projects. The Energy Innovation Program, with an annual budget of $24 million, is in the process of receiving proposals for CCUS front-end engineering design studies. The Government of Canada also introduced an investment tax credit to businesses for capital invested in CCUS projects that will be implemented in 2022.

Value-Added Wood Products[34]

In 2020, Canada exported about $5.6B of value-added products, nearly exclusively to the U.S. (97%). Exports of value-added wood products increased 18% in 2020, rebounding from a 12% decline from the previous year, which was primarily caused by a reduction in particle board demand. 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 a new generation of engineered mass timber products and the implementation of certain wood-friendly policies is also contributing to this.

To track the growth of mass timber buildings and manufacturing in Canada, Natural Resources Canada published the first of its kind State of Mass Timber in Canada report (May 2021). This report established a baseline dataset of nearly 500 completed or under construction projects since 2007 and data on 21 mass timber manufacturing facilities in Canada. Some key findings include: the number of mass timber projects has steadily increased from 2007-2019 (on average over 10% each year); and the average size of projects is also growing steadily each year. Likewise, projects are becoming more complex as there is more choice in mass timber products and growing market acceptance. To further track and analyze the growth of mass timber in Canada, an interactive State of Mass Timber web-based map[35] and data dashboard was developed and published to support the report. The map is updated on a quarterly basis and now highlights over 550 mass timber projects.

Sawn Softwood (also known as Softwood Lumber)

In 2020, Canada produced 54.7 million cubic metres[36]of sawn softwood. 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 the residential construction segment. This increased demand, 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. Prices declined throughout the summer of 2021 but remain above pre-pandemic averages.

[34] 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.
[35] https://nrcan-rncan.maps.arcgis.com/apps/dashboards/673e6ac7e4b34119aa83fd6891808df2
[36] Figures above have been adjusted to reflect actual volumes as opposed to nominal.

The United States is the primary destination for Canadian sawn softwood exports. In 2020, 84% of Canada's sawn softwood exports, by volume, went to the U.S., an increase of almost 54% over 2019 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, currently averaging 8.99%, have caused instability in softwood lumber prices and export levels. Canada has challenged the U.S. duties before WTO, NAFTA and CUSMA panels. While victories in these challenges put increased pressure on the U.S. to return to the negotiating table, an interest in returning to negotiations has not yet been expressed.

China is the second largest destination for Canadian sawn softwood products. 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, with COVID-19 driving steeper declines. In 2020, sawn softwood export volumes to China decreased by 32% over 2019 levels. In the first six months of 2021, exports continued to decline, falling by more than 57% compared to the same period in 2020. 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. With extremely strong demand from the North American housing market and high lumber prices, producers have been exporting less sawn softwood overseas.

Oriented Strand Board (OSB)

OSB represents 83% of Canada's total structural panel exports by value. In 2020, almost all (96%) of Canada's OSB exports were destined for the U.S. (up from 93% in 2019), where it is mainly used in housing construction. OSB exports increased 55% in 2020 by value, largely as a result of improved prices for OSB in North America, primarily from increased demand from the housing sector. As of June 2021, North American demand for OSB is forecasted to grow 3% above 2020; a reflection of persistent growth in the residential construction sector. This upward trend is anticipated to hold in 2022.

Paper and Paperboard

In 2020, 81% of paper and paperboard products that Canada exported (by value) were destined for the U.S. Total exports of paper and paperboard products fell 17% in 2020, due largely to the reduction of newsprint exports, which fell 31%. The reduction in newsprint exports is a result of declining global demand following the rise of digital media which has led to 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 puts a negative pressure on export markets. India, Canada's second largest newsprint market, imposed a 10% tariff in July 2019 on newsprint and some other paper products coming from Canada. Following the imposition of these tariffs, exports of newsprint to India declined 13% in 2019 and another 28% in 2020.

Wood Pulp

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 2020. While exports of Canadian wood pulp declined for most countries in 2020, the declines were relatively lower for China (-16%) and the U.S. (-11%) than for the next 6 largest importers of Canadian wood pulp, where exports fell on average nearly 27%.

Similar to certain paper grades, 2020 was another challenging year for Canadian wood pulp exports, with the total value of exports falling nearly 20% from 2019. The 2020 decrease in wood pulp exports followed weak global demand for end-use products, combined with domestic fibre supply challenges. Moreover, limitations in global transportation due to COVID-19 have exponentially increased shipping prices. Thus, with the overall cost of importing wood pulp overseas elevated, global demand for Canadian wood pulp has dampened. These logistical challenges are expected to continue into 2022.

Looking forward, the recent slowing of China's economy in 2021 has weakened domestic consumption, while pulp demand in the U.S. will likely remain solid for the rest of 2021. A recent surge in COVID rates in China and land transportation challenges to the U.S. (expensive cost of trucks and a shortage of trucks and drivers), are expected to impact at least short-term demand. Similarly on the supply side, disrupted logistics remain a notable challenge to pulp supply. Increasing costs for container shipments and trucking rates have resulted in elevated in-transit pulp volumes. It is unexpected that these conditions with improve in the first half of 2022.

Bioproducts

In Canada, the domestic market for biopolymers and bioplastics was worth an estimated $165.2 million USD in 2019, and is projected to reach $353.2 million USD by 2025. From 2018 to 2020, the Innovative Solutions Canada program hosted a series of Plastics Challenges ranging from sustainable alternatives to plastic packaging to improved compostability of bioplastics. In 2021, the Government of Canada announced $1.3M to support five projects that aim to reduce plastic waste, prevent plastic pollution and support the transition to a national circular plastics economy.

The Canadian market for lignin is estimated to be worth $15.8 million USD, and is projected to reach $19 million USD by 2025. The most significant application of lignin in Canada is as a concrete additive, representing 50.9% of the domestic market. Kraft lignin is the fastest growing market segment in Canada. Canada has one commercial lignin recovery operation, and most of this recovered lignin is burned to provide energy for plant operations.

The nanocellulose market in Canada was estimated to be worth $10.9 million USD in 2019, and is projected to reach $28.5 million USD by 2025. The nanocellulose product segment with the largest and fastest growing market share (65.3%) is cellulose nanocrystals. By application, composites and packaging are the largest segment (30.2%) of the domestic nanocellulose market, with personal care products representing the fastest growing application.