

Forestry Solutions for Housing and Climate: Growing the BC Value Chain

Anyone who has tried to buy a home recently in a Canadian city knows that Canada is facing a housing crisis. The Canadian Mortgage and Housing Corporation (CMHC) estimates the country will need 5.8 million new housing units by 2030 in order to meet growing demand and achieve affordability. At our current rate of construction, however, we'll only build 2.3 million units – so we need to more than double our output.

At the same time, anyone who struggled through 2021's record heat dome in western Canada or experienced wildfire smoke, flooding, or drought knows that our changing climate will have increasingly serious effects on our well-being. Perhaps less known is the fact that buildings are a major contributor to climate change: the building sector is the third-largest source of emissions in Canada, releasing nearly 90 megatonnes (MT) of greenhouse gases (GHGs) annually.¹ Further, according to recent statistics from the UN Environment Programme (UNEP),² the built environment accounts for at least 37% of global carbon emissions. That's why the building materials we use today matter.³

Forest products, harvested and manufactured sustainably in BC, can be part of the solution. A more sustainable built environment requires innovations in building systems and in the materials used to reduce embodied energy and emissions in new buildings. Indeed, as Natural Resources Canada asserts, "building with wood is one strategic way Canada can reach its 2030 climate change target while creating jobs for Canadians and opportunities for Canadian businesses."⁴

Forging deeper connections across the wood products value chain in BC – from forest to lumber to engineered wood, mass timber, and other finished products – is critical to growing the forest sector and enhancing its competitiveness. It is also key to ensuring green building materials for affordable housing here, and elsewhere in the world, are sourced in BC and Canada.

Wood: An Environmental Champion

Sustainably produced wood can be an environmental champion. Life-cycle analysis (LCA) research shows that the embodied carbon of wood-based construction materials is 72% lower than that of steel and 66% than that of cement.⁵ Unlike steel or cement, which release large amounts of carbon dioxide in their manufacture, wood sequesters (absorbs) carbon as it grows. Further, in BC, much of the energy used in wood manufacturing comes from hydroelectricity or biomass.⁶ Wood is also a renewable resource.

1 https://publications.gc.ca/collections/collection_2022/eccc/En4-460-2022-eng.pdf

2 <https://www.unep.org/resources/report/building-materials-and-climate-constructing-new-future>

3 <https://natural-resources.canada.ca/energy-efficiency/green-buildings/green-building-principles/25301>

4 <https://natural-resources.canada.ca/our-natural-resources/forests/industry-and-trade/forest-products-applications/greening-our-built-environments-wood/16834>

5 <https://www.fpac.ca/reports/solutions-to-canadas-housing-crisis-are-found-in-the-forest>

6 <https://www.naturallywood.com/resource/embodied-carbon-a-primer-for-buildings-in-canada/>



In its 2023 white paper *Building Materials and the Climate: Constructing a New Future*, the UNEP recommends a shift to using regenerative building materials such as wood. Such a shift will be essential if we wish to reduce the risk and impacts of climate change.

Wood products have the potential to be used in even more construction applications than they are today. While dimension lumber has traditionally been restricted to use in single-family homes and low-rise construction up to 6 storeys tall, new products and new applications for existing products are enabling wood to edge into building types that have historically been built from steel and concrete. For example, the BC Building Code currently allows the construction of mass timber buildings up to 12 storeys high for residential and office use, and with recent proposed changes this could soon be expanded to 18 storeys, as is permitted in the United States. According to research by the RBC Climate Action Institute, the widespread adoption of mass timber in Canada could cut the embodied emissions in Canadian buildings by up to 25%.⁷

A Business Environment in Transition

The BC forest industry has the opportunity to play a big role in easing both the housing and the climate crises by providing low-carbon building materials generated using sustainable forest management (SFM) practices.

However, exposed to the whims of nature, the unpredictability of commodity markets, evolving public policy, and trade disputes, the BC forest industry is also facing a challenging operating environment.

- **Natural disasters** such as the mountain pine beetle epidemic and recent severe wildfire seasons have reshaped BC's timber supply, and climate change is exacerbating the problem.
- **Market volatility**, long an issue for commodity industries like softwood lumber and pulp, continues to challenge both primary and secondary producers alike.
- **The US/Canada softwood lumber dispute** continues to undermine Canada's competitiveness in US markets.
- **Public policy** is evolving in BC to recognize Indigenous rights and title and increase conservation. In the long run, these changes will lead to greater stability for land use planning. However, in the short term, they have caused uncertainty.

Spotlight: Mass Timber

Mass timber is a value-added engineered wood product. Examples of mass timber products include glue laminated (glulam) columns and beams, cross laminated timber (CLT) panels, and dowel laminated (DLT) panels. They are typically solid, structural load-bearing components engineered for strength. Mass timber products are uniquely well suited for prefabricated housing projects, reducing construction timelines, noise, disruptions, and emissions.

Although the use of mass timber is still relatively new in North America, it has been growing rapidly. BC is both the largest producer and consumer of mass timber on the continent and is home to 355 of the 832 mass timber projects across Canada.⁸

⁷ <https://thoughtleadership.rbc.com/timber-rising-how-wood-can-spur-canadas-green-building-drive/>

⁸ <https://nrcan-rncan.maps.arcgis.com/apps/dashboards/041e338d2a4d4b3a82ff2c238a9f0f93>



During this transition period, harvest levels have fallen from about 70 million m³ in 2018 to less than 40 million m³ in 2023, resulting in close to 9,000 job losses (4,500 within the last two years).

While timber harvests have fallen, costs have increased. Benchmarking studies by Forest Economic Advisors (FEA)⁹ show that BC's log costs are currently among the highest in North America. Part of this is due to demand and supply economics: as timber supplies dwindle, competition for supply has pushed up the price of raw materials.

The combined effects of declining (and less predictable) harvests and high costs has led to curtailments and permanent closures across the forest supply chain and is impacting investment in the sector.

Leveraging BC's Strong Foundation

Notwithstanding current challenges, the BC forest industry has significant opportunities for leadership in the future of wood products. With 55 million hectares of forests, of which 41 million hectares (75%) is third-party certified, BC produces about 5% of the world's softwood lumber.

BC has a rich and well-developed forest business ecosystem:

- A modern and deeply integrated supply chain, including foresters and loggers, First Nations, lumber and secondary manufacturers, developers and architects designing with mass timber, and pulp, paper, and bioenergy producers
- A network of businesses that supply the forest industry—such as equipment suppliers, software developers, and international traders
- A skilled workforce
- Top research and education institutions
- A network of entrepreneurs

⁹ <https://getfea.com/publication/global-cost-benchmarking-report>



Enabling the Forest Industry as a Solutions Provider

The forest industry can help meet the dual challenges of growing our housing stock and meeting our net-zero commitments. To achieve this, we need to have a robust forest business ecosystem—just as we need to maintain healthy forests. As parts of the supply chain all rely on each other (for example, pulp mills rely on sawmills for their raw material supply, while sawmills rely on pulp mills to take their byproducts), shocks to one part of the chain have a ripple effect throughout the system.

The key to having a wood products supply chain is having a steady supply of wood. Forest planning and silviculture have always been important, but as we transition to a more holistic forest management paradigm, they will become even more so. As more First Nations acquire forest tenure, new and innovative partnership opportunities will emerge within the existing value chain.

At the opposite end of the value chain, we have the potential to add new “links.” We need to build faster, cheaper, and better—and prefabrication can help with this. Mass timber is one such opportunity where the BC industry can leverage existing expertise, increase manufacturing capacity, and deliver much needed low-carbon housing.

Value-added products such as mass timber have also been proposed as a means of “growing the forestry sector pie” while adjusting to a smaller timber supply. To help achieve this, BC launched a Mass Timber Action Plan,¹⁰ stewarded by the Office of Mass Timber Implementation (OMTI), and created the Value-Added Accelerators initiative.¹¹

Mass timber and other engineered products often have unique upstream and downstream supply chain needs, such as square-edge specialty lumber, and specialized distribution networks. And getting these materials to the end of the chain will require new ways of engaging with building developers, designers, and contractors. Adding new parts to the forestry value chain (or “business ecosystem”) can therefore be more complicated than simply building a new plant.

As forestry companies operate in volatile commodity markets, often at tight margins, they have little room for error when making business investments. Forestry is a capital-intensive industry; investments take many years to bear fruit. Careful examination of market trends can help firms select and time investments. Long-term timber supply stability is thus vital to attracting private investment. In addition, government programs can help alleviate risk and stimulate investment; however, if governments outside of Canada perceive such programs to be subsidies, this can provoke retaliatory trade practices.

¹⁰ https://www2.gov.bc.ca/assets/gov/business/construction-industry/bc_masstimber_action_plan_2022.pdf

¹¹ <https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/value-added-accelerators>



Conclusion: Change Presents Both Challenge and Opportunity

We in the BC forest industry have a long list of questions to ask ourselves as we navigate changing dynamics on fibre supply, diversification, forest health, wildfire, and community protection. We know demand for low carbon and renewable products is going up. But what are the products and services that BC can have a competitive advantage in? Can we grow the value of our output, while reducing the volume of wood we move through the chain? Are there steps we could take to smooth the transition? What can we do to reduce the risk inherent to investing in new products and technologies? How can we better align and coordinate between forest managers, producers, and end users?

North America needs more housing, and will need to find new ways to build it faster and more affordably. Wood-based building systems - both traditional (i.e., wood frame) and emerging (i.e., mass timber) - will play an important role in meeting this need.

We have the forest, we have the infrastructure, we have the skills, and most of all, we have the desire to diversify and grow our industry. “Reconnecting the dots”—reimagining and re-working our supply chain so that we remain globally competitive—won’t be an easy task. Yet, doing so represents one of the biggest and most important opportunities in front of the BC forest sector right now.