



Conseil de l'industrie forestière du Québec

Brief submitted to the House
of Commons Standing
Committee on Natural
Resources

05/07/2021

Contents

1. The Conseil de l'industrie forestière du Québec	2
2. The industry's energy profile	2
2.1 Pulp, paper, cardboard and panel mills	2
2.2 Forest operations	3
3. The industry's performance in the fight against climate change	4
4. Bioenergy	6
5. Hydrogen	8
6. Regulatory framework	10
7. Conclusion	11

1. The Conseil de l'industrie forestière du Québec

As the main umbrella organization for Quebec's forest industry, the Conseil de l'industrie forestière du Québec (CIFQ) represents the interests of companies involved in softwood and hardwood lumber, rotary cutting, pulp, paper, cardboard and panels, those that manufacture engineered wood, and the goods and services companies that support them. Through its expertise and that of its partners, the CIFQ guides and supports its members in various issues, including the environment and energy.

The forest industry is a driver of economic development for Quebec. In 2019, it paid **\$4.8 billion** in taxes to the governments. It accounts for **17.4% of Quebec's exports** and **4.7% of the gross domestic product**.

2. The industry's energy profile

2.1 Pulp, paper, cardboard and panel mills

Quebec is Canada's largest producer of pulp and paper. Its pulp, paper, cardboard and panel mills are major energy consumers. Annually, the sector uses **142 PJ** (the equivalent of 39.4 TWh) of energy, ranking it second after the aluminum and non-ferrous metals industry. Electricity and biomass are the main energy sources, each accounting for 40% of needs, followed by natural gas (18%), and petroleum products and other sources (2%). The electricity supplied to paper manufacturers represents 40% of Hydro-Québec Distribution's electricity sales.

Energy supply (from all sources) constitutes, on average, 30% of plant operating expenses. This is a significant proportion, and companies need to ensure that energy costs are kept as low as possible to remain competitive. The main fuels used for steam production are black liquor solids, residual forest biomass and natural gas. Currently, many plants have cogeneration units that consume significant amounts of biomass for energy and steam production. It is therefore important to find the right balance between the development of bioenergy, which will significantly increase the demand for

forest biomass, and the maintenance or even strengthening of the forest industrial structure.

The implementation of public policies to fight climate change significantly increases the costs of fossil fuel energy sources that emit greenhouse gases (GHGs), a trend that will continue to grow. Their competitiveness could be affected if, in addition, the same rules do not apply in competing foreign markets to which we export. Canada cannot act alone, nor can it lag behind in supporting the conversion of its industrial base. As for the pulp and paper industry, it must seek technically and economically advantageous energy solutions.

2.2 Forest operations

Forest harvesting operations require large quantities of energy, mainly for the operation of mobile machinery. Each year in Quebec, 500 million litres of diesel are consumed for forestry operations.

There are currently no viable solutions to replace fossil fuels for mobile equipment used in the forest. The engines of current equipment are not well adapted to receive a minimal volume of renewable fuels (the supply of low-emission engines is scarce). As well, since most forestry operations are carried out in remote areas, it is difficult to access affordable alternative fuels to diesel.

Furthermore, wood processing and forestry operations generate large quantities of biomass, which is an important input to fuel cogeneration units for the production of energy and steam in pulp and paper and cellulose mills. These mills are therefore largely dependent on biomass supplies (mainly bark) from primary wood processing plants and logging residues from forestry operations.

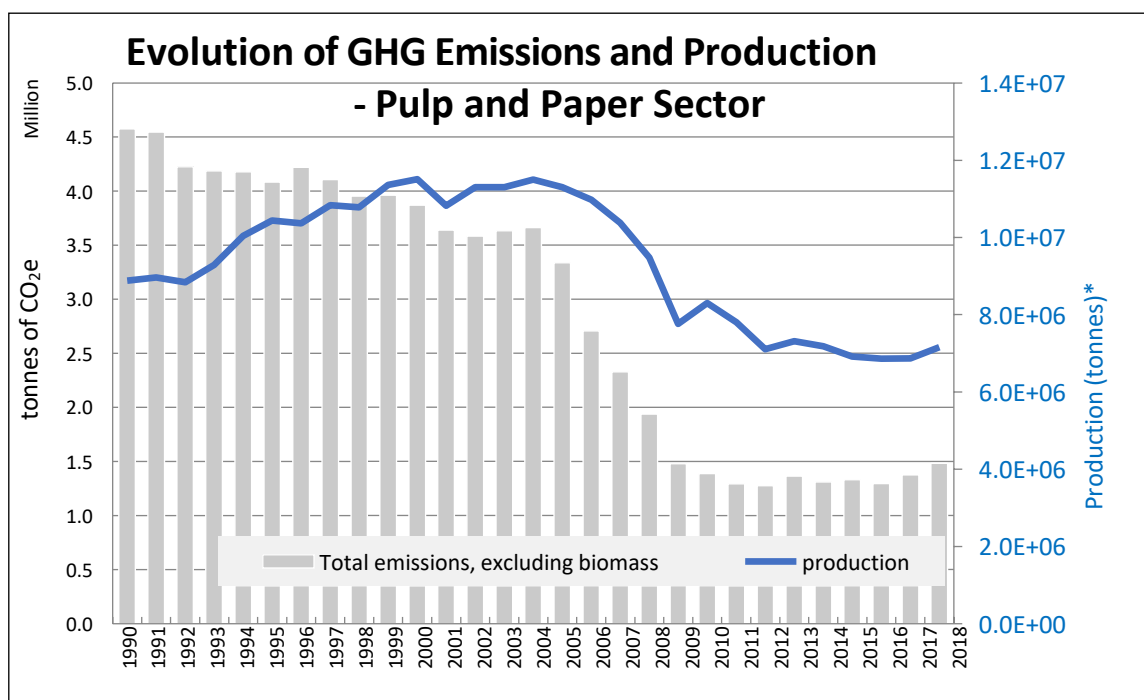
Trees that are processed into sawmill products generate large quantities of chips, shavings and sawdust (up to 55%), which are mainly used by the pulp, paper and cardboard, panel and pellet industries; therefore, the balance between these sectors is crucial and forms the basis of the forest industrial structure.

3. The industry's performance in the fight against climate change

Since 1990, GHG emissions from the Quebec forest industry have decreased significantly, from 4.6 million tonnes of CO₂e in 1990 to 1.5 million tonnes of CO₂e in 2018, with a slightly lower production level. This corresponds to a reduction of 68% in absolute terms and 60% in intensity, which is nearly twice the target Quebec hopes to achieve by 2030 (-37.5%).

Over the same period, the GHG reduction of all industrial sectors combined was 24%. The paper sector alone contributed to a reduction of 3.1 million tonnes of CO₂e out of the 7.8 million tonnes of CO₂e from all industrial sectors in Quebec, making it one of the best performing sectors in this regard while remaining the leading Canadian newsprint producer.

Despite its positive results, the forest industry is being hit hard by carbon pricing because of the significant amount of fossil fuels it uses throughout its processing chain, from the trees in the forest to the products we depend on every day. In addition, because the industry exports mainly to economic zones where there is no carbon pricing, its competitiveness has deteriorated.



* Data from the annual report (MELCC)

Furthermore, this performance does not include additional savings from replacing petroleum products with timber and paper products, which, because of their small carbon footprint, help reduce emissions. In its 2019 report, the Intergovernmental Panel on Climate Change (IPCC)¹ stated that when wood carbon is transferred to harvested timber products, these products can store carbon in the long term and can be substituted for high-emission materials, reducing emissions from other sectors.

The IPCC has also identified the key priorities in this sector for fighting climate change: afforestation and reforestation (increased forest area) and decreased deforestation (reduced loss of forest area); sustainable forest management and development (harvest, regeneration of developed forest areas, and production of timber forest products).

¹ Shukla, P R, et al. *Climate change: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. Climate change and land, Intergovernmental Panel on Climate Change, 2019.

It has been demonstrated that joint action to intensify forest management and increase use of bioenergy and wood products helps Quebec realize its full potential with respect to its forests and their role in the fight against climate change.

Canada is a leader in the sustainable management of its forests, with 40% of the world's certified forests located in Canada (a quarter of which are in Quebec).² It is important to keep in mind that it is forbidden to harvest a tree in a public forest without a government permit. It's the law!

4. Bioenergy

With the implementation of federal and provincial regulations, the development of bioenergy and its use as an alternative to fossil fuels should see significant and rapid growth in the coming years.

One thing is obvious: “bioenergy” means “biomass” of various kinds (urban, agricultural and forest waste, industrial biosolids, etc.).

Various forms of reclamation are used to extract energy content from these materials, and as technological developments and innovation continue, new uses and outlets are found for them. Inevitably, bioenergy development will have a direct impact on increased demand for various forms of biomass, which could lead to scarcity and a subsequent price increase.

Considering the great diversity of the needs for biomass, the CIFQ is of the opinion that it is becoming necessary to establish a type of use hierarchy in order to promote the optimal use of resources when analyzing projects and to maximize the added value created and the broadening of the forest industrial sector in the Canadian economy rather than its cannibalization. A large part of lumber and forest harvesting by-products is recovered to fuel

² <https://cdn.pefc.org/pefc.org/media/2020-01/de73c4e1-7a28-46d2-b71d-b86100497b9d/f995b54a-aab1-52afa47e-83ddc9825712.pdf>
<https://www.pefc.org/discover-pefc/facts-and-figures>
<https://www.fpac.ca/canadian-forestry-is-sustainable-forestry-2/>
https://cfs.nrcan.gc.ca/publications?id=40220&lang=en_CA

the cogeneration units in many plants.

Ultimately, it is the price that a possible user offers and secures for the biomass in the long term that will determine the hierarchy of potential uses. The cost of residual forest biomass can vary significantly. Average costs can be around \$125/ODMT, with a wide standard deviation depending on the supply context.

Currently, bioenergy (biofuels) are reported to represent only 7% of Quebec's energy balance and comes mainly from residual forest biomass³ (unused or undeveloped by the primary wood processing industry) recovered for electricity or heat production. Overall, based on estimates of stocks of biomass from various sources (forestry, agri-food and urban), there is significant gross potential for energy reclamation. Nevertheless, this potential new use must be integrated in addition to and not subtracted from the industrial forest sector. That is why the CIFQ is of the opinion that the use hierarchy is so important.

To ensure the start-up and development of bioenergy products from residual forest biomass and the financial viability of strategic projects, it is of utmost importance to be able to count on a predictable, stable supply at competitive costs. One of the conditions considered essential to achieving this objective is the transportation distance between the supply site and the place of use. This is especially true for forestry operations, which are often located in remote areas and where access to biofuels for forestry machinery to replace fossil fuels is very limited.

Considering the issue of remote areas, market conditions may not be favourable to develop infrastructure in order to produce renewable energy and distribute it to customers. In that context, the government will have to come up with the necessary tools to eventually compensate for the price differentials between renewable fuels and conventional fossil fuels, until

³ Whitmore, J. and P.-O. Pineau, 2021. *State of Energy in Quebec*, 2021, Chair in Energy Sector Management, HEC Montréal, prepared for the Quebec Ministry of Energy and Natural Resources, Montreal.

those prices are close to parity.

Since significant GHG reduction gains can be achieved in this sector by replacing a portion of the 500 million litres of diesel consumed annually during harvesting and transport operations using cleaner fuels, special attention must be paid to make bioenergy and potentially green hydrogen accessible in remote areas of Quebec.

This is a vast subject that must be carefully analyzed considering not only the issues of regional availability, supply costs and current uses of forest biomass, but also the future opportunities provided by the value chain of bioproducts and the types of bioenergy (wood residue chips, pellets, black pellets, compressed wood logs, microchips, biochar, syngas or gas from pyrolysis or gasification, pyrolytic oil, bioethanol, methanol, biodiesel, biojet fuel, etc.). Once again, the prioritization of the value added generated should serve as a guide.

It is therefore necessary to look for ways to provide opportunities to pulp, paper, cardboard, panel and other mills in order to decrease energy supply costs and further reduce GHGs.

5. Hydrogen

With the demand for hydrogen growing around the world, a number of countries have adopted very aggressive strategies with significant capital to boost the supply and demand of this energy vector and to implement market conditions favourable to its use.

In June 2020, Germany launched *The National Hydrogen Strategy* and plans to spend €9 billion (C\$13.5 billion) on hydrogen by 2030. If Canada wants to assume a leadership role in this field, it will need to invest significant financial resources in it in addition to implementing economic, technological and regulatory levers. It will also need to be clear on the type (colour) of hydrogen it wishes to produce: grey, blue or green.

Since hydrogen, like bioenergy, is booming and technological innovations are rapid and numerous, the government will have to take an active role in stimulating market development. Foreign experience shows that hydrogen cannot be developed without strong government support through public policies to create a viable business environment, especially during the emergence phase of the industry, in order to support innovation in a very competitive environment and to foster the creation of new markets.

Considering its potential for reducing GHGs, particularly in economies that are more dependent on fossil fuels, hydrogen is experiencing rapid development throughout the world. The situation in Canada, especially in Quebec, is different because we can count on a large renewable energy production capacity and low electricity rates. For now, hydrogen in the Canadian context seems to have more applications in the mobility sector than in the industrial sector.

As mentioned earlier, pulp, paper, cardboard and panel mills are quite energy intensive and must rely on fossil fuels for lack of other cleaner, cheaper options. Hydrogen can offer interesting opportunities for the replacement of fossil fuels, but industrial applications for hydrogen need to be documented and the knowledge needs to be perfected. Studies and funding for pilot or demonstration projects are needed.

A recent publication (2019) from the VTT Technical Research Centre of Finland, entitled *The Carbon Reuse Economy: Transforming CO₂ from a pollutant into a resource*, anticipates that by 2040, three gigatonnes of CO₂ per year will be captured and transformed into fuels and chemicals or used to manufacture materials and food. Many of the technologies presented in this document are nearing the marketing stage. Building a reuse economy requires low carbon energy and supportive public policies, including CO₂ pricing. These conditions are present in Quebec and British Columbia.

The CIFQ is currently studying projects to recover the CO₂ emitted by pulp and paper mills to make a gaseous fuel. The process consists of combining the CO₂ from the thermal reclamation of biomass with hydrogen to produce biogenic e-fuels (e-methanol, e-diesel, e-kerosene, etc.). The green hydrogen used would be produced by water electrolysis which, combined with CO₂ from the combustion of residual forest biomass, produces green e-fuel molecules. This process reduces CO₂ emissions from paper mills, reclaims that recovered CO₂ and produces a biogenic fuel that is easy to market given its ecological character and the growing market demand for such a product. The potential for CO₂ reclamation is very large and its commercial value is just as great. It is in the industry's interest to proceed quickly with such a demonstration project and to do so in partnership with governments.

As for the creation of process steam from boilers, the industrial use of hydrogen from electrolysis or methane reforming (with CO₂ capture) only makes sense if other, more economically viable and less polluting energy sources are not available. This must be properly assessed with a life cycle approach (feedstock, production, transport, energy use) in comparison with the status quo or other options. Again, the use hierarchy discussed earlier will therefore be very important in identifying the potential for new energy use.

6. Regulatory framework

The federal government published the proposed Clean Fuel Regulations (PCFR) in the *Canada Gazette*, Part I, on December 19, 2020. The CIFQ provided comments on the proposed regulations in March. It applauded the federal government's initiative to propose a clean fuel standard to gradually reduce the carbon intensity of fossil fuels used in Canada, although it did express some concerns.

This new regulatory framework is in addition to those already implemented in Canada and Quebec in recent years, including Quebec's cap-and-trade system for greenhouse gas emissions (SPEDE). Introduced in 2013, the main objective of the cap-and-trade system is to encourage companies to reduce their GHG emissions, which is also the objective of the draft provincial regulations concerning the minimum volume of renewable fuel in gasoline and diesel fuel that will soon be published. The overlap of these regulations is

not without impact on businesses. On the contrary, it increases their additional costs and reduces their flexibility. In order to preserve the competitiveness of the forest industry, the CIFQ believes that any new regulations or requirements should take this reality into account and seek harmonization with other jurisdictions, rather than addition.

The industry conservatively estimates the cost of the SPEDE for Quebec at \$550 million for 2021–2030. An update of this estimate, with prices ranging from \$23 to \$68 per tonne of CO₂e between 2021 and 2030, shows that these costs could reach \$900 million over the entire period. For 2030 alone, the combined impact of the regulatory measures is expected to be about \$190 million for the forest industry, or \$150 million for the carbon market and \$40 million for the PCFR. Over the entire period (2021–2030), the estimated amounts exceed \$1 billion (\$900 million for the carbon market and \$215 million for the PCFR). These are therefore significant financial impacts that may affect the competitiveness of companies on international markets, especially since the forest industry is basically export-oriented.

Since hydrogen, like bioenergy, is a relatively new field, an appropriate regulatory framework is needed to establish clear rules for all, to provide a predictable environment and to ensure public safety, while taking care to ensure the applicability of regulations and their flexibility. Care must also be taken to ensure that the introduction of any new standards or regulations does not create additional regulatory and administrative burdens on businesses and harm Canada's competitiveness if it is the only jurisdiction in North America to act.

7. Conclusion

The fight against climate change inevitably requires an energy transition that will reduce the consumption of fossil fuels in all sectors. The forest industry is well aware of this and that is why it has increased its efforts over the past few years to reduce its GHG emissions, which it has done with positive results.

Of course, there is still work to be done to reach the ambitious targets set by both Canada and Quebec. The implementation of renewable fuels and hydrogen regulations brings both great opportunities and great challenges.

As a global exporter, the industry's competitiveness can be radically affected by inappropriate and unilateral policies. It can also be stimulated and its ecosystem strengthened if supportive policies that boost market demand are put in place.

This is why the CIFQ believes that it is important to be able to count on government support through suitable financial levers to enable the industry to comply. In that regard, the government has a range of financial tools (financial assistance programs, tax incentives, loans and loan guarantees, government procurement) that allow it to support the development of the sector in various ways.

The challenge is to ensure that the tools put in place are well adapted to the needs of companies in the forest industry cluster and that they spur investment. Without these interventions and incentives, market development could prove to be difficult and keep Canada back when it has everything it takes to be a leader. In particular, to encourage the penetration of new sectors, it will be necessary to ensure that they are cost competitive with conventional fossil fuels. Financial mechanisms will likely need to be developed to bridge the price gap until economies of scale are established on the biofuel side.

In addition, it will be of utmost importance to take into account the particular context of remote areas and to implement solutions adapted to their realities. More specifically for forestry operations, access to a renewable fuel supply in remote areas remains an issue, and it could become difficult for companies to reduce their GHG emissions without this access, even if they are subject to the same regulations as those with easier access to a diversified fuel supply. Strategies to produce and supply renewable energy will therefore have to be developed to make it more widely available throughout Quebec, particularly where industrial activity is more intensive and at costs comparable to those in major centres. Again, government intervention will be necessary to ensure equity of supply.

Lastly, it is important that federal interventions through laws, regulations, policies, strategies, and so on, be consistent with and complementary to actions undertaken in the same areas by the provinces to avoid overlap and duplication that would inevitably result in additional costs and a heavier regulatory and administrative burden for the industry.