# Secondary manufacturing of solid wood products in Quebec 2017:
## Structure and economic contribution

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Canada

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## Abstract

This report presents the survey results for Quebec's secondary wood manufacturing industries in 2017. The survey compiled operational, employment, production, marketing, and financial information for eight business types. This is the first Canadian Forest Service survey of this sub-sector of Quebec's forest sector. The Quebec secondary wood manufacturing sector experienced a decline in the early 2000s but did not change appreciably between 2004 and 2017 despite significant contraction after the Great Recession of 2009. In 2017, Quebec secondary wood product industries were largely concentrated in the heavily urbanized areas of southern Quebec. The majority of the industry's requirement for wood fibre (69%) was sourced from within Quebec. Most of the sales (46%) were to the Quebec market and the bulk of the rest was to the United States (33%). Approximately two out of five responding companies planned to expand operations, though opportunities to do so were tempered by existing constraints. Key potential constraints identified were lack of experienced labour and the costs of labour as well as markets and finance.

**Keywords:** employment, forest industry, markets, policy, secondary manufacturing, value added

## Résumé

Le présent rapport expose les résultats d'une enquête effectuée auprès des industries de transformation secondaire du bois du Québec en 2017. Le sondage comprend des renseignements portant sur les activités, l'emploi, la production, la commercialisation et les finances de huit types d'entreprises. Il s'agit de la première enquête du Service canadien des forêts relatif à ce sous-secteur de l'industrie forestière du Québec. Le secteur de la transformation secondaire du bois du Québec a connu une baisse entre 2000 et 2003 mais a peu changé entre 2000 et 2017 malgré des contractions importantes après la Grande Récession de 2009. En 2017, les industries québécoises de transformation secondaire du bois étaient principalement concentrées dans les zones fortement urbanisées du sud de la province. La majorité des besoins de l'industrie en fibres de bois (69 %) provenait du Québec. La plupart des ventes (46 %) se concentraient dans le marché québécois et le reste était principalement vendu aux États-Unis (33 %). Environ deux sur cinq entreprises répondantes prévoyaient d'étendre leurs activités, bien que les contraintes existantes faisaient obstacle aux occasions d'expansion. Les principales contraintes soulevées étaient le manque de main-d'œuvre expérimentée et les coûts de la main-d'œuvre ainsi que les marchés et les finances.

**Mots-clés :** emploi, industrie forestière, marchés, politiques, transformation secondaire, valeur ajoutée

# Key Points

- This report summarizes the results of a comprehensive survey of secondary manufacturing of wood products in Quebec for the year 2017. The final survey population included 1467 firms of which 289 responded for a 20% response rate.

- For 2017, we estimated that 1434 businesses (excluding panelboard businesses) employed 32942 people, had sales of $6.9 billion and used 20.6 million m³ of wood fibre.

- Most sales were to Quebec (46%), with the rest distributed across the U.S. (33%), other parts of Canada (17%), and overseas (4%).

- The most common business type was cabinets (43%), followed by millwork (20%), and furniture (13%).

- The most commonly used wood fibre species was spruce (48%) in the form of lumber and logs, with 87% of all wood fibre sourced from within Quebec.

- Internet use was prevalent, with 89% of companies reporting some form of internet use. Use of social media, such as Facebook and LinkedIn, was in its initial stages; early adopters tended to be companies producing finished products, such as furniture, millwork and cabinets.

- 44% of responding firms expected to expand in the near future, although labour, markets, and finance posed potential constraints.

- Labour stood out as a strong potential constraint to industry growth with lack of experienced workers, inadequate training/skills of job candidates, and cost of labour identified as the main labour-related issues.

# 1 Introduction

In 2018, the Canadian Forest Service conducted a survey of secondary wood manufacturing in Quebec to learn more about this subsector of Quebec's forest industry. While the Quebec Government produces a comprehensive annual report on the state of forestry and the forest products industry in Quebec, it does not go beyond the more traditional industries such as lumber, plywood and panelboards, and pulp and paper (Gouvernement du Québec 2018). This report aims to complement existing information on the forest products sector in Quebec.

Many aspects of Quebec's secondary wood manufacturing sector have been studied over the years. Bagilishya (2009) found that the secondary wood product sector was more stable in terms of employment than the primary sector. The Commission d'étude sur la gestion de la forêt publique québécoise (2004) established that product diversification helped reduce company transportation costs. Lirette & Chouinard (2010) concluded that in order to improve the productivity of secondary manufacturing companies, automation of production processes, including the integration of digital technologies, was required.

There is ongoing interest in mitigating the impacts of exchange rates and economic crises and to promote value-added wood processing that maximizes the level of economic activity from each unit of wood fibre harvested in Quebec. According to the Coulombe commission, the conservation of Quebec forests depends in part on the diversification of revenue generated by secondary wood manufactured products (Commission d'étude sur la gestion de la forêt publique québécoise 2004). As such, certain regions of Quebec, such as Saguenay-Lac-St-Jean, la Mauricie, and la Gaspésie–Îles-de-la-Madeleine have decided to base their industrial development on secondary wood processing to promote forest conservation (Ministère des Ressources naturelles du Québec 2002). In order to support such a strategy, relevant and contemporary data about the sector are required. The information in this report provides insight that will aid in the development of novel strategies for the growth and diversification of the secondary wood manufacturing industries in Quebec.

This study follows closely the definition of secondary manufacturing used in similar research of the industries of British Columbia (Bogdanski and McBeath 2015). To provide general trend information and context for the survey results and supplementary information on the panelboard industry, we complemented the survey data with publicly available data from Statistics Canada in Appendix 1. More extensive information on industry trends as well as a complete profile of the plywood and panelboard industry can be found in the annual statistical report produced by the Government of Quebec (Gouvernement du Quebec 2018).

Secondary manufacturing is the further processing of primary wood or wood-based materials into semi-finished or finished products. Aggregated by business type, the major wood products groups in the secondary manufacturing sector include:

- millwork
- cabinets
- engineered wood products (EWP)
- pallets and containers
- furniture[1]
- other wood products (OWP)
- remanufactured products (Reman)
- plywood and panelboards (panelboards)

Our definition of a "manufacturer" excludes several activities, the primary being contractor/builders or custom one-off operations. The business types most impacted by this definition are contained in the business types of EWP (i.e. buildings and building components) and cabinet firms. For example, a firm that manufacturers houses in a plant and then ships them to a site for assembly falls within our definition of engineered wood products, whereas a contractor or builder who constructs houses at a job site does not. Appendix 2 contains a comprehensive listing of wood products organized by level of processing while Appendix 3 contains a non-exhaustive listing of products by business type.

# 2 Research Methods

A list of companies surveyed was produced from Statistics Canada's Business Registry database. All companies that identified to have at least one employee in the Business Registry were included in the list. The complete list formed the initial survey frame of 1982 potential companies.[2] During the process of administering the survey, 515 companies were found to be either misclassified, outside the scope of the survey, or no longer in business. This included 21 companies that mainly produced primary lumber. Therefore, 1467 firms made up the identified population of the secondary wood manufacturers in Quebec for the 2017 survey year, including 33 plywood and panelboard mills.

A multi-part questionnaire was developed based on previous surveys administered by the Canadian Forest Service for studies of the British Columbia and Alberta secondary manufacturing sectors (Wilson et al. 2001; Stennes and Wilson 2008; Bogdanski and McBeath 2015, 2017). This survey design was also used to study secondary wood manufacturers in other provinces during

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1  Note that le ministère des Forêts, de la Faune et des Parcs du Québec does not include furniture in its assessments of the sector due to issues with identifying the amount of wood used by this business type.

2  The Business Registry had over 2000 additional company entries that had no information on employment. A second list of companies was formed by taking a random sample of 20% of the companies with no employment classification contained in the Business Registry. This secondary list was composed of 403 potential companies. Eleven surveys were returned and all except one had no more than two employees. One large company responded and subsequently was included in the final population and survey analysis. The other 10 companies were excluded from any further analysis. While we verified many of the 403 companies in this secondary population to determine if they were either out of business or in a different industry, time constraints prevented an exhaustive vetting of all listed companies in the secondary frame. However, given the very low response rate and the follow-up research on non-responding firms from this secondary survey frame, we were reasonably confident that the true population and industry size was not too different from our estimates.

2017 and 2018 as part of the first national secondary wood manufacturer survey. The first part of the survey sought to collect basic business information. The subsequent parts focused on wood use, operational costs, employment, capacity utilization and expansion plans, constraints to expansion, use of electronic commerce and social media, markets, sales revenue, and products (see Appendix 4).

The questionnaire was mailed out in middle of January 2018 to all firms identified in the survey frame, with follow-up several weeks later in February and March. Firms that did not respond to faxes, emails, or mail-outs were contacted again by phone during April, and asked to complete and return the survey using the return envelope or by digital copy via fax or email. By the end of April the bulk of the responses were received but surveys continued to be returned into the summer months. By the end of July, 289 secondary manufacturing firms had returned the survey for a response rate of 20%.

Table 1 summarizes the survey population and respondents by business type. Each respondent firm was classified into a business type according to its reported sales of specified product types; non-respondent firms were classified based on communications with the company or indirectly through company webpages and industry directory information (see Appendix 3 for the specific activities within our defined business types). Most firms were classified as cabinets (43%), millwork (20%), or furniture (13%) firms.

Table 1 shows an overall 20% response rate for Quebec secondary wood product manufacturers. Though we received a good response rate for plywood and panelboard business types, we did not include them further in the survey analysis, as Statistics Canada and the Quebec government produce very good data for this industry group, some of which are found in Appendix 1. Also, for some specific questions, only a few individual companies of a particular business type responded and so those results were suppressed to maintain confidentiality.

**Table 1.** Survey population, response, and working sample

| Business type | Number of firms | | Response rate (%) |
|---|---|---|---|
| | Population | Respondents | |
| Cabinets | 629 | 102 | 16 |
| Engineered wood products | 141 | 32 | 23 |
| Furniture | 194 | 33 | 17 |
| Millwork | 290 | 50 | 17 |
| Other wood products | 51 | 12 | 24 |
| Pallets and containers | 76 | 25 | 33 |
| Remanufactured products | 53 | 22 | 42 |
| **Sub-total** | **1434** | **276** | **19** |
| Plywood and panelboards | 33 | 13 | 39 |
| **Total** | **1467** | **289** | **20** |

Data from completed surveys was stored in a secure database and survey results were checked for errors and anomalies. Employment data and sales data were acquired directly from non-participating firms through follow-up communication, indirectly from websites, news articles, or company reports. Alternatively, estimates were derived from employment category information in the original Statistics Canada Business Registry database. Employment and sales data were obtained for 1322 and 511 firms, respectively. In some cases, returned surveys had missing sales or employment data. For these records, the missing data was estimated using information from similar businesses. When we could not acquire employment data, we imputed values using employment information contained in the business registry or median values from similar firms. For missing sales values, estimates were imputed by multiplying the employment value by sales per employee for responding businesses sharing the same business type and Business Registry employment size range. Using the sample and imputed values, we were able to generate in aggregate sales and employment estimates for all 1467 businesses.

Non-response to the survey by businesses raised concern of biased results. Firms that did not participate may have been very different than firms that did respond, resulting in biased results and perhaps false conclusions. For example, perhaps larger firms with more resources at their disposal were more likely to respond. We conducted two statistical tests to check for possible response bias, more specifically, the bias of distribution of business types and the bias of distribution of firm sizes. The results are presented in Appendix 5.

The first test compared the frequency distribution of the responding firms across business types against the population distribution. This test found a difference between the population distribution and the sample distribution; therefore, the survey respondent group did not provide a good representation of the distribution of business types across the population. In particular, the cabinet businesses were under-represented and other wood product businesses were over-represented in the sample vis-à-vis the population.

A second test compared the size distribution between respondent and non-respondent firms to determine possible firm size bias. This test found no difference between the two groups.

In sum, the survey respondents were generally representative of the entire population of firms in terms of size but not in composition across business types. As with any census survey that fails to collect information from all firms, some uncertainty remains and therefore caution should be exercised in extrapolating results to the entire population.

# 3 Current State of the Sector

First, we characterized the geographical distribution and scale of the sector using information from all identified businesses.

## 3.1 Sales, Jobs, and Wood Use

For 2017, aggregate employment and sales (excluding panelboards) were estimated to be 32 942 and $6.9 billion, respectively. The sector (excluding plywood and panelboards) used an estimated 20.6 million cubic metres of wood fibre.

Table 2 shows employment and gross sales per unit of roundwood equivalent (i.e. logs, lumber, panelboards, etc. used by companies was converted into roundwood equivalents) and gross sales per full time equivalent. Sales per employee is an indicator of the potential wage levels available to employees, as higher sales per employee may indicate the manufacture of higher value-added products. Nevertheless, businesses with a high volume of output, and therefore sales, may also have high material (e.g., raw lumber) and capital costs, and thus may not generate much value-added product per employee, which is required to support higher wages. Jobs per cubic metre is an indicator of how much more employment is created through further processing of primary wood products.

**Table 2.** Jobs and sales per unit of roundwood equivalent (m³) and sales per full-time equivalent 2017

| Business type | Jobs per 1000 m³ | Sales per m³ | Sales per full-time equivalent (000s) |
|---|---|---|---|
| Cabinets | 27.7 | $4064 | $147 |
| EWP | 0.8 | $213 | $270 |
| Furniture | 10.2 | $1807 | $176 |
| Millwork | 5.0 | $1077 | $215 |
| Other wood products | 0.3 | $87 | $306 |
| Pallets and containers | 1.3 | $285 | $215 |
| Reman | 0.5 | $152 | $295 |
| **All business types** | **1.6** | **$336** | **$211** |

In the case of employment, the labour intensive business types such as cabinets, furniture and millwork generated the most jobs per cubic metre of wood fibre. These business types also had the highest sales per cubic metre of wood fibre. Remanufactured products and other wood products businesses created the highest sales per full-time equivalent employee but had low employment per cubic metre. The other wood products business type had high sales per employee but the lowest sales per cubic metre, as a small number of companies in this category consumed large quantities of wood fibre to produce wood pellets with few employees and low per unit sales.

## 3.2 Locations

Figure 1 shows the distribution of the businesses across Quebec in 2017, including plywood and panelboards.[3] The secondary wood manufacturing industries were spread out across the five regions. The largest concentration of businesses was in the south with 30% of all surveyed companies, followed by the south-central region with 24%, the central region with 21%, the west region with 14% and the north/east region with 11%. Though a smaller number of firms were located in the west and north/east regions, the distribution of firms across all regions was fairly consistent, with some small regional differences. Also, while there was a tendency for businesses to be located near the largest population centres, there was a notable cluster of firms around the Saguenay-Lac St-Jean region.

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3 The five regions shown in the map are composed of several public forest administrative divisions used by le ministère de Fôrets, de la Faune et des Parcs. The south region consists of the Montréal, Laval, and Montérégie administrative divisions while the west region is composed of Outaouais, Abitibi-Témiscamingue, and Laurentides. The administrative divisions of Capitale-Nationale, Mauricie, and Lanaudiere make up the central region. The south-central region is composed of the Estrie, Chaudière-Appalaches, and Centre-du-Québec administrative regions. Finally, the north and east regions consist of the Bas-Saint-Laurent, Saguenay-Lac-Saint-Jean, Côte-Nord, Nord-du-Quebec, and Gaspésie-Iles-de-la-Madeleine administrative regions.
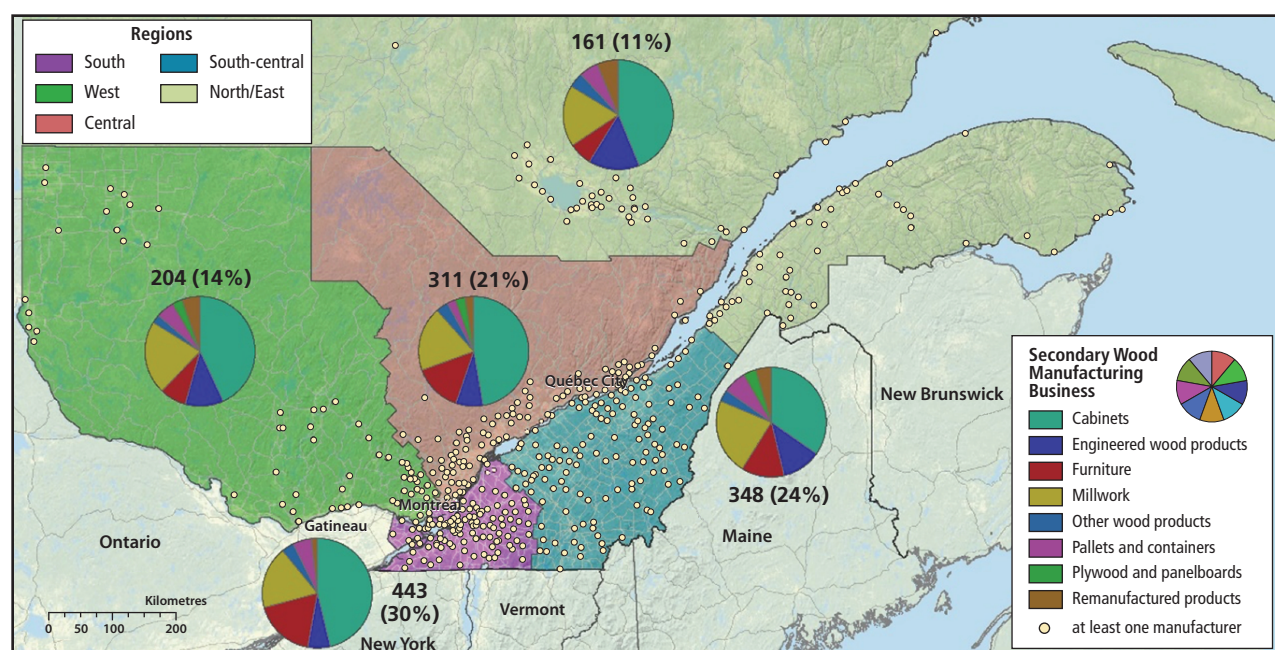


**Figure 1.** Location, number and percentage of Quebec secondary wood manufacturers, 2017.

# 4 Survey Results

This section provides results and insights from the survey respondents, excluding responses from plywood and panelboards. First, we profile the various businesses by products, employment, costs, and sales. Then, we take an in-depth look at the type and source of fibre used by the businesses. Next, we report on how respondents use the internet to support their businesses. Finally, the opportunities and challenges facing the survey respondents are discussed to get a sense of the outlook for the future, and highlight possible areas where effort could be directed to support industry growth.

## 4.1 Employment

Employment information presented here comes either from the 890 companies that completed the survey with employment information or provided employment information by phone/email. For these businesses, the average number of employees per firm was 24 and the median was 6. The distribution of firms into three employee class sizes is shown in Figure 2. Sixty-seven percent of firms had 1–15 employees, 22% had between 16–50 employees, and 11% had over 50 employees. A higher share of large firms (>50) are located in the south (23%) and south-central region (38%).
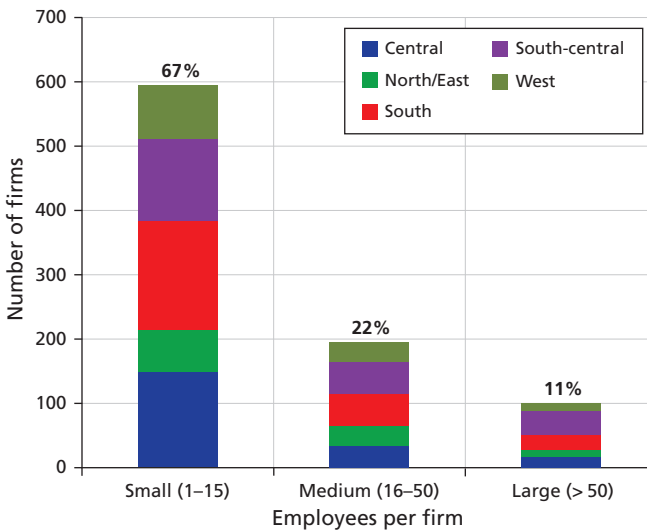


**Figure 2.** Geographical distribution of firms by firm size (884 responding firms).

Figure 3 indicates the number of employees by firm size and by region. Although large firms (>50) made up only 11% of all firms, they accounted for 60% of employment in the sector, and while small firms made up 67% of all businesses they accounted for only 13% of total employment. Geographically, 31% of employment was in the south-central region followed by 24% in the south region, 22% in the central region, 13% in the north/east region, and 10% in the west region.
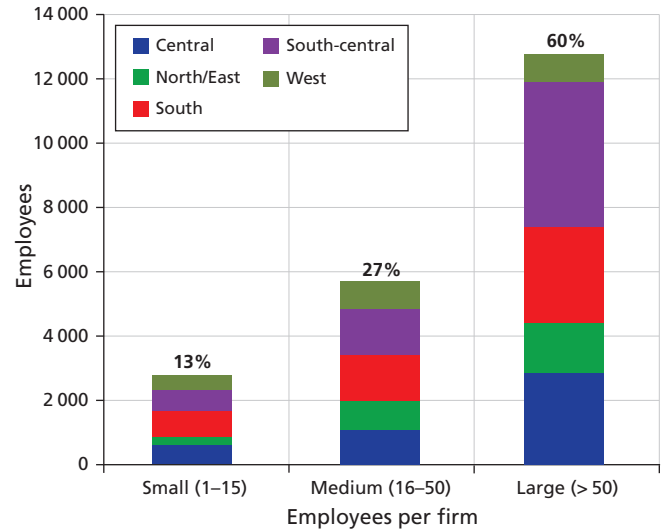


**Figure 3.** Geographical distribution of the number of employees by firm size (884 responding firms).

Figure 4 shows the employment distribution across business types. Approximately 62% of employment was with either cabinets, millwork, or furniture businesses. Engineered wood products (EWP) and remanufactured businesses employed 28% of the total followed by other wood products at 6%, and pallets and containers at 5%.
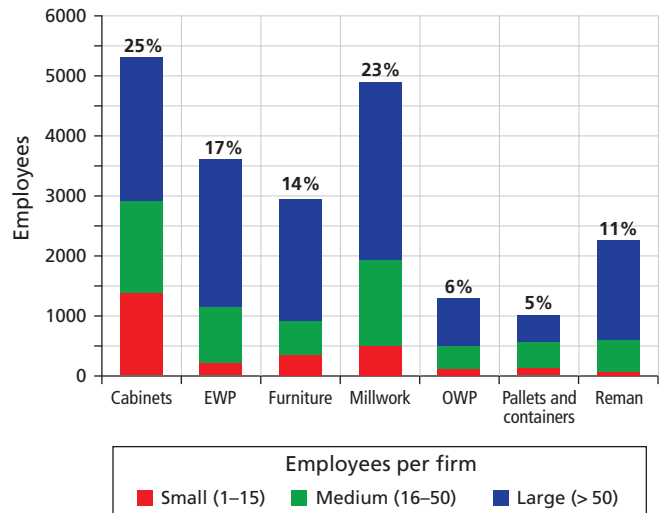


**Figure 4.** Employee distribution by business type.

With regard to firm size distribution across business types, Figure 5 illustrates that remanufactured products and EWP business types had the greatest share of large firms (>50 employees) while cabinets and furniture businesses had the greatest segment of small firms (≤15 employees).
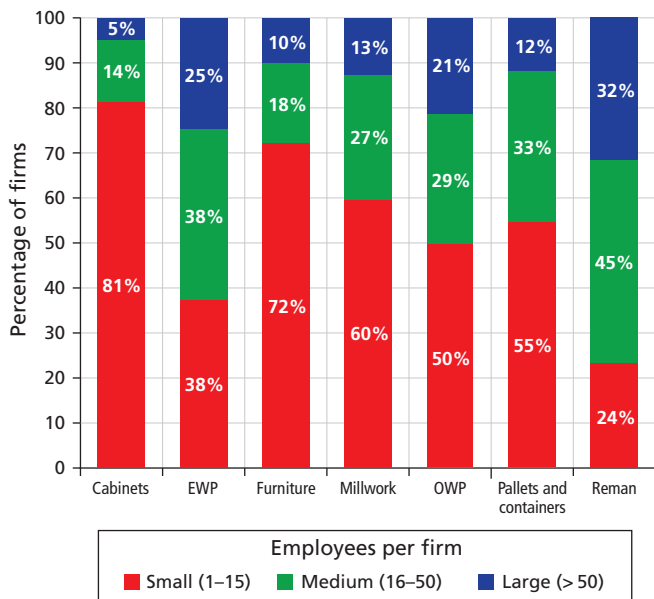
**Figure 5.** Distribution of firm size across business type.

## 4.2 Sales

Gross sales figures for 2017 were provided by 289 companies either by direct response to the survey or by phone during follow-up calls. Total reported sales were $1.7 billion. The average sales per firm were $6.0 million with the median sales per firm at $1.3 million. Many respondents generated modest sales, with 42% of firms having sold less than $1 million, and only 12% of firms having sold more than $12 million. Figure 6 shows the sales revenue distribution across business types. EWP, millwork, and remanufactured products accounted for 69% of total sales.
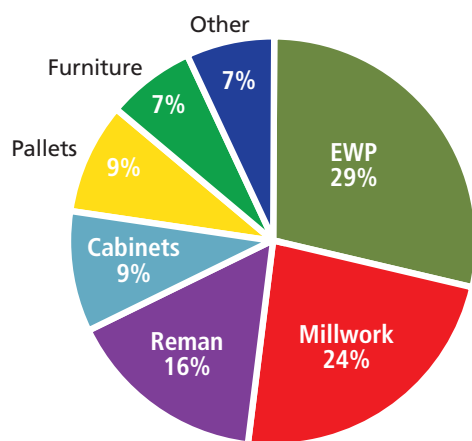


**Figure 6.** Distribution of revenue across business type.

Figure 7 shows the revenue-class distribution across business types. Approximately 62% of cabinets firms had sales less than $1 million as well as the lowest proportion of firms with sales exceeding $12 million per year. Remanufactured products, on the other hand, had the smallest proportion of lower-revenue firms and the largest proportion of higher-revenue firms than any business type.
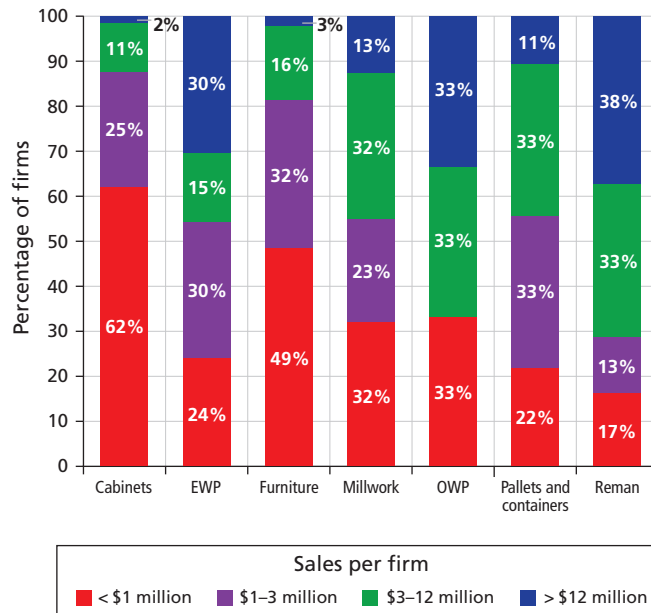


**Figure 7.** Distribution of respondents by revenue class and business type.

In addition to 2017 gross sales, respondents were asked to provide 2016 sales figures and expected sales for 2018. Figure 8 shows the change in nominal sales by business type in relation to 2017.[4] Of the firms that provided such information, sales increased 5% between 2016 and 2017, with 64% of firms reporting an increase in revenue and 27% indicating a decrease. All business types increased sales in 2017 compared to 2016. The pallets and containers business type experienced significant sales growth (+14%), while all others saw mild to moderate growth. Respondents anticipated sales to increase 7% between 2017 and 2018, with 74% of firms expecting sales growth. All business types, except for other wood products, predicted at least moderate growth. The EWP (+12%) and millwork (+9%) business types projected the largest changes in total sales, while the other wood products business type expected negative growth (–3%).

## 4.3 End-use Markets and Services

This section summarizes the end-use markets that secondary wood products sector supply and the services that they provide to and purchase from other secondary wood product manufacturers. Table 3 shows the percentage of respondents in each business type that manufactured for a particular end-use market.

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4 Constructed as the percentage change in total sales for each business type.
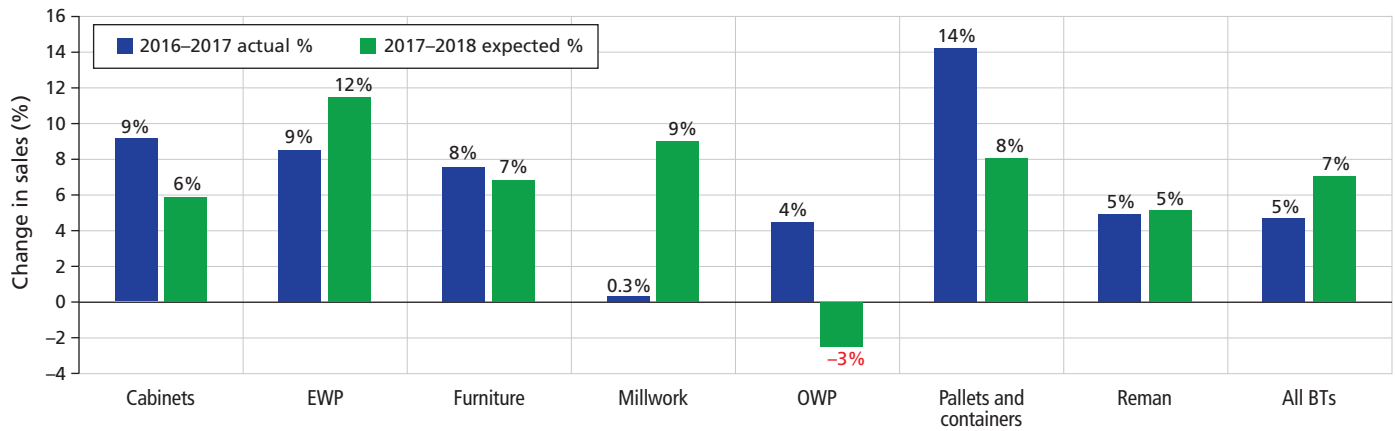
**Figure 8.** Percentage change in annual sales by business type.

**Table 3.** Percentage of respondents that produce products for select end-use markets

| Business type | New residential | Remodeling | Commercial buildings | Multiple-unit housing | Industrial uses | Industrial buildings | Other |
|---|---|---|---|---|---|---|---|
| Cabinets | 95 | 78 | 56 | 50 | 10 | 22 | 5 |
| Engineered wood products | 72 | 88 | 72 | 56 | 19 | 38 | 19 |
| Furniture | 47 | 57 | 30 | 40 | 20 | 17 | 23 |
| Millwork | 82 | 78 | 41 | 53 | 24 | 39 | 6 |
| Other wood products | 25 | 42 | 17 | 50 | 50 | 25 | 17 |
| Pallets and containers | 4 | 4 | 4 | 4 | 92 | 0 | 21 |
| Remanufactured products | 55 | 50 | 18 | 9 | 50 | 5 | 32 |
| **All business types** | **70** | **66** | **43** | **43** | **27** | **23** | **13** |

The majority of firms manufactured products for new residential buildings (70%) and remodelling of existing buildings (66%). A significant share of firms in the business types that service the building sector (cabinets, millwork, EWP and remanufacturing) targeted these two markets. The pallets and containers business type was the most focused on industrial uses. The other business types targeted an array of end-use markets.

Respondents were asked whether they bought or sold custom services, and the types of services acquired or provided (Table 4). Custom services are classified as manufacturing (e.g. resawing, planing, kiln drying) and non-manufacturing (e.g. marketing, distribution, logistics). Forty percent of respondents indicated they purchased a custom service while 38% sold a custom service to another business. Of the businesses that sold custom services and provided detailed responses (*n*=90), 18% provided non-manufacturing services only, 67% provided manufacturing services only, and 16% delivered both.[5] Businesses were also asked if they plan to expand into new services. Of the firms that responded (*n*=249), only 6% of firms indicated an intention to offer new services.

**Table 4.** Percentage of respondents purchasing (*n*=259) or selling (*n*=268) custom services

| | Purchase custom services (%) | Sell custom services (%) | Plan to expand services sold (%) |
|---|---|---|---|
| North/East | 31 | 50 | 6 |
| Central | 40 | 38 | 7 |
| South-central | 49 | 26 | 9 |
| South | 42 | 39 | 6 |
| West | 30 | 47 | 2 |
| **Quebec** | **40** | **38** | **6** |

### 4.4 Cost Structure

Respondents were asked to list the proportion of operating costs attributable to wood, labour, interest payments, depreciation, and other production costs. Of the responding firms, wood costs made up 41% of costs, followed by labour at 34%, other at 18%, and depreciations and interest at 6%. The 'other' category varied across business types and was used for such costs as overhead, maintenance, transportation, and utilities.

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5  Does not sum to 100% due to rounding.

Figure 9 highlights the cost distribution across the four cost categories by business type. Wood and labour expenditures comprised between 69% and 84% of operating costs across business types. Wood costs were the most significant cost for all business types except for cabinets and furniture, where labour was the most significant cost component. 'Other' costs varied between 9% and 24% across business types and were most significant with engineered wood products. Depreciation and interest made up the smallest part of operating costs for all business types.
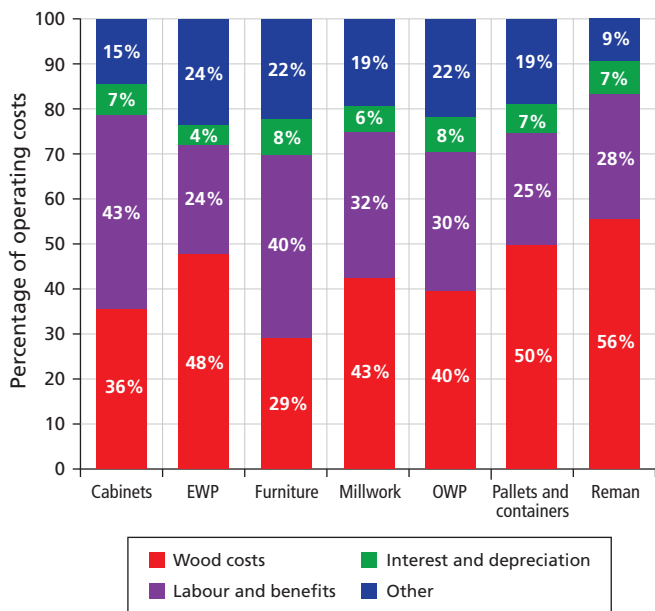


**Figure 9.** Operating cost mix by business type.

## 4.5 Wood Material Utilization and Species

Respondents were asked to report on their wood fibre inputs in terms of logs, lumber, panelboards, and other primary wood products. All responses were converted into roundwood equivalent to allow for comparison across business type and types of wood inputs. Survey respondents ($n=229$) used over 4.6 million cubic meters of roundwood equivalent. As shown in Figure 10, EWP product manufacturers consumed the most fibre at 32%, followed by remanufacturers at 30%.
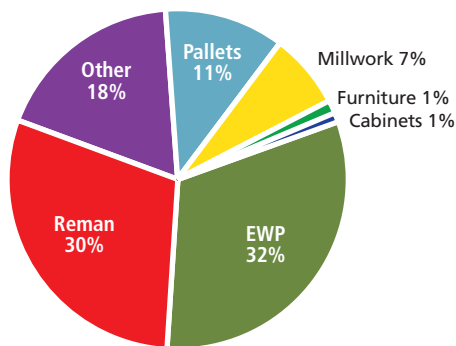


**Figure 10.** Distribution of wood use across business type.

Of the total wood fibre, 57% was in the form of lumber, 20% in logs, 15% in wood residues, and 7% in panel products, which includes OSB, fibreboard, plywood, particleboard and similar products (Figure 11). Remanufactured products, millwork, and pallet manufacturers predominantly used lumber. Wood residues were mainly used in the manufacture of wood pellets, which, in terms of wood fibre usage, dominated the other wood products business type. Cabinet and furniture manufacturers primarily used panels, of which particleboard made up the largest share. Cabinet, furniture and millwork manufacturers also used small quantities of veneer and other wood fibre.
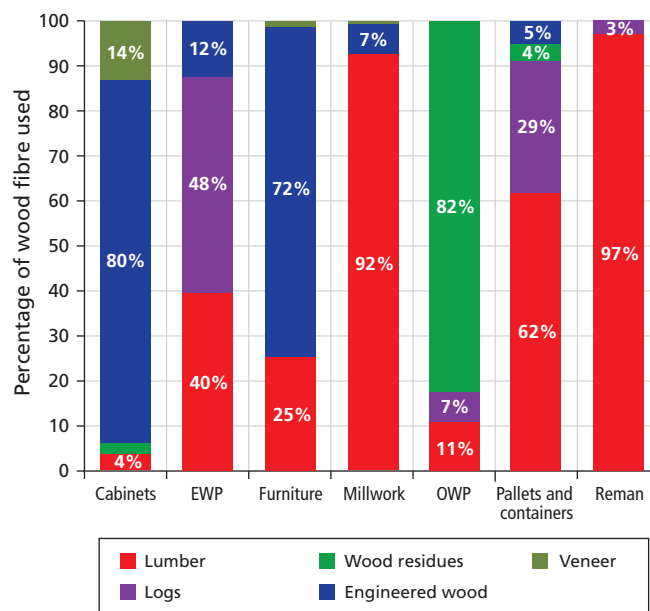


**Figure 11.** Distribution of wood fibre by business type.

Respondents were also asked for the source and percentage of total wood fibre used in their secondary manufacturing facilities (Figure 12) ($n=257$). Of the total volume of wood material used by the respondent businesses, 75% was sourced from the Quebec market, 9% was material from a respondent's own primary mill, and 8% was sourced from other parts of Canada. The remainder of the wood material was sourced from log or lumber trades with other companies (5%) and imports from outside Canada (3%).

The percentage of companies that imported some of their wood fibre from outside Quebec was 37% or 96 of 257 responding firms. Eighty respondents disclosed the regions from which they acquired wood fibre, and of these firms, 75% purchased from other Canadian provinces, 46% from the US, and 21% sourced wood fibre from overseas (Figure 13). Ontario was the most common origin of imported wood fibre ($n=37$), followed by the northeastern US ($n=26$).

Table 5 shows the species of wood fibre used by all businesses (excluding panelboards). Sixty-four percent of all wood used was from coniferous species, such as spruce (47%), pine (6%), fir (5%), and cedar (5%) (part of Other SW in Table 5). Non-conifers comprised 36% of the wood fibre including birch (8%), poplar (12%), maple (8%), and oak (4%).
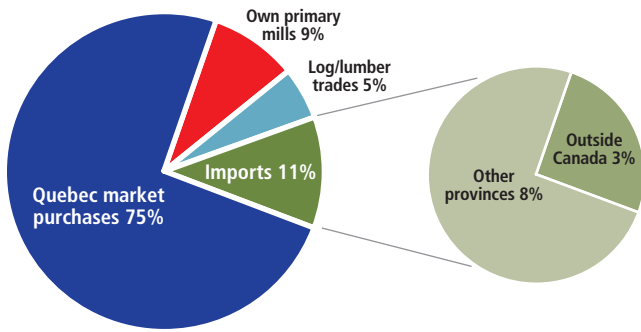
**Figure 12.** Source of wood fibre.
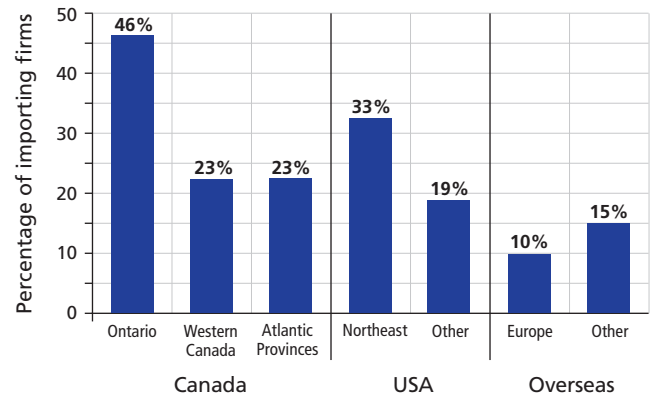


**Figure 13.** Sources of imported fibre supply.

**Table 5.** Species mix by business type (%)

| Business type | Spruce | Pine | Fir | Other softwood | Birch | Poplar | Maple | Oak | Other Hardwood |
|---|---|---|---|---|---|---|---|---|---|
| Cabinets | 2 | 5 | 0 | 0 | 11 | 3 | 48 | 10 | 20 |
| EWP | 45 | 6 | 2 | 2 | 13 | 26 | 4 | 2 | 0 |
| Furniture | 51 | 1 | 0 | 1 | 32 | 0 | 8 | 1 | 6 |
| Millwork | 0 | 12 | 0 | 1 | 4 | 1 | 42 | 23 | 16 |
| Other | 23 | 3 | 7 | 28 | 10 | 0 | 10 | 6 | 12 |
| Pallets | 47 | 10 | 0 | 3 | 6 | 26 | 6 | 2 | 0 |
| Reman | 72 | 6 | 10 | 1 | 3 | 0 | 4 | 2 | 2 |
| **All business types** | **47** | **6** | **5** | **6** | **8** | **12** | **8** | **4** | **4** |

Table 5 also shows wood species used by business type. Cabinets (93%) and millwork (87%) used the highest percentage of hardwoods in their manufacturing processes. Remanufactured products (89%), other wood products (62%), as well as pallets and containers (60%) predominantly used softwoods, with spruce often accounting for the largest share. Cedar was also a significant input for some respondents in the other wood products business type.

## 4.6 Destination Markets

Of all respondents, 281 disclosed where they sold their products; Figure 14 shows the distribution their total sales ($1.7 billion) across markets.[6] Sixty-three percent of revenue was earned in Canadian markets, with Quebec accounting for the largest share (46%). Exports to the US accounted for 33% of sales revenue, with 16% earned in the Northeast. Four percent of sales received from overseas markets.

Figure 15 shows the sales distribution across destination markets by business type. The other wood products and remanufacturing business types relied more heavily on export markets, each earning over half of their revenue abroad, whereas the remaining business types sold the majority of their products in Canada. Cabinet, and
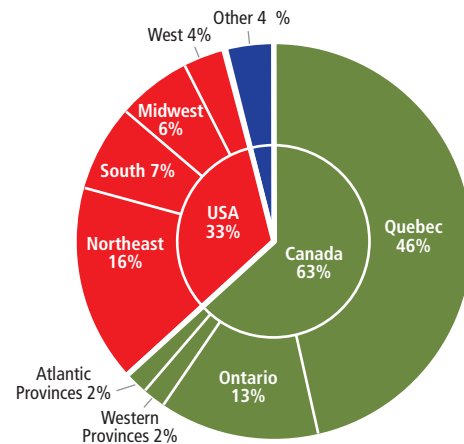


**Figure 14.** Distribution of total sales across destination markets.

pallets and container manufacturers were particularly reliant on local Quebec markets, which accounted for 84% and 57% of their revenues, respectively. The other wood products business type had the most market diversification, with respondents having sold products in an average of five destination markets. Remanufacturers followed closely, with sales in four markets, on average.

_____
6  265 survey and 16 phone respondents, excluding plywood and
   panelboard producers.
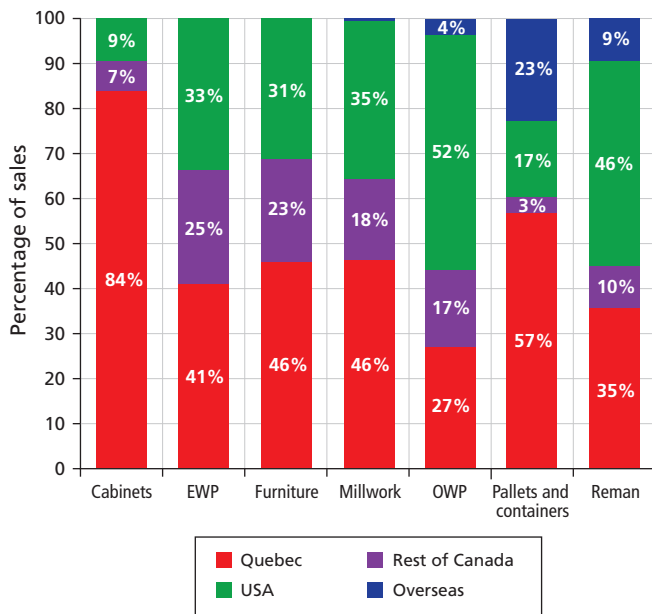
**Figure 15.** Sales distribution across destination markets by business type.

Firms were asked if they planned to expand into new markets. Of the 257 respondents, 41% (or 105 firms) had plans to expand within the next three years. Of firms who intended to expand, 65% expected to do so within the Quebec market, 49% to Ontario, and 38% to the US Northeast market. Only 11% of respondents had expansion plans that targeted overseas markets, with Europe garnering the most interest.

## 4.7 Use of the Internet

To measure the use of existing and emerging electronic business practices, survey respondents were asked if they utilized the internet in some way to conduct their business. The survey responses were arranged into three groups that represented the firms' use of the internet: 1) management, 2) e-commerce, and 3) marketing (Table 6).

Regarding the use of the internet for management purposes, 38% of firms employed it to acquire knowledge and information while 19% used Linked-in, a social media tool suited to recruiting employees. In terms of e-commerce, 31% of firms used the internet to purchase goods or services and 12% used it to sell. Other wood products and furniture were the most likely business types to purchase goods on-line. Additionally, the other wood products business type used the internet most frequently to sell products.

About 75 percent of respondents had a website. This was by far the most common use of the internet for marketing. Facebook and Instagram were utilized by 51% and 9% of companies, respectively. The website Houzz that brings together home owners, designers, and home improvement professionals, was also mentioned by several cabinet, furniture, and millwork firms (recorded under 'Other' in Table 6).

## 4.8 Capacity Utilization and Expansion Plans

Respondents were queried about their level of manufacturing capacity utilization and expansion plans. Manufacturing capacity refers to the maximum volume of products that a mill is expected to produce over a one-year period. Table 7 shows that average capacity was 72% across all responding firms. Across business types, average capacity utilization ranged from 61% (EWP) to 78% (pallets and containers).

With regard to expansion plans, 118 out of 269 or 44% of respondents had intentions to increase capacity over the period of 2018–2020 (Table 7). Of these firms, the average expected capacity expansion was 37%. Sixty-six percent of engineered wood products respondents expressed intentions of developing capacity over the three-year period, with an average expansion plan of 48%. About 60% of pallets and containers and remanufactured products respondents indicated intentions to increase capacity with an average expansion plan of 21% and 56%, respectively. Cabinet manufacturers had the lowest growth intentions at 28%.

**Table 6.** Percentage of firms using the internet for management, e-commerce, or marketing by business type

| Business type | Management | | E-commerce | | Marketing | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Knowledge/ Information | Linked-In | Purchase | Sell | Website | Facebook | Instagram | YouTube | Pinterest | Other |
| Cabinets | 30 | 14 | 23 | 2 | 61 | 52 | 9 | 4 | 10 | 9 |
| EWP | 41 | 28 | 40 | 20 | 88 | 63 | 3 | 16 | 6 | 16 |
| Furniture | 45 | 23 | 43 | 18 | 81 | 57 | 20 | 13 | 10 | 3 |
| Millwork | 42 | 18 | 30 | 13 | 82 | 47 | 8 | 6 | 6 | 10 |
| OWP | 50 | 33 | 63 | 38 | 92 | 67 | 17 | 17 | 8 | 8 |
| Pallets & containers | 40 | 20 | 21 | 27 | 80 | 44 | 4 | 0 | 0 | 0 |
| Reman | 45 | 18 | 29 | 7 | 73 | 36 | 0 | 9 | 0 | 14 |
| **Total** | **38** | **19** | **31** | **12** | **74** | **51** | **9** | **7** | **7** | **9** |

**Table 7.** Percentage of respondents expecting to expand capacity and average expansion by business type

| Business type | Capacity utilization (%) | Plan to expand (%) | Expected expansion (%) |
|---|---|---|---|
| Cabinets | 75 | 28 | 41 |
| EWP | 61 | 66 | 48 |
| Furniture | 73 | 42 | 23 |
| Millwork | 72 | 46 | 31 |
| OWP | 74 | 50 | 28 |
| Pallets and containers | 78 | 60 | 21 |
| Reman | 69 | 59 | 56 |
| **All business types** | **72** | **44** | **37** |

## 4.9 Constraints to Expansion

We asked respondents to rate six factors that might constrain their ability or expectations to expand capacity over the next few years. These six factors were: labour, markets, finance, management capacity, wood supply, and transportation/distribution. Respondents rated each factor on a scale of 1 to 5 with 1 as not at all constraining and 5 as very constraining. Based on the responses of all businesses, the most constraining factor was labour, with over 60% of the firms scoring it as a 4 or a 5 (Figure 16). This was followed by markets, with over 30% rating it a 4 or a 5. All other constraints were only modestly constraining with fewer than 25% of businesses rating them as either a 4 or 5 out of 5. It is interesting to note that further grouping of the data into regions showed no significant regional differences.

Finally, respondents were asked to rate subcategories of the six factors to provide some insights into the specific issues that may constrain expansion. Table 8 provides the average score for each factor within the subcategories. The labour-related constraints that had the highest mean scores were labour experience (3.5) and training/skills (3.4). Even though market constraints were rated second highest on average by all businesses, no sub-factor

**Table 8.** Detailed constraints to capacity expansion (*n*=269)

| General and specific constraints | Score |
|---|---|
| **Labour** | |
| Experience | 3.5 |
| Training/Skills | 3.4 |
| Cost | 3.2 |
| Flexibility | 2.9 |
| **Markets** | |
| Market diversification | 2.3 |
| Market/Product research | 2.1 |
| Foreign regulations | 2.1 |
| Product diversification | 2.1 |
| Softwood Lumber Agreement | 2.0 |
| **Finance** | |
| Cost | 2.4 |
| Flexibility | 2.3 |
| Availability | 2.2 |
| Repayment schedule length | 2.2 |
| **Management capacity** | |
| Increasing labour efficiency | 3.2 |
| Reducing manufacturing costs | 3.0 |
| Implementing lean/Just-in-time | 2.7 |
| Improving raw material recovery | 2.4 |
| Improving product quality | 2.2 |
| **Wood supply** | |
| Price | 2.9 |
| Price volatility | 2.7 |
| Quality/Grade | 2.4 |
| Volume | 2.3 |
| **Transportation/distribution** | |
| Costs | 2.9 |
| Access | 2.4 |
| Logistics | 2.4 |
| Frequency | 2.2 |
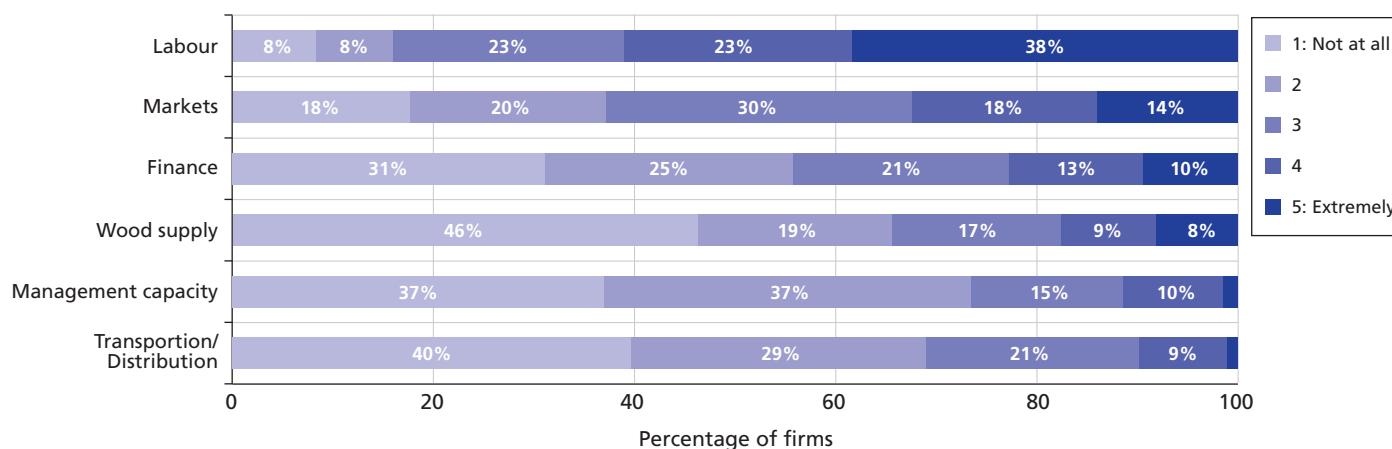


**Figure 16.** General constraints to expansion: distribution of rankings.

was rated above 2.5 suggesting they were at most moderate constraints to expansion. With regard to finance constraints, cost was rated highest in terms of constraining factors, though it was still modest with an average score of 2.4. The highest rated management-related constraints were increasing labour efficiency and manufacturing cost reduction, both of which are arguably also associated with labour constraints. Price and price volatility were rated as moderate constraints to wood supply. Lastly, the cost of transportation was identified as a moderate constraint with an average rating of 2.9.

Figure 17 presents the general constraints by business type and shows how key factors that may constrain growth differed between business types. Except for the other wood products business type, labour was the highest rated limiting factor. For other wood products, the main constraining factor was markets, but labour was a close second. Markets was moderately restricting for the other business types. For pallets and containers as well as other wood products, wood supply was also an issue. Finance and transportation also seemed to be more constraining for the other wood products business type than the others.
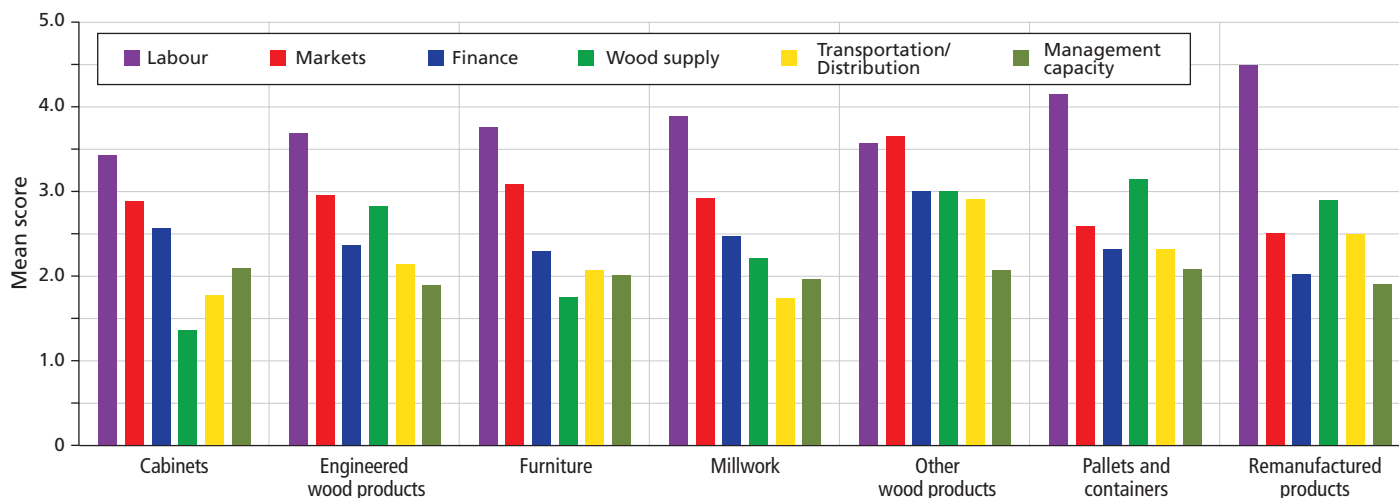


**Figure 17.** General constraint rating by business type.

# 5 Conclusion

The Quebec secondary wood product manufacturing sector was not much different in 2017 than it was during the 2004 Coulombe Commission. Since the early 2000s, the industry has decreased in size. The sector was still largely located in the more densely populated area of southern Quebec, and was heavily structured to millwork, furniture and cabinet businesses. One difference between the north and south was that in the north a more commodities-focused industry grouping was co-located near primary industry and the timber supply, while in the south businesses are clustered around urban centres, and focus on producing cabinets, furniture and millwork. The sector was heavily focused on the domestic Quebec market, though one-third of the 2017 sales revenues of survey respondents were from the United States. As the U.S. housing market continues to improve, there continue to be opportunities for growth within North America. Additionally, expanding sales to overseas markets from the current small base is both an opportunity and a challenge to further diversify the sector.

The Quebec secondary wood products sub-sector contracted similarly to the broader Quebec forest sector during the recession of 2009 and a gradual rebound continues. Many firms surveyed expected to grow over the near term. At the time of this survey, firms indicated that labour and markets were the key constraints to growth. Responses showed that labour issues such as lack of experienced workers and the costs of workers were the most pressing challenges.

The cyclical nature of commodity forest product markets continue to support interest in promoting sustainable growth of the Quebec value-added wood processing sector. The key challenge looking forward is how to expand the production base outside the southern region, which has well developed transportation systems and is situated close to large Canadian and US urban centres. Through accurate and timely information on the existing structure and challenges provided by this survey, a comprehensive assessment of various options is made possible, greatly benefitting future policy development focused on the Quebec secondary wood product sector.

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# Appendices

## Appendix 1: Statistics Canada data and analysis

**North American Industry Classification System (NAICS) and correspondence to our Business Type classification**

Secondary wood manufacturing industries, as defined in our study, largely fall within five industrial groups of the North American Industry Classification System (NAICS) used by Statistics Canada:

- 3212 – Veneer, Plywood and Engineered Wood Product Manufacturing;
- 3219 – Other Wood Product Manufacturing;
- 337110 – Wood Kitchen Cabinet and Countertop Manufacturing;
- 337123 – Other Wood Household Furniture Manufacturing; and
- 337213 – Wood Office Furniture, including Custom Architectural Woodwork, Manufacturing.

The business type "Remanufacturers" falls under several NAICS groups:

- 3211 – Sawmills and Wood Preservers (Siding and Dressed Lumber);
- 321919 – Other Millwork (Planed Lumber);
- 321999 – All Other Miscellaneous Wood Product Manufacturing (Fencing).

Also, businesses producing products such as wood fuel pellets or horticultural products that are under our "other" business category, are listed under NAICS 321999 (i.e., All Other Miscellaneous Wood Product Manufacturing). Table A1 lists the NAICS codes and names corresponding to the business groupings of secondary forest products used in this study.

**Table A1.** Correspondence between business types used in this study and North American Industrial Classification System (NAICS) 6-digit groups

| NAICS code | NAICS description | Corresponding business type in this study |
|---|---|---|
| 321114 | Wood preservation | Other wood products |
| 321211 | Hardwood veneer and plywood mills (US) | Panelboards |
| 321212 | Softwood veneer and plywood mills (US) | Panelboards |
| 321215 | Structural wood product manufacturing | Engineered wood products |
| 321216 | Particle board and fibreboard mills | Panelboards |
| 321217 | Waferboard mills | Panelboards |
| 321911 | Wood window and door manufacturing | Millwork |
| 321919 | Other millwork | Millwork/remanufacturing |
| 321920 | Wood container and pallet manufacturing | Pallet and containers |
| 321991 | Manufactured (mobile) home manufacturing | Buildings – Engineered wood products |
| 321992 | Prefabricated wood building manufacturing | Buildings – Engineered wood products |
| 321999 | All other miscellaneous wood product manufacturing | Other wood products/remanufacturing |
| 337110 | Wood kitchen cabinet and countertop manufacturing | Cabinets |
| 337121 | Upholstered household furniture manufacturing | Furniture |
| 337123 | Other wood household furniture manufacturing | Furniture |
| 337213 | Wood office furniture, including custom architectural woodwork, manufacturing | Furniture/millwork |

Statistics Canada's Annual Survey of Manufacturers and Logging provides information on Quebec's forest sector industries and includes information on revenues, employee numbers, number of firms, and costs; at the time of this report, the most recent release was for the 2017 manufacturing year (Statistics Canada 2017). Because of confidentiality laws, information is often suppressed, preventing a detailed disaggregation of the industry to separate out non-wood and wood material industries, such as with furniture manufacturing and related industries (NAICS 337). In other cases, data is not available for each year; however, the existing data can still provide a good understanding of historical and recent trends.

For the aggregation of furniture (NAICS 337), other wood product manufacturing (NAICS 3219), structural wood product manufacturing (NAICS 321215), and wood preservation (NAICS 321114), sales from manufacturing and employment experienced significant growth between 1990 and 2001 but began decreasing around 2004, and more quickly during the Great Recession (2008/2009) (Figures A1 and A2). Although the data for furniture includes non-wood furniture manufacturing, they were still a good indicator of industry changes from 1990 to 2016. Since 2013 furniture sales have been on a steady accent. A closer look at subindustries that fit the definition of wood furniture manufacturing (NAICS 337121, 337123, 337213) and cabinetry (NAICS 337110) shows that both have seen growth since 2013 (Figure A3). Other wood products grew steadily between 1994 and 2003, declined between 2004 and 2011, and held steady until 2014. Since 2014 this aggregate has been on a slow ascent in terms of sales (Figure A1) and employment (Figure A2), but most of the growth has been in subsectors 321919 (incl. mouldings and flooring) and 32192 (wood container and pallet manufacturing). Businesses involved in cabinetry (NAICS 33711) had steady to marginally growing nominal sales between 2009 and 2017, while wood door and window manufacturing (321911) was on a marginal decline over the same period.
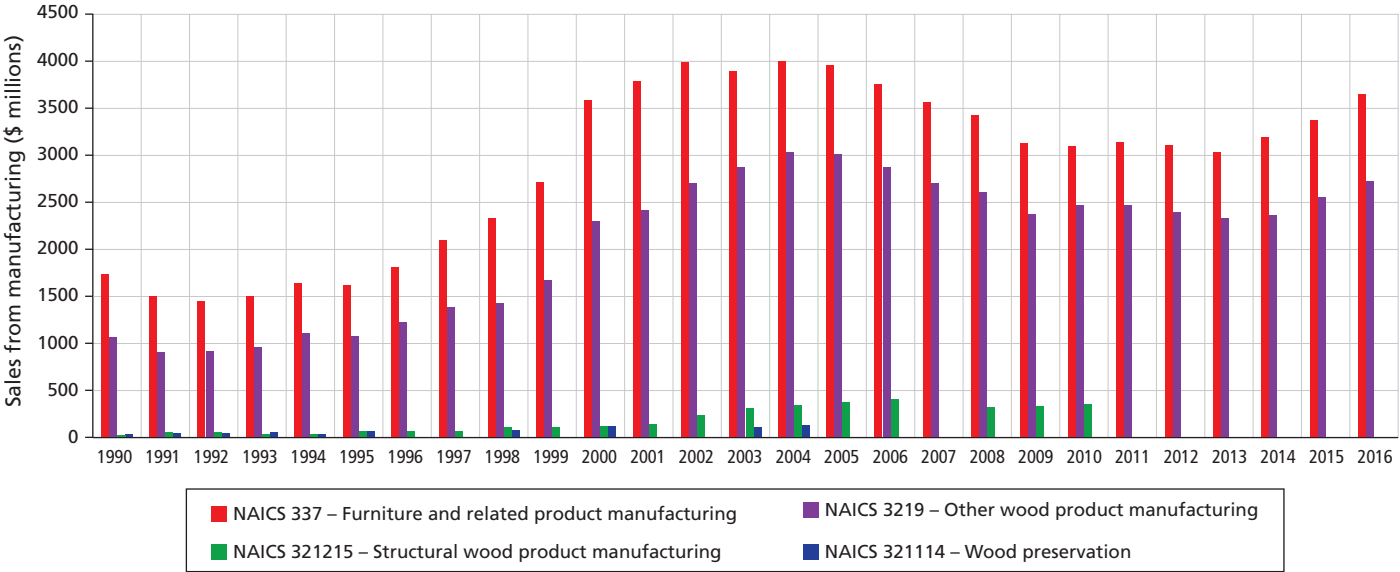


**Figure A1.** Sales from manufacturing select industry aggregates, 1990–2016 (source: Statistics Canada 2005, Statistics Canada 2014, and Statistics Canada 2017).
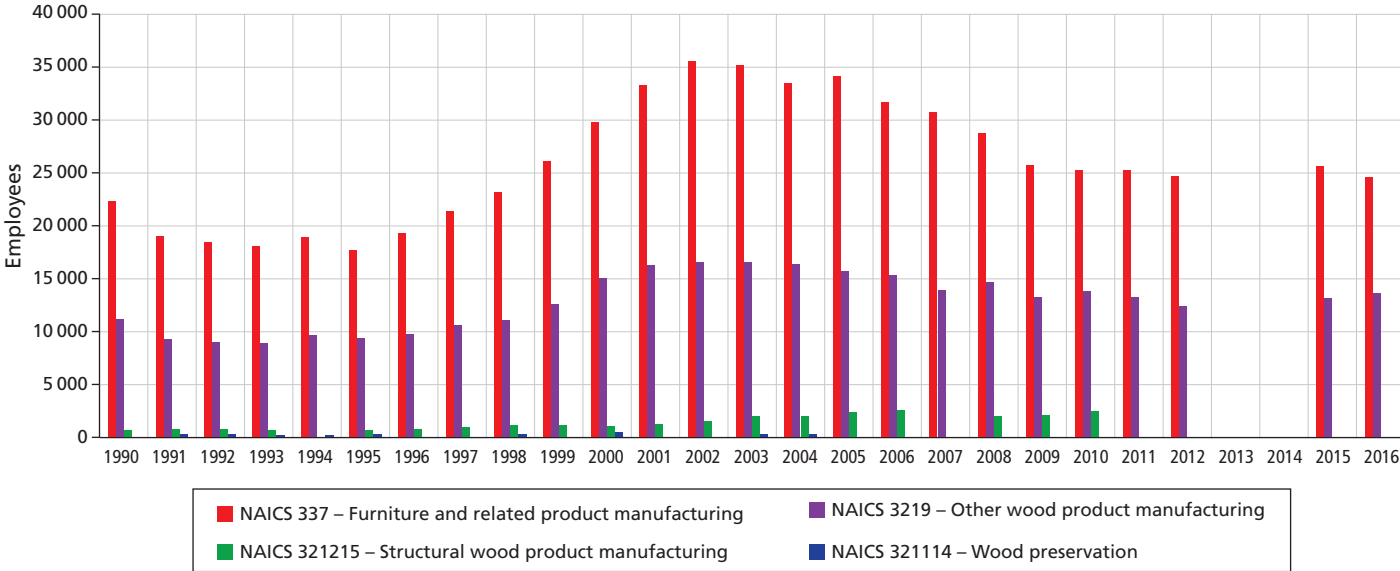


**Figure A2.** Total number of employees for select industry aggregates, 1990–2016 (source: Statistics Canada 2005, Statistics Canada 2014, and Statistics Canada 2017).
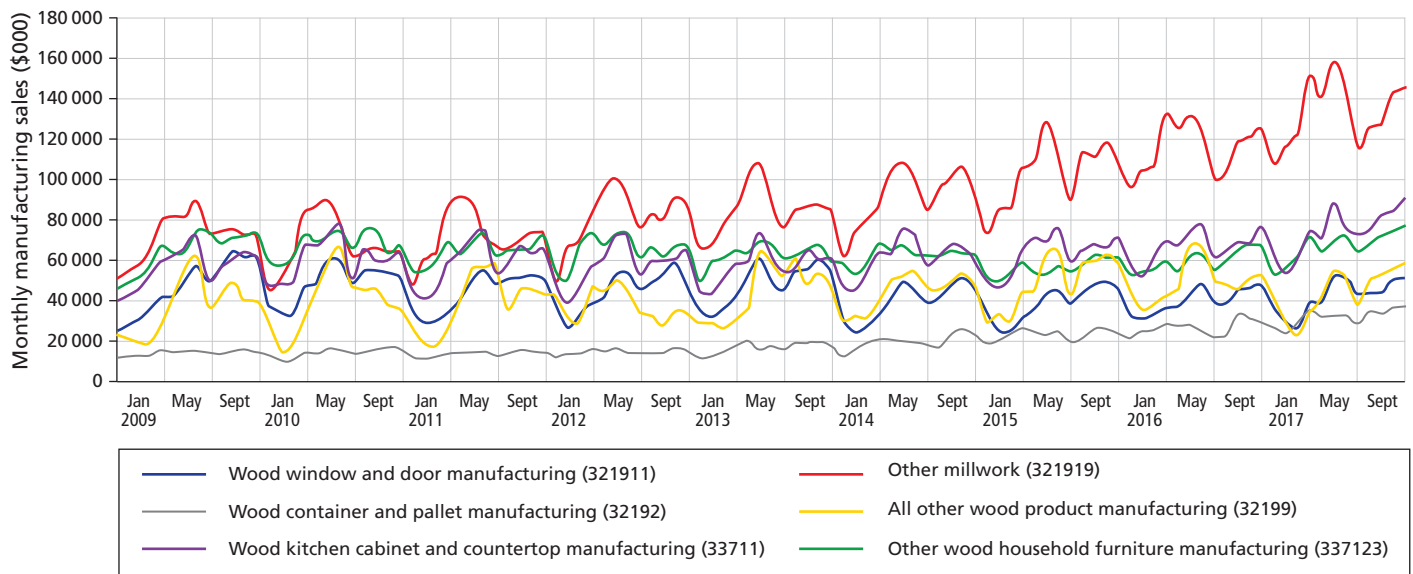
**Figure A3.** Monthly sales for select industry aggregates, 2009–2017. (source: Statistic Canada 2018a).

Table A2 shows the correlation between business types used in this survey report and the Harmonized System of traded products used internationally and by Statistics Canada. Using these relationships, export and import trade data of secondary wood products to and from Quebec is illustrated in Figure A4.

**Table A2.** Harmonized System for traded products code (HS), description and correspondence to business types

| Business type used in study | HS code | Product description |
|---|---|---|
| Other | HS 440131 | Sawdust, wood waste and scrap w/ or not agglomerated in logs, briquettes, pellets: wood pellet |
| Other | HS 440310 | Wooden telephone poles, fence posts, other wood in rough – painted, stained or treated |
| Other | HS 4404 | Hoopwood, split poles, piles, pickets and stake |
| Other | HS 440690 | Cross-ties (sleepers) railway/tramway – wood – impregnated |
| Panelboard | HS 4408 | Veneer/plywood sheets (thickness <6 mm) |
| Millwork | HS 4409 | Wood (lumber) continuously shaped |
| Panelboard | HS 4410 | Particle board of wood or other ligneous material |
| Panelboard | HS 4411 | Fibreboard |
| Panelboard | HS 4412 | Plywood (plies <6 mm thick) and veneered or laminated panel |
| Other | HS 4413 | Densified wood – in blocks, plates, strips or profile shape |
| Other | HS 4414 | Wooden frames |
| Pallets and containers | HS 4415 | Cases, boxes, crates, drums, pallets, load boards and similar packing articles of wood |
| Other | HS 4417 | Tools (bodies and handles), broom/brush bodies, footwear parts of wood |
| Millwork | HS 4418 | Windows, doors, shingles and shakes, panels and other builders, joiners and carpentry of wood |
| Other | HS 4419 | Tableware and kitchenware of wood |
| Other | HS 4420 | Wood statuettes, ornaments, caskets, cases; wood marquetry and inlaid wood |
| Other | HS 4421 | Other articles of wood |
| Furniture | HS 940161 | Seats with wooden frames – upholstered |
| Furniture | HS 940169 | Seats with wooden frames – not upholstered |
| Furniture | HS 940330 | Wooden furniture for office use |
| Furniture | HS 940340 | Wooden furniture for kitchen use |
| Furniture | HS 940350 | Wooden furniture for bedroom use |
| Furniture | HS 940360 | Wooden furniture for other use |
| Buildings – engineered wood products | HS 940600 | Prefabricated buildings ("industrialized buildings") |

**Figure A4.** Aggregate net exports for NAICS 6-digit industries, excluding panelboards (NAICS 321211, 321212, 321217) (source: Trade Data Online website).[7]

Foreign trade of secondary wood products to and from Quebec has dramatically changed since 2000. Quebec's net exports decreased by more than 75% between 2000 and 2010 (Figure A4). Since 2011, net exports grew slowly, which was consistent with the overall growth in the sector (Figures A1 and A2). Net exports peaked in 2002 and fell slowly over the next few years and then more quickly beginning in 2006. Decreased export demand due to the recession and increased import competition were likely behind the reduced overall sales and employment over this period. Although it is difficult to determine which factors contributed to these trends, the overall trade balance trend tracks changes in the US–Canadian dollar exchange rate, suggesting loss of competitiveness related to the strengthening Canadian dollar in the period between 2003 and 2011 (Figure A4).

A detailed look at Quebec's furniture trade uncovers two key trends since 2000 (Figure A5); that is:

1. a dramatic decrease in non-office wood furniture exports; and

2. a dramatic increase in imports of all non-office wood furniture.

Between 2000 and 2017, 97–99% of Quebec's furniture exports were to the United States. As such, it is not surprising that trends in Quebec exports (blue bars in Figure A5) line up with the US–Canada dollar exchange rate trends in Figure A4 and general economic activity in the US. On the other hand, furniture imports, though shares changed between 2000 and 2017, came from a diverse set of other countries such as China, Poland, Italy, Vietnam, Brazil and US and were increasing year-over-year.
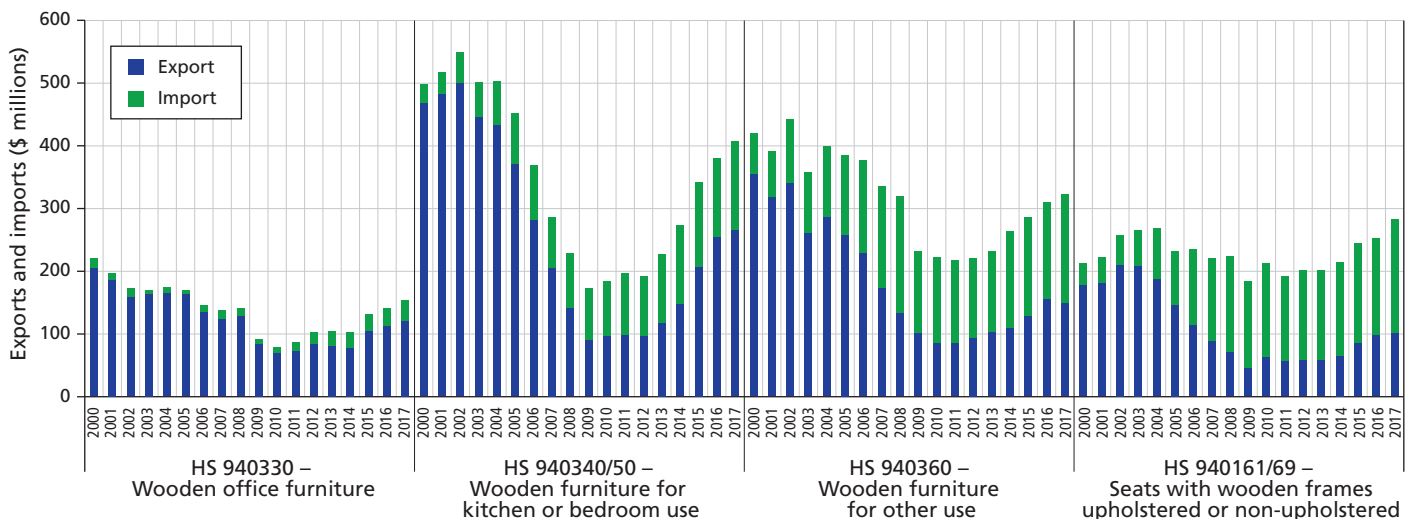


**Figure A5.** Quebec's wood furniture imports and exports, 2000–2017 (source: Statistics Canada 2018b).

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7  See Innovation, Science and Economic Development Canada's "Trade Data Online" (TDO) website at: https://www.ic.gc.ca/eic/site/tdo-dcd.nsf/eng/home.

Although panelboard mills are technically classified as secondary manufacturing mills because of the large average size of mills and the scale of the industry, they are sometimes treated as a primary industry. In this study, we recognize panelboards as part of the secondary wood manufacturing sector but exclude them from the survey analysis. Here we provide a cursory overview of the industry trends and current state using data available from Statistics Canada and Innovation, Science and Economic Development Canada.

In 2016, the veneer, plywood and engineered wood product industry group (NAICS 3219) had sales of about $1.8 billion and employed over 4600 people (Figure A6; Statistics Canada 2017). Between 1990 and 2004, the industry grew considerably with employment and revenues peaking around 2004. After a significant decline during the United States housing slump beginning in 2006 and the subsequent Great Recession of 2008–2009, the industry grew steadily between 2012 and 2016.
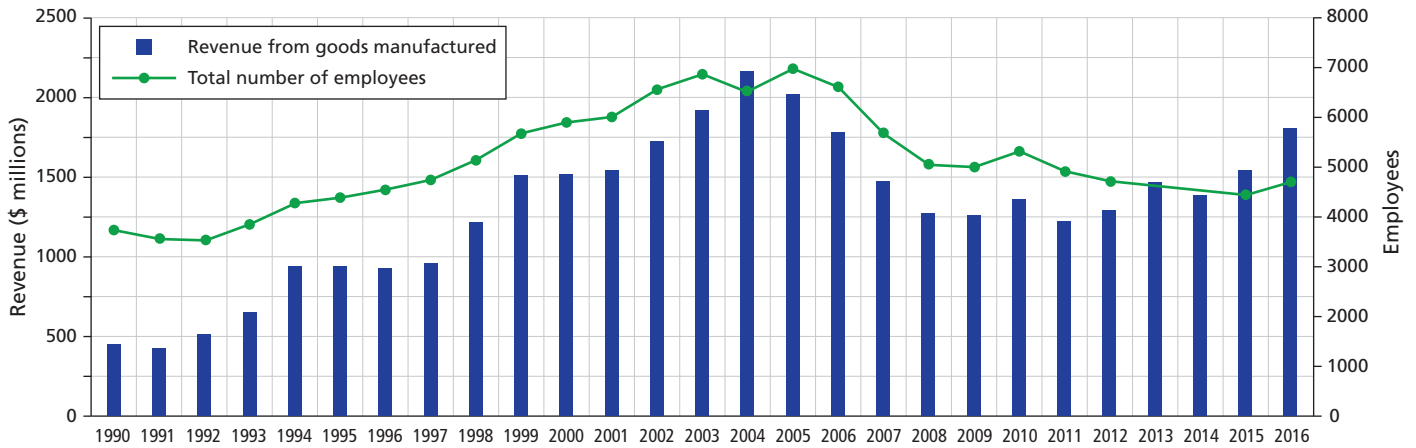


**Figure A6.** Manufacturing sales revenue and total number of employees for Quebec veneer, plywood, and engineered wood product manufacturing (NAICS 3212) 1990–2016 (source: Statistics Canada 2005, Statistics Canada 2014, and Statistics Canada 2017).

In 2017, Quebec's exports of panelboard products reached $789 million after hitting a low of $237 million in 2011 in the aftermath of the Great Recession (Figure A7). Nearly all of Quebec's waferboard, fibreboard, and plywood exports were shipped to the United States, with the province's panel industry fueled by demand for waferboard (orientated strand board) in the United States housing construction market (Figure A7). After reaching a low point for exports in 2011, exports of waferboard to the United States reached $400 million in 2017 as the US housing market continued to grow. Quebec's exports of fibreboard and plywood fell below $100 million in sales in 2011 but they grew growing steadily between 2012 and 2017. Imports of fibreboard and plywood have grown steadily, with China becoming a dominant supplier. With growing imports and declining exports, Quebec's balance of trade was negative for fibreboard and plywood in 2017.
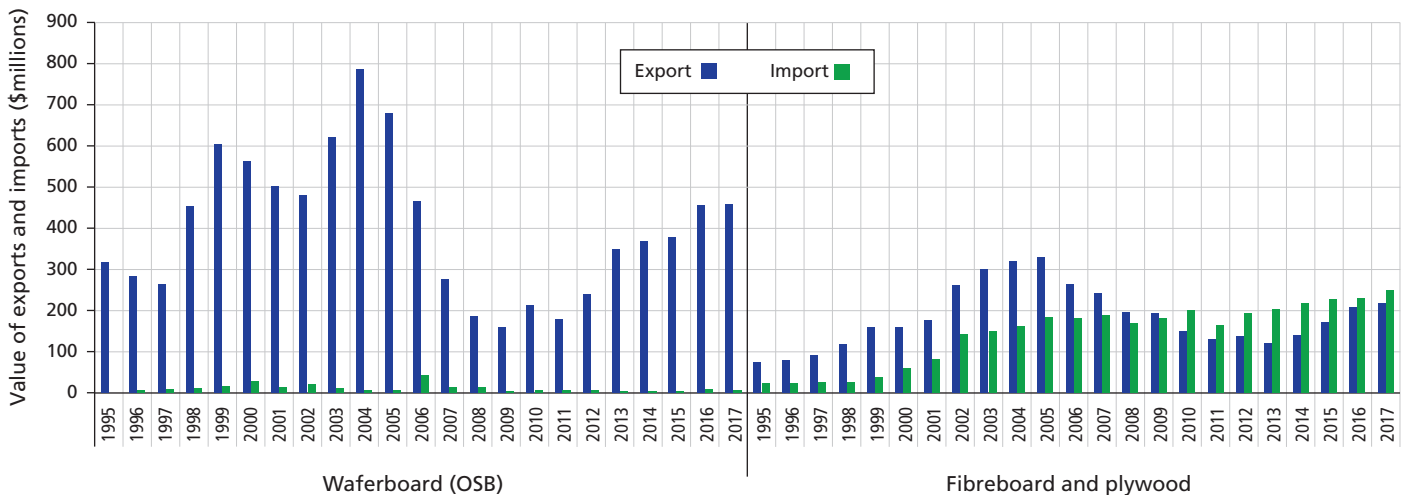


**Figure A7.** Value of exports and imports of waferboard (oriented strand board), fibreboard, and plywood, 1995 –2017.[8]

8  Ibid.

# Appendix 2:  Taxonomy of secondary manufactured wood products

This taxonomy is based on Wilson and Ennis (1993).

| Log products | Wood products | | |
| | Primary[a] | Intermediate | Final |
| --- | --- | --- | --- |
| Chopsticks | Boards | Building/home | Boxes, bins, and crates |
| Firewood | Cants | Components | Cabinets |
| House logs | Chips | Cutstock | Coffins |
| Pilings | Flitches | Door stock | Countertops |
| Poles | Lumber/Industrial timber | Edge-glued components | Decking |
| Posts | Treated timber | Finger-jointed stock | Fencing |
| Log homes | Veneer | Furniture components | Finger-jointed lumber |
| Shakes | | Joinery stock | Flooring |
| Shingles | | Ladder stock | Flooring/engineered |
| Treated pilings | | Laminated components | Furniture/commercial |
| Treated poles | | Laminated stock | Furniture/household |
| Treated posts | | Metric stock | Furniture/patio |
| Novelties | | Moulding, panel blanks | Furniture/RTA |
| | | Pallet, crating stock | Garden buildings/products |
| | | Medium-density fibreboard | Laminated veneer lumber |
| | | Particleboard | Millwork/architectural, custom |
| | | Pattern stock | Medium-density fibreboard |
| | | Sawmill specialty products | Mouldings |
| | | Staircase components | MSR lumber |
| | | Turning squares | Oriented strand board |
| | | Window stock | Pallets |
| | | | Paneling |
| | | | Plywood |
| | | | Prefab buildings and manufactured homes |
| | | | Oil and gas drill rig mats |
| | | | Siding |
| | | | Staircases |
| | | | Stakes, lathe, strips, and batten |
| | | | Structural laminated beams |
| | | | Treated lumber |
| | | | Trusses |
| | | | Turned wood products |
| | | | Windows |
| | | | Wood novelties |
| | | | Wood pellets |

a  This column does not include secondary products but was inserted to provide a more complete taxonomy.

## Appendix 3: Wood products by business type

**Remanufactured Products**
- Lumber specialties
- Sawmill specialties
- Custom processing
- Fencing
- Cutstock
- Siding
- Decking

**Engineered Wood Products**
- Laminated beams
- Trusses
- Treated wood
- Laminated veneer lumber
- Cross-laminated timber

**Engineered Wood Products: Buildings**
- Log homes
- Prefab buildings

**Millwork**
- Doors
- Architectural woodwork
- Windows
- Turned wood
- Moulding
- Stairs
- Flooring

**Cabinets**
- Kitchen cabinets
- Cabinet doors
- Vanity cabinets
- Countertops

**Furniture**
- Household
- Commercial and institutional
- Ready-to-assemble (RTA)
- Patio

**Pallets and Containers**
- Pallets
- Boxes, bins, and crates
- Shipping materials

**Panelboards**
- Plywood
- Oriented strand board
- Particleboard
- Medium-density fibreboard

**Other Wood Products**
- Poles and posts
- Wood novelties
- Veneer
- Woodcrafts
- Instruments
- Fuelwood pellets
- Oil and gas drill rig mats

## Appendix 4: 2017 Survey of Quebec Wood Product Secondary Manufacturing

**Survey purpose**

This survey collects manufacturing and related information on the Quebec secondary wood manufacturing sector. Natural Resources Canada has been doing similar surveys since 1990 in BC and this is the first for Quebec. This information will provide an accurate information base to describe the structure, performance and needs of the secondary manufacturing sector in Quebec. This will be a key source of information on the sector that will be used by policy makers in Quebec and we hope will be useful for forest industry associations. These data are used for statistical analyses and to produce published reports and presentations on the state of the industry.

1. Please give the location of where the mill site is located, if different from mailing address.
   **Complete a separate questionnaire for each of your mill sites, if more than one. Please contact us if you have questions.**
   **We define a mill as a specific facility or area where manufacturing occurs such as a shop, planer mill etc.**

   | Address (number and street) |
   |---|

   | Town/City | Postal Code |
   |---|---|

2. In what year did the mill begin operations? _____

3a. What is the legal status of your business?
   ☐ Sole proprietorship
   ☐ Partnership
   ☐ Corporation
   ☐ Other _____

3b. Is this business owned by Indigenous people?
   ☐ Yes, wholly owned
   ☐ Yes, partially owned
   ☐ No

4a. Please select the activity that accounted for the majority of your **2017** manufacturing sales revenue.
   Please select **one** only.
   ☐ Remanufactured products (finger joint, lumber specialties, fencing, panels, rig mats)
   ☐ Engineered wood products (glulam, LVL, I-joists, laminated posts/beams, trusses, prefab buildings, log homes, treated wood)
   ☐ Millwork (doors, windows, architectural and custom woodwork, turned wood products, mouldings)
   ☐ Cabinets (kitchen/vanity cabinets, cabinet doors, countertops)
   ☐ Furniture (household, ready-to-assemble, commercial, institutional and patio)
   ☐ Pallets and containers (pallets, boxes, bins, crates)
   ☐ Plywood & Panelboards (excluding/net of veneer production)
   ☐ Other (please specify) _____

4b. Does a majority of your sales revenue come from construction/building at the job site or involve making one-off products (such as cabinets or furniture) for individual customers?
   ☐ Yes
   ☐ No
   ☐ Don't know/unsure

**Wood Use**

5a. Please provide the estimated volume of raw wood materials used by your mill in **2017**.

**Note: m³** = cubic meters; **mbf** = thousand board feet; **msf** = 1,000 square feet 3/8" basis; **odt** = oven-dried metric tonnes

| Type of Raw Wood Material | Volume | Units of Measure |
|---|---|---|
| Logs | | ☐ m³  ☐ mbf  ☐ other _____ |
| Lumber | | ☐ m³  ☐ mbf  ☐ other _____ |
| Plywood | | ☐ m³  ☐ msf  ☐ other _____ |
| Veneer | | ☐ m³  ☐ msf  ☐ other _____ |
| Oriented Strand Board (OSB) | | ☐ m³  ☐ msf  ☐ other _____ |
| Medium-density fibreboard (MDF) | | ☐ m³  ☐ msf  ☐ other _____ |
| Wood residues | | ☐ m³  ☐ odt  ☐ other _____ |
| Other wood material (please specify): | | |
| | | ☐ m³  ☐ mbf  ☐ msf  ☐ other _____ |
| | | ☐ m³  ☐ mbf  ☐ msf  ☐ other _____ |

5b. Please provide the sources of raw wood material used by your mill in **2017** (provide best estimate):

| Source of Wood Supply | % |
|---|---|
| Quebec market purchases | |
| Logs from own tenured lands | |
| Other wood materials from own primary mills | |
| Log/lumber trades with other companies | |
| Canadian purchases outside of Quebec | |
| Imports from outside Canada | |
| **Total = 100%** | |

5c. If you sourced wood material from outside Quebec in **2017**, please indicate where you sourced these raw materials from. Please check all that apply.

| | | | |
|---|---|---|---|
| Ontario | ☐ | Europe | ☐ |
| Atlantic provinces | ☐ | Japan | ☐ |
| Western Canada | ☐ | China | ☐ |
| US West | ☐ | Korea | ☐ |
| US South | ☐ | Other Asia | ☐ |
| US Midwest | ☐ | Latin America | ☐ |
| US Northeast | ☐ | Africa | ☐ |
| | | Australia/New Zealand | ☐ |

6. Please provide an estimate of the wood species used by your mill by **percentage** of total volume in **2017**.

| Softwood | Jack pine | |
|---|---|---|
| | Red/White pine | |
| | Spruce | |
| **Other softwoods** (please specify): | | |
| | | |
| **Hardwoods** | Maple | |
| | Oak | |
| | Birch | |
| **Other hardwoods** (please specify): | | |
| | | |
| | | |
| | **Total volume of wood fibre used** | **100%** |

**Operations**

7. Please provide the percentage breakdown of operating costs for your mill in **2017**. (Provide your best estimate.)

| Main Operating Costs | | % |
|---|---|---|
| Wood Costs | | |
| Labour and Benefits | | |
| Interest | | |
| Depreciation | | |
| **Other** (please specify): | | |
| | | |
| | | |
| | **Total of operating costs** | **100%** |

**Employment**

8a. Please provide the average number of full-time equivalent employees working at this mill in **2017**.
A full-time equivalent is 220 or more days worked in the year.

| Production (manufacturing) staff | |
|---|---|
| Non-production staff | |
| **Total** | |

8b. Of the total number of full-time equivalent employees reported in question 8a, how many are Indigenous people?

_____

**Manufacturing Capacity and Expansion**

**Manufacturing capacity refers to the maximum volume of products that your mill is designed to produce for a one-year period.**

9a. Approximately what percentage of manufacturing capacity was the plant operating at in **2017**? _____%

9b. On average how many 8- to 10-hour shifts were running in **2017**?
  - ☐  1
  - ☐  2
  - ☐  More than 2

9c. What percentage of your manufacturing capacity is used to provide custom manufacturing services to other businesses?

  _____%                    ☐ Unknown/unsure

9d. Does your business plan to expand manufacturing capacity over the three-year period **2018–2020**?
  - ☐  Yes
  - ☐  No
  - ☐  Don't know

**If you responded yes, please continue to question 9e otherwise go to question 10a.**

9e. By what percentage does your business plan to expand capacity over the three-year period of **2018–2020**?

  _____%

**Constraints to Expansion**

10a. For each item below, please indicate the extent to which they represent a constraint to expand your business with **1** being not at all constraining and **5** being extremely constraining.

| General constraints to expansion | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Wood Supply | ☐ | ☐ | ☐ | ☐ | ☐ |
| Labour | ☐ | ☐ | ☐ | ☐ | ☐ |
| Markets | ☐ | ☐ | ☐ | ☐ | ☐ |
| Finance | ☐ | ☐ | ☐ | ☐ | ☐ |
| Management Capacity | ☐ | ☐ | ☐ | ☐ | ☐ |
| Transportation/Distribution | ☐ | ☐ | ☐ | ☐ | ☐ |
| Other (specify) _____ | ☐ | ☐ | ☐ | ☐ | ☐ |

10b. For each general constraint category below, please indicate the extent to which each specific factor represents a constraint to expand your business with **1** being not at all constraining and **5** being extremely constraining.

| i. Wood supply specific constraints | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Volume | ☐ | ☐ | ☐ | ☐ | ☐ |
| Price | ☐ | ☐ | ☐ | ☐ | ☐ |
| Quality/Grade | ☐ | ☐ | ☐ | ☐ | ☐ |
| Price Volatility | ☐ | ☐ | ☐ | ☐ | ☐ |
| Other (specify) _____ | ☐ | ☐ | ☐ | ☐ | ☐ |

| ii. Labour specific constraints | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Training/Skills | ☐ | ☐ | ☐ | ☐ | ☐ |
| Flexibility | ☐ | ☐ | ☐ | ☐ | ☐ |
| Cost | ☐ | ☐ | ☐ | ☐ | ☐ |
| Experience | ☐ | ☐ | ☐ | ☐ | ☐ |
| Other (specify) _____ | ☐ | ☐ | ☐ | ☐ | ☐ |

| iii. Markets specific constraints | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Softwood Lumber Agreement | ☐ | ☐ | ☐ | ☐ | ☐ |
| Product Diversification | ☐ | ☐ | ☐ | ☐ | ☐ |
| Market Diversification | ☐ | ☐ | ☐ | ☐ | ☐ |
| Market/Product Research | ☐ | ☐ | ☐ | ☐ | ☐ |
| Foreign Regulations | ☐ | ☐ | ☐ | ☐ | ☐ |
| Other (specify) _____ | ☐ | ☐ | ☐ | ☐ | ☐ |

| iv. Financing specific constraints | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Availability | ☐ | ☐ | ☐ | ☐ | ☐ |
| Cost | ☐ | ☐ | ☐ | ☐ | ☐ |
| Flexibility | ☐ | ☐ | ☐ | ☐ | ☐ |
| Repayment Schedule Length | ☐ | ☐ | ☐ | ☐ | ☐ |
| Other (specify) _____ | ☐ | ☐ | ☐ | ☐ | ☐ |

| v. Management capacity specific constraints | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Improving Product Quality | ☐ | ☐ | ☐ | ☐ | ☐ |
| Reducing Manufacturing Costs | ☐ | ☐ | ☐ | ☐ | ☐ |
| Increasing Labour Efficiency | ☐ | ☐ | ☐ | ☐ | ☐ |
| Improving Raw Material Recovery | ☐ | ☐ | ☐ | ☐ | ☐ |
| Implementing Lean/Just-in Time Manufacturing Techniques | ☐ | ☐ | ☐ | ☐ | ☐ |
| Other (specify) _____ | ☐ | ☐ | ☐ | ☐ | ☐ |

| vi. Transportation & distribution specific constraints | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Costs | ☐ | ☐ | ☐ | ☐ | ☐ |
| Access | ☐ | ☐ | ☐ | ☐ | ☐ |
| Logistics | ☐ | ☐ | ☐ | ☐ | ☐ |
| Frequency | ☐ | ☐ | ☐ | ☐ | ☐ |
| Other (specify) _____ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Electronic Commerce and Social Media**

11a. Does your company use social media (See list in 11b, below)?
- ☐ Yes
- ☐ No
- ☐ Don't know

11b. If yes, which social media sites does your company use? Please check all that apply.
- ☐ Facebook
- ☐ Twitter
- ☐ Pinterest
- ☐ Instagram
- ☐ Linked-in
- ☐ YouTube
- ☐ Snapchat
- ☐ Other (please specify) _____

11c. If no, does your company plan to use a social media site?
- ☐ Yes
- ☐ No
- ☐ Don't know

11d. Does your company have a website?
- ☐ Yes
- ☐ No
- ☐ Don't know

11e. If yes, what is your website name? _____

11f. Does your company search the web for manufacturing knowledge/information?
- ☐ Yes
- ☐ No
- ☐ Don't know

11g. Does your company currently engage in e-commerce?
- ☐ Yes
- ☐ No
- ☐ Don't know

11h. If no, what are the key issues for not expanding e-commerce? Check all that apply.
- ☐ Too costly
- ☐ Too much time required
- ☐ Do not have required skills
- ☐ No business need
- ☐ In process of adopting
- ☐ Other (please specify) _____

**If you answered no to 11g please go to question 12a, otherwise continue to 11i.**

11i. Does your company sell products or services through the web?
- ☐ Yes
- ☐ No
- ☐ Don't know

11j. Does your company purchase or search the web for inputs?
- ☐ Yes
- ☐ No
- ☐ Don't know

11k. Is your company planning to expand its use of e-commerce?
- ☐ Yes
- ☐ No
- ☐ Don't know

11l. If no, what are the key issues for not adopting e-commerce? Check all that apply.
- ☐ Too costly
- ☐ Too much time required
- ☐ Do not have required skills
- ☐ No business need
- ☐ Other (please specify) _____

11m. If yes, what type of e-commerce expansion are you planning?
- ☐ New web design
- ☐ Sales
- ☐ Purchases
- ☐ Other (please specify) _____

**Markets**

12a. What was the percentage breakdown of sales and revenues from the following markets in **2017**?

| | |
|---|---|
| Quebec | |
| Ontario | |
| Atlantic provinces | |
| Western Canada | |
| US West | |
| US South | |
| US Midwest | |
| US Northeast | |
| Europe | |
| Japan | |
| China | |
| Korea | |
| Other Asia | |
| Latin America | |
| Africa | |
| Australia/New Zealand | |
| **Total sales** | **100%** |

12b.  What end markets do you target for your products? (Mark all that apply.)
- ☐  New residential
- ☐  Remodeling
- ☐  Multiple-unit housing
- ☐  Industrial buildings
- ☐  Industrial uses
- ☐  Commercial buildings
- ☐  Other _____

12c.  Does your company plan to expand sales to new markets?
- ☐  Yes
- ☐  No
- ☐  Don't know

12d.  If yes, please indicate new market areas (provinces/states/countries/regions) of interest. Mark all that apply.
- ☐  Quebec
- ☐  Ontario
- ☐  Atlantic provinces
- ☐  Western Canada
- ☐  US West
- ☐  US South
- ☐  US Midwest
- ☐  US Northeast
- ☐  Europe
- ☐  Japan
- ☐  China
- ☐  Korea
- ☐  Other Asia
- ☐  Latin America
- ☐  Africa
- ☐  Australia/New Zealand
- ☐  Other (please specify) _____

12e.  Please identify how you plan to access **new** markets (check all that apply).
- ☐  Own effort
- ☐  Partnering with other manufacturers
- ☐  Selling to wholesaler/distributors
- ☐  Working with existing Ontario wood industry associations
- ☐  Other _____
- ☐  Don't know/unsure

12f. Please identify resources your company considers important to develop and evaluate **new** markets (check all that apply).

☐ Timely market intelligence

☐ Evaluation of new products and market opportunities

☐ Coordinated presence on international market development missions and at trade shows

☐ In-market support from Quebec industrial organizations

☐ Other _____

☐ Don't know/unsure

**Sales Revenue**

13a. Please indicate this mill's **2017** gross revenue (to the nearest dollar). **(Free On Board at mill – C$)**.

Gross 2017 revenue: _____

13b. Please indicate this mill's **2016** gross revenue (to the nearest dollar). **(Free On Board at mill – C$)**.

Gross 2016 revenue: _____

13c. Please estimate the **expected 2018** gross revenue (to the nearest dollar). **(Free On Board at mill – C$)**.

Expected gross 2018 revenue: _____

13d. Please indicate the **percentage** of your mill's 2017 gross revenue that was attributed to custom **manufacturing services** such as planning or kiln drying services and **non-manufacturing services** such as marketing or distribution services.

Percentage of 2017 revenue: _____

**Products**

14a. Please list up to **4** of the top grossing products manufactured at this mill and indicate approximate percentage of **2017** total sales revenue reported in question 14a.

| Main products | % of 2017 sales |
|---|---|
| | |
| | |
| | |
| | |
| All others products | |
| **Total** | **100%** |

14b. Does your company plan to expand its product offering?

☐ Yes

☐ No

☐ Don't know

14c. If yes, what new products do you plan to offer?

| Possible new products |
|---|
| |
| |
| |
| |
| |

**Services**

15a. Do you sell custom services?

☐ Yes
☐ No
☐ Don't know

15b. If yes, please indicate which custom services you provide. Please check all that apply.

| Manufacturing Services | | Non-manufacturing Services | |
|---|---|---|---|
| Planing | ☐ | Marketing | ☐ |
| Kiln Drying | ☐ | Distribution | ☐ |
| Resawing | ☐ | Logistics | ☐ |
| Other (specify): _____ | ☐ | Other (specify): _____ | ☐ |

15c. In relation to your mill, where are the businesses you provide services to generally located?

☐ within 50 km
☐ within 51 to 100 km
☐ greater than 100 km

15d. Do you currently plan to expand into new businesses services?

☐ Yes
☐ No
☐ Don't know

15e. If yes, please indicate which services you plan to offer? Please check all that apply.

| Manufacturing Services | | Non-manufacturing Services | |
|---|---|---|---|
| Planing | ☐ | Marketing | ☐ |
| Kiln Drying | ☐ | Distribution | ☐ |
| Resawing | ☐ | Logistics | ☐ |
| Other (specify): _____ | ☐ | Other (specify): _____ | ☐ |

15f. Do you currently purchase services from other businesses?

☐ Yes
☐ No
☐ Don't know

15g. If yes, please indicate which services you currently purchase? Please check all that apply.

| Manufacturing Services | | Non-manufacturing Services | |
|---|---|---|---|
| Planing | ☐ | Marketing | ☐ |
| Kiln Drying | ☐ | Distribution | ☐ |
| Resawing | ☐ | Logistics | ☐ |
| Other (specify): _____ | ☐ | Other (specify): _____ | ☐ |

15h. And if yes, what percentage of the volume of logs or lumber used by your business in 2017 did you have custom processed by another business?

_____%          ☐ Unknown/unsure

15i. In relation to your mill, where are the businesses you purchase services from generally located?

☐ within 50 km
☐ within 51 to 100 km
☐ greater than 100 km

**Company and product directory and survey reports**

We will publish a directory of Quebec companies that produce secondary wood manufacturing products. This electronic directory is made freely available through the on-line bookstore of the Canadian Forest Service (http://cfs.nrcan.gc.ca/publications/) and distributed through industry organizations. The directory includes company name, contact information, and a list of principle products. We welcome you to be included in this directory. We also publish a report that summarizes the findings from the analysis of the data produced from this survey. This report is also made freely available on the on-line bookstore. If you would like participate in the directory or directly receive either the directory or survey report, please indicate below.

Would you want to be included in the Quebec secondary wood product manufacturers' directory?

☐   Yes

☐   No

Would you like to receive a digital copy of the company/product directory?

☐   Yes

☐   No

Would you like to receive a digital copy of the final survey report?

☐   Yes

☐   No

**Contact Person** (name of person to contact about this questionnaire):

First name: _____

Last name: _____

Title: _____

Email: _____

Telephone number  (     ) _____          Fax number  (     ) _____

How long did you spend to collect the data and complete the survey? _____ hours _____ minutes

We invite your comments. Please be assured we read all comments with the intent of improving the survey.

**Remember, all questionnaire responses are confidential. Thank you for your time.**

## Appendix 5: Non-response bias tests

**Table A3.** Chi-squared test for goodness-of-fit between population and sample distributions

| Business type | Population | Observed (*o*) | Expected (*e*) | *o*−*e* (*d*) | (*d*)$^2$ | (*d*)$^2$/*e* |
|---|---|---|---|---|---|---|
| Cabinets | 629 | 102 | 123.9 | −21.9 | 480.2 | 3.9 |
| Millwork | 141 | 32 | 27.8 | 4.2 | 17.8 | 0.6 |
| Furniture | 194 | 33 | 38.2 | −5.2 | 27.2 | 0.7 |
| Pallets and containers | 290 | 50 | 57.1 | −7.1 | 50.8 | 0.9 |
| Engineered wood products | 51 | 12 | 10.0 | 2.0 | 3.8 | 0.4 |
| Other wood products | 76 | 25 | 15.0 | 10.0 | 100.6 | 6.7 |
| Remanufactured | 33 | 13 | 6.5 | 6.5 | 42.2 | 6.5 |
| Plywood and panelboards | 53 | 22 | 10.4 | 11.6 | 133.6 | 12.8 |
| **Chi-square statistic** | | | | | | **32.5** |

Calculated chi-square value is 32.5, which is greater than the chi-square test statistic for 7 degrees of freedom at 5% level of significance (14.1). We rejected the hypothesis that the distributions are the same.

**Table A4.** Chi-squared test for goodness-of-fit between population firm size distribution and respondent firm size distribution

| Company size | Population | Observed (*o*) | Expected (*e*) | *o*−*e* (*d*) | (*d*)$^2$ | (*d*)$^2$/*e* |
|---|---|---|---|---|---|---|
| Small (1–15) | 1002 | 182 | 197.4 | −15.4 | 237.0 | 1.2 |
| Medium (16–50) | 306 | 69 | 60.3 | 8.7 | 76.0 | 1.3 |
| Large (>50) | 159 | 38 | 31.3 | 6.7 | 44.6 | 1.4 |
| **Chi-square statistic** | | | | | | **3.9** |

Chi-square value is 3.9, which is less than the chi-square statistic (5.99) for 2 degrees of freedom at 5% level of significance. We did not reject the hypothesis that the two distributions are the same.

For more information about the Canadian Forest Service, visit our website at **nrcan.gc.ca/forests** or contact any of the following Canadian Forest Service establishments

# nrcan.gc.ca/forests

## Canadian Forest Service Contacts

**1**  Atlantic Forestry Centre
P.O. Box 4000
Fredericton, NB E3B 5P7
Tel.: (506) 452-3500 Fax: (506) 452-3525
**nrcan.gc.ca/forests/research-centres/
afc/13447**

Atlantic Forestry Centre – District Office
Sir Wilfred Grenfell College Forestry Centre
University Drive
Corner Brook, NF A2H 6P9
Tel.: (709) 637-4900 Fax: (709) 637-4910

**2**  Laurentian Forestry Centre
1055 rue du P.E.P.S., P.O. Box 3800
Sainte-Foy, PQ G1V 4C7
Tel.: (418) 648-5788 Fax: (418) 648-5849
**nrcan.gc.ca/forests/research-centres/
lfc/13473**

**3**  Great Lakes Forestry Centre
P.O. Box 490 1219 Queen St. East
Sault Ste. Marie, ON P6A 5M7
Tel.: (705) 949-9461 Fax: (705) 759-5700
**nrcan.gc.ca/forests/research-centres/
glfc/13459**

**4**  Northern Forestry Centre
5320-122nd Street
Edmonton, AB T6H 3S5
Tel.: (403) 435-7210 Fax: (403) 435-7359
**nrcan.gc.ca/forests/research-centres/
nofc/13485**

**5**  Pacific Forestry Centre
506 West Burnside Road
Victoria, BC V8Z 1M5
Tel.: (250) 363-0600 Fax: (250) 363-0775
**nrcan.gc.ca/forests/research-centres/
pfc/13489**

**6**  Headquarters
580 Booth St., 8th Fl.
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Canadian Wood Fibre Centre
A virtual research centre of
the Canadian Forest Service,
Natural Resources Canada
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