

# **SME PROFILE** CLEAN TECHNOLOGY IN CANADA

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# ABSTRACT

This report presents results from the 2020 <u>Survey on Financing and Growth</u> <u>of Small and Medium Enterprises</u> to offer a glimpse into the financing and growth activities of clean technology (clean tech) small and medium-sized enterprises (SMEs) in Canada.

A detailed profile of SMEs operating in the clean tech sector is created to provide insights. Compared to all SMEs, clean tech SMEs in 2020 were less negatively impacted by the COVID-19 pandemic and, on average, had more employees and were older.

Ownership of clean tech SMEs was generally less diverse than that of all SMEs, while primary decision makers in clean tech SMEs had comparable or higher levels of education and slightly more experience than primary decision makers in all SMEs.

Clean tech SMEs were more likely to seek financing, with a high approval rate for their financing requests. They were high-potential firms that innovated, adopted advanced technologies, and exported more often than all SMEs to further their growth and maintain their competitiveness.

Clean tech SMEs were also more likely to report expansion intentions into new markets and positive future growth expectations.

# 1. INTRODUCTION

This report presents results from the 2020 *Survey on Financing and Growth of Small and Medium Enterprises* to offer a glimpse into the financing and growth activities of clean technology (clean tech) small and medium-sized enterprises (SMEs) in Canada. Clean technologies<sup>1</sup> are defined as follows:

- Any good or service designed with the primary purpose of contributing to remediating or preventing any type of environmental damage;
- Any good or service that is less polluting or more resource-efficient than equivalent normal products which furnish a similar utility. Their primary use, however, is not one of environmental protection.

# Section 2 provides a summary of macroeconomic statistics on the environmental and clean technology sector in Canada.

In 2020, the sector accounted for 3.3% of Canada's gross domestic product (GDP). Activities typically run by government, such as clean electricity and waste management services, were the main components, while the private sector played an important role in providing clean technology services. Businesses, including clean tech SMEs, also played a vital role, selling nearly \$31 billion worth of environmental and clean technology goods and services in 2020.

## Section 3 discusses the results of the 2020 Survey on Financing and Growth of Small and Medium Enterprises.

These results compare the impact of COVID-19, firm characteristics, ownership demographics, financing, and growth activities of clean tech SMEs with those of all SMEs.

In 2020, clean tech SMEs were considerably less negatively impacted by the COVID-19 pandemic, were older, and had more employees. The ownership of clean tech SMEs was likely to be less diverse than that of all SMEs, with the primary decision makers of clean tech SMEs having comparable or higher levels of education and slightly more experience than the primary decision makers of all SMEs.

Clean tech SMEs were more likely to seek financing and their financing requests had a very high approval rate (as was the case for all SMEs). These were high-potential firms that innovated, adopted advanced technologies, and exported more often than all SMEs to remain competitive and further their growth.

Clean tech SMEs were also more likely to report expansion intentions and a positive outlook for future growth.

<sup>1</sup> See <u>Clean technologies and the Survey of Environmental Goods and Services: A technical reference guide</u> for more details.

# 2. ENVIRONMENTAL AND CLEAN TECHNOLOGY SECTOR

The environmental and clean technology products sector is vital to the Canadian economy. According to Statistics Canada's <u>Environmental and Clean Technology Products</u> <u>Economic Account</u>, environmental goods and services accounted for 3.3% (\$67.5 billion) of Canadian GDP, 1.8% of all jobs in Canada (322,972), 2.2% of Canadian exports, and 3.0% of Canadian imports in 2020.<sup>2</sup>

Most of the environmental and clean technology GDP consists of clean electricity, construction services, and waste management services.

As illustrated in Figure 1, the biggest contributors of environmental and clean technology towards Canada's GDP were environmental goods (41.6%) and clean technology services (39.4%). Waste management services and clean technology goods accounted for the remaining 12.4% and 6.5% contributions to GDP respectively.



(\$ billions)



Source: Statistics Canada, Environmental and Clean Technology Products Economic Account, 2020.

<sup>2</sup> The share of environmental goods and services in the Canadian economy has remained relatively stable since 2007, the first year for which these indicators are available.

The GDP composition of the environmental and clean technology sector suggests that government plays an important role.

For example, more than half of the sector's GDP consisted of clean electricity and waste management services, which are usually provided by the government. On the other hand, clean technology services such as construction services and support services, which often require both

governmental and private sector contribution, also account for a significant portion of the sector's GDP, highlighting the growing importance of the private sector.

Businesses also play a vital role, selling \$30.6 billion in environmental and clean technology goods and services in 2020, according to Statistics Canada's <u>Survey of Environmental Goods and Services</u>.

As shown in Figure 2, this total breaks down into domestic goods (\$12.9 billion), domestic services (\$10.6 billion), and exports (\$7.1 billion).<sup>3</sup> The largest components of these categories were energy efficiency technologies (\$4.6 billion), clean energy services (\$3.0 billion), and transportation technologies (\$3.0 billion) respectively.

(\$ billions)

Contribution of environmental and clean technology businesses to domestic production and exports.



#### Figure 2: Environmental and clean technology sales by Canadian businesses, in \$ billions

Source: Statistics Canada, Survey of Environmental Goods and Services, 2020.

<sup>3</sup> The results from the 2020 <u>Survey of Environmental Goods and Services</u> should be used with caution as some estimates are of poor quality or are missing because they are too unreliable to be published.

# 3. CLEAN TECH SMES

The rest of this report focuses on key results for clean tech SMEs from the 2020 *Survey on Financing and Growth of Small and Medium Enterprises*. The survey statistics provide a snapshot of the characteristics, financing, ownership demographics, and growth activities of clean tech SMEs in Canada. The data and definitions used are described in Section 3.1.

# 3.1 Data and definitions

The 2020 *Survey on Financing and Growth of Small and Medium Enterprises* was designed to determine the types of financing used by SMEs and to collect information on recent attempts by SMEs to obtain new financing. Furthermore, the survey gathered data on barriers to growth, business ownership characteristics, and the degree of involvement of SMEs in innovation and intellectual property.

## The target population for the survey was derived from Statistics Canada's Business Register (BR).

It consisted of private-sector, for-profit SMEs employing between 1 and 499 people and generating \$30,000 or more in annual revenues in 2020.

The main target population of 859,375 SMEs was stratified by age of business, enterprise size, industry, and geography, with samples randomly selected from these strata to generate representative estimates of the entire survey population.

The survey was conducted by Statistics Canada from April to August 2021. The base sample size was 19,283 SMEs, with a response rate of 55.5%. See the <u>methodology report</u> and <u>questionnaire</u> for more details. The survey also produced statistics on clean tech SMEs by oversampling clean technology businesses. The clean tech sample size was 622 businesses, with a response rate of 81%, and was representative of clean tech SMEs, with over \$750,000 in revenues, operating in industries covered by the 2020 *Survey of Environmental Goods and Services*, a mandatory survey that collected data on the sales of environmental and clean technology goods and services. Clean technologies are defined as follows:

- ☑ Any good or service designed with the primary purpose of contributing to remediating or preventing any type of environmental damage;
- ☑ Any good or service that is less polluting or more resource-efficient than equivalent normal products which furnish a similar utility. Their primary use, however, is not one of environmental protection.



Fewer clean tech firms were temporarily closed due to the COVID-19 pandemic. The categories of goods and services covered by the *Survey of Environmental Goods and Services* include clean energy production, management of non-hazardous waste, precision agriculture technologies, and energy efficiency services. More details on the clean tech sample can be found in Appendix A.

Due to sample exclusions resulting in a relatively small sample size, the survey results on clean tech SMEs should be considered experimental.<sup>4</sup>

# 3.2 COVID-19 impact

The COVID-19 pandemic has had a lasting and profound impact on the ability of SMEs to operate in a sustainable manner. Since clean tech firms generally require less in-person interaction and have relatively stable demand, only 17.1% of clean tech SMEs were temporarily closed due to the COVID-19 pandemic, compared to 33.4% of all SMEs (Figure 3). On average, clean tech SMEs were temporarily closed for seven weeks, compared to twelve weeks for all SMEs.



## Figure 3: Temporary closure due to the COVID-19 pandemic (% of businesses)

<sup>4</sup> The sample of clean tech SMEs is derived from the target population of the <u>Survey of Environmental Goods and Services</u>, which excludes firms with annual revenues under \$750,000, while the core survey sample excludes firms with annual revenues under \$30,000. To the extent that higher revenue firms tend to be larger, the clean tech sample is selected to exclude the smallest firms included in the core survey sample. This selection is likely related to many of the differences described in this report.

Figure 4 shows that in comparison to 44.8% of all SMEs, 67.0% of clean tech SMEs applied for the Canada Emergency Wage Subsidy (CEWS). Also, fewer clean tech SMEs applied for the Canada Emergency Business Account (CEBA) than all SMEs (51.5% versus 65.2%).

More clean tech firms applied for the Canada Emergency Wage Subsidy <u>(CEWS).</u>



# % 80 67.0 70 65.2 60 51.5 50 44.8 40 30 20 13.1 8.7 10 0 Canada Emergency Business Canada Emergency Wage Canada Emergency Account (CEBA) Subsidy (CEWS) Commercial Rent Assistance (CECRA) Clean Tech All SMEs

# Figure 4: Application for COVID-19 related federal government programs (% of businesses)

# 3.3 Firm characteristics

In 2020, clean tech SMEs were large and well-established businesses, tending to have more employees and to have been in operation longer than all SMEs.

Clean tech SMEs were more likely than all SMEs to be medium-sized, with 4.5% having between 100 and 499 employees and 31.0% having between 20 and 99 employees, compared with 1.7% and 10.6% of all SMEs respectively (Figure 5). Approximately 25% of clean tech SMEs were categorized as micro-sized firms, having between 1 and 4 employees. By contrast, over half of all SMEs were in this firm size group.



## Figure 5: Firm size (number of employees) (% of businesses)

Source: Statistics Canada, Survey on Financing and Growth of Small and Medium Enterprises, 2020.



Clean tech firms are larger. Given the relative size of clean tech SMEs compared to all SMEs, it is expected that clean tech SMEs would also be older. Figure 6 illustrates that 44.8% of clean tech SMEs had been in operation for more than 20 years, compared to 33.7% of all SMEs. Moreover, clean tech SMEs were less likely to be younger. Compared to 39% of all SMEs, 23.8% of clean tech SMEs had been in operation for 10 years or less.

Clean tech firms are generally older.





#### Figure 6: Firm age (% of businesses)



Clean tech SME ownership is generally less diverse.

# 3.4 Ownership demographics

The majority ownership demographics for clean tech SMEs were generally less diverse than that of all SMEs. For example, people in underrepresented groups such as women or visible minorities were significantly less likely to be majority owners of clean tech SMEs. The primary decision makers in clean tech SMEs had comparable or higher levels of education and were slightly more experienced than the primary decision makers of all SMEs.

As shown in Figure 7, clean tech SMEs in 2020 were more likely to be majority owned by men (82.1%), compared with 68.9% of all SMEs. Clean tech SMEs were also considerably less likely to be majority owned by women, visible minorities, and person(s) with a disability. Furthermore, 16.4% of clean tech SMEs had primary decision makers who were born outside of Canada, compared with 28.7% of all SMEs.



# Figure 7: Majority ownership demographics (% of businesses)

Overall, clean tech SME primary decision makers were equally or more likely to have obtained degrees at the post-secondary or graduate level of education.

As shown in Figure 8, 64.0% of clean tech SMEs had primary decision makers with a college, CEGEP, trade school, or bachelor's degree, while 21.4% had primary decision makers with a high school diploma or less.

Clean tech SME primary decision makers are highly educated.



In comparison, 55.0% of all SMEs had primary decision makers with a college, CEGEP, trade school, or bachelor's degree, while 29.6% had primary decision makers with a high school diploma or less.



#### Figure 8: Highest level of education attained by primary decision maker (% of businesses)

Clean tech SME primary decision makers are experienced. In comparison to all SMEs, the primary decision makers of clean tech SMEs were likely to have more experience.

As shown in Figure 9, 80.9% of clean tech SMEs in 2020 had primary decision makers with more than 10 years of experience in managing or owning a business, compared with 75.1% of all SMEs.

The primary decision makers in clean tech SMEs were also less likely to have fewer than 5 years of experience. Correspondingly, the primary decision makers in clean tech SMEs were more likely than those in all SMEs to be 50 years of age or older.

#### Figure 9: Primary decision maker years of experience (% of businesses)



# 3.5 Financing

In comparison to all SMEs, clean tech SMEs were more likely to request financing. The financing requests by both clean tech SMEs and all SMEs generally had a very high likelihood of being approved. However, as most clean tech SMEs and all SMEs indicated that the main reason they did not apply for financing was because they did not need it, it is clear that SMEs had adequate access to financing. The proportion of clean tech SMEs which accessed financing was greater than that of all SMEs.

Clean tech SMEs are more likely to request financing.

# In 2020, clean tech SMEs were more likely to seek external financing than all SMEs.

Compared to 82.4% of all SMEs, 90.8% of clean tech firms sought external financing (of any type).

Nearly 80% of clean tech SMEs requested government financing compared with 75.9% of all SMEs (Figure 10). Approximately 25% of clean tech enterprises requested debt financing, compared with 16.3% of all SMEs.

Moreover, clean tech SMEs were more likely to request all other types of financing, including lease financing, trade credit, and equity financing, than all SMEs.

For example, compared to 5.8% and 24.3% of all SMEs, 12.0% and 44.5% of clean tech SMEs sought lease financing and trade credit financing, respectively.



## Figure 10: Requested external financing by financing instruments (% of businesses)

Almost all debt financing requests made by SMEs in general were approved in 2020.

For clean tech SMEs, 94% of debt financing requests were approved, while the ratio of the amount of financing authorized to the amount of financing requested was 94.8% (Figure 11).

In comparison, for all SMEs, the debt financing approval rate was 90.8%, while the ratio of the amount of financing authorized to the amount of financing requested was 92.3%.

%

SME financing has a high approval rate and amount authorized-torequested ratio.



## Figure 11: Approval rate and share (%) of amount of financing authorized-to-requested



Source: Statistics Canada, Survey on Financing and Growth of Small and Medium Enterprises, 2020.

SMEs that do not request financing often do not require it. Like all SMEs, clean tech SMEs were unlikely to face barriers to accessing financing in 2020. Of the 9.2% of all clean tech firms that did not request external financing, 90.8% reported that they did not require financing (Figure 12). In comparison, of the 17.6% of all SMEs that did not request external financing, 86.5% reported that they did not require financing.



## Figure 12: Reasons for not requesting external financing (% of businesses)

Source: Statistics Canada, Survey on Financing and Growth of Small and Medium Enterprises, 2020.

Clean tech SMEs have higher growth.

In addition, about 3% of all SMEs and 2% of clean tech SMEs did not request financing because they thought that their request would not be approved (i.e., discouraged borrowers).<sup>5</sup>

Lastly, only 9.5% of all SMEs and 8.9% of clean tech SMEs considered obtaining financing to be a major obstacle to business growth.

# 3.6 Growth activities

In 2020, clean tech SMEs were growth-oriented businesses. They were more likely than all SMEs to have average yearly growth of 11% or more in their previous three years of operation (from 2018 to 2020), with 21.1% of clean tech SMEs reporting average yearly growth in sales or revenue of 11% or more, compared with 16.4% of all SMEs (Figure 13). Clean tech SMEs were also more likely to report positive growth. Compared with 61.5% of all SMEs, 65.4% of clean tech firms reported growth of 1% or more.

<sup>5</sup> Particularly, 3.1% of the 17.6% of all SMEs that did not seek financing were discouraged borrowers, while 1.8% of the 9.2% of clean tech SMEs that did not seek financing were discouraged borrowers. This implies that 0.55% (i.e.,  $3.1\% \times 17.6\%$ ) of all SMEs (i.e., both those that sought and those that did not seek financing) and 0.17% (i.e.,  $1.8\% \times 9.2\%$ ) of all clean tech SMEs (i.e., both those that sought and those that did not seek financing) were discouraged borrowers.



## Figure 13: Average yearly growth in sales/revenue from 2018–2020 (% of businesses)

Source: Statistics Canada, Survey on Financing and Growth of Small and Medium Enterprises, 2020.

Clean tech SMEs sold their products and services nationally or internationally much more often than all SMEs. Fortytwo percent of clean tech SMEs sold outside of their province or territory, and 24.7% of clean tech enterprises sold internationally (Figure 14). In comparison, 21.6% of all SMEs sold to other provinces or territories, while 12.1% sold internationally.

Clean tech SMEs sell nationally and internationally.



## Figure 14: Sales destination (% of businesses)

Clean tech SMEs engaged in other international business activities more often than all SMEs in 2020. For example, 23.7% of clean tech firms imported production inputs to Canada compared with 8% of all SMEs.

In 2020, clean tech SMEs were also more likely to innovate,<sup>6</sup> adopt advanced technology,<sup>7</sup> and hold intellectual property (IP)<sup>8</sup> than all SMEs.



Clean tech SMEs are technologically advanced and innovative. From 2018 to 2020, 56.5% of clean tech SMEs adopted at least one advanced technology, such as business intelligence or design/information control technologies, compared with 33.7% of all SMEs (Figure 15).

## Figure 15: Advanced technology adoption, innovation and IP holdings (% of businesses)



<sup>6</sup> An SME is innovative if at least one of the following types of innovation was adopted over the past three years: product innovation, process innovation, organizational innovation, or marketing innovation.

<sup>7</sup> Advanced technology includes the following: business intelligence technologies, design or information control technologies, security or advanced authentication systems, material handling, supply chain or logistics technologies, processing or fabrication technologies, integrated Internet of Things (IoT) systems, clean technologies.

<sup>8</sup> IP includes registered trademarks, patents, registered industrial designs, trade secrets, and non-disclosure agreements.

Approximately 39% of clean tech SMEs introduced at least one type of innovation from 2018 to 2020, compared with 28.4% of all SMEs. Clean tech SMEs were also more likely to have introduced product, process, and organizational innovations. However, all SMEs were more likely to have introduced marketing innovations than clean tech firms.

In 2020, 35.2% of clean tech SMEs owned at least one type of IP, compared with 15.5% of all SMEs. Clean tech enterprises were also more likely to own all types of IP, including registered trademarks and non-disclosure agreements.

Furthermore, 76.3% of clean tech SMEs had an online presence in 2020, compared with 58.5% of all SMEs (Figure 16).

Clean tech SMEs have an online presence.



Among those with an online presence, websites were the most popular type of site or service used (82.9% for all SMEs and 89.9% for clean tech SMEs), followed by social media accounts (66.2% for all SMEs and 56.4% for clean tech SMEs).

Clean tech firms were less likely than all SMEs to have e-commerce platforms (12.1% for all SMEs and 5.9% for clean tech SMEs) or payment systems (14.6% for all SMEs and 9.2% for clean tech SMEs).



#### Figure 16: Online presence in 2020 (% of businesses)

Clean tech SMEs intend to expand. In addition, clean tech SMEs had expansion intentions. In 2020, 86.3% of clean tech SMEs expressed an intention to expand sales into new markets between 2021 and 2023, compared with 76.8% of all SMEs (Figure 17).





Source: Statistics Canada, Survey on Financing and Growth of Small and Medium Enterprises, 2020.

In comparison to all SMEs, clean tech SMEs were much more likely to report intentions to expand outside the local municipality or region into domestic and international markets. Clean tech SMEs were also more likely than all SMEs to report positive growth expectations between 2021 and 2023.

# 4. CONCLUSIONS

This report provides a glimpse into the financing and growth activities of clean tech SMEs in Canada. The environmental and clean technology sector plays a vital role in the Canadian economy, contributing to the GDP, jobs, and trade activity.

Statistics for clean tech SMEs in this sector in 2020 are presented in this report. Using results from the 2020 *Survey on Financing and Growth of Small and Medium Enterprises*, it was found that clean tech SMEs were less severely impacted by the COVID-19 pandemic, were older, and had more employees than all SMEs.

Clean tech SME ownership was generally less diverse than that of all SMEs, with primary decision makers of clean tech SMEs having comparable or higher levels of education and slightly more experience than the primary decision makers of all SMEs. They were also more likely to seek financing, and their financing requests, like all SMEs, had a high likelihood of being approved.

Compared to all SMEs, clean tech SMEs were more likely to innovate, adopt advanced technologies, own intellectual property, and export to ensure that they maintain growth and remain competitive.

Finally, clean tech SMEs were more likely to report intentions to expand their sales to new markets and expect future business growth.

# **APPENDIX A** Detailed description of the clean tech sample

Businesses identified as clean technology firms by the 2020 *Survey of Environmental Goods and Services*, a mandatory Statistics Canada survey, comprised the sampling frame for the 2020 *Survey on Financing and Growth of Small and Medium Enterprises* clean tech sample. Respondents to the *Survey of Environmental Goods and Services* operated in the following North American Industrial Classification System (NAICS) industries:

| NAICS code | NAICS title  |
|------------|--|
| 115        | Support activities for agriculture and forestry industries                 |
| 211        | Oil and gas extraction industries  |
| 236        | Construction of buildings  |
| 237        | Heavy and civil engineering construction                                   |
| 238        | Specialty trade contractors  |
| 311        | Food manufacturing   |
| 321        | Wood product manufacturing   |
| 324        | Petroleum and coal product manufacturing                                   |
| 325        | Chemical manufacturing   |
| 326        | Plastics and rubber product manufacturing                                  |
| 327        | Non-metallic mineral product manufacturing                                 |
| 332        | Fabricated metal product manufacturing                                     |
| 333        | Machinery manufacturing  |
| 334        | Computer and electronic product manufacturing                              |
| 335        | Electrical equipment, appliance, and component manufacturing               |
| 336        | Transportation equipment manufacturing                                     |
| 339        | Miscellaneous manufacturing  |
| 412        | Petroleum and petroleum products merchant wholesalers                      |
| 415        | Motor vehicle and motor vehicle parts and accessories merchant wholesalers |
| 416        | Building material and supplies merchant wholesalers                        |
| 417        | Machinery, equipment, and supplies merchant wholesalers                    |
| 418        | Miscellaneous merchant wholesalers   |

| 419  | Business-to-business electronic markets and agents and brokers     |
|------|--|
| 511  | Software publishers industry                                       |
| 518  | Data processing, hosting, and related services industry            |
| 541  | Professional, scientific, and technical services industry          |
| 5416 | Management, scientific, and technical consulting services industry |
| 561  | Administrative and support services                                |
| 562  | Waste management and remediation services                          |
| 811  | Repair and maintenance industry                                    |

The questionnaire used by the *Survey of Environmental Goods and Services* covers the following categories of clean technology goods and services:

- Clean energy production
- Management of non-hazardous waste
- Management of industrial air pollution or flue gas
- Monitoring and reduction of greenhouse gas emissions and air pollution
- Industrial wastewater treatment and municipal sewage treatment
- Water management, recycling, and treatment of drinking water technologies
- Remediation of ground water, surface water, and leachate
- Remediation of soil, sediment, and sludge
- Smart grid and energy storage
- Bioenergy and biomaterial production
- Precision agriculture technologies
- Energy efficiency technologies

- Transportation technologies
- Site remediation services and environmental emergency response services
- Energy efficiency and industrial design services
- Monitoring and reduction of greenhouse gas emissions and air pollution services
- Clean energy services
- Water management and efficiency services
- Sustainable resource services
- Transportation services
- Smart grid services
- Environmental employment
- Revenues generated through exports
- Investments