

# THE IMPACT OF COVID-19 ON THE CLEANTECH SECTOR

EDC Economics

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## CANADIAN CLEANTECH INDUSTRY HIT HARD BY COVID-19

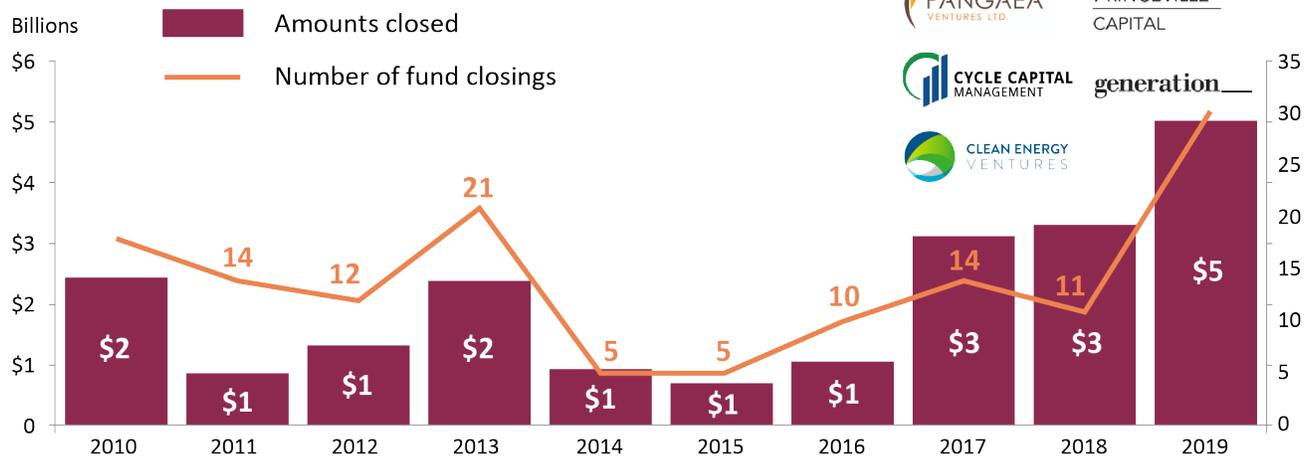
The COVID-19 pandemic is causing an unprecedented liquidity crisis for Canadian cleantech companies. This acute shortage of liquidity risks impairing an industry that was expected to be a significant driver of growth for the Canadian economy over the medium term and help lead the transition towards a more sustainable economy in the longer term.

Since the start of the COVID-19 outbreak, the Canadian cleantech industry associations have come together to identify the challenges facing the sector and communicate them to the broader ecosystem that supports them. Like other industries, survey results show the cleantech industry is being deeply impacted, but several unique elements stand out:

- Beyond the typical struggles to pay staff, rent and general expenses, many cleantech firms are highly active in research and development, and manufacturing products. COVID-19 lockdowns are preventing access to company facilities and laboratories.
- Supply chain disruptions and travel restrictions have also added pressure.
- Some investors have walked away from planned investments because of the uncertainty.
- Many cleantech companies partner with large corporations on development and testing their solutions, but that has virtually stopped because of the crisis.

Before COVID-19, the Canadian ecosystem in both the private and public sector was aligned on the importance of developing cleantech and supporting the growth of companies. After years of market reluctance, venture capitalists were also back investing in cleantech companies worldwide, totalling \$35 billion in 2019, of which \$1.2 billion occurred in Canada, or 3% of the global total.

## Venture and Growth Capital cleantech funds raised in the last decade

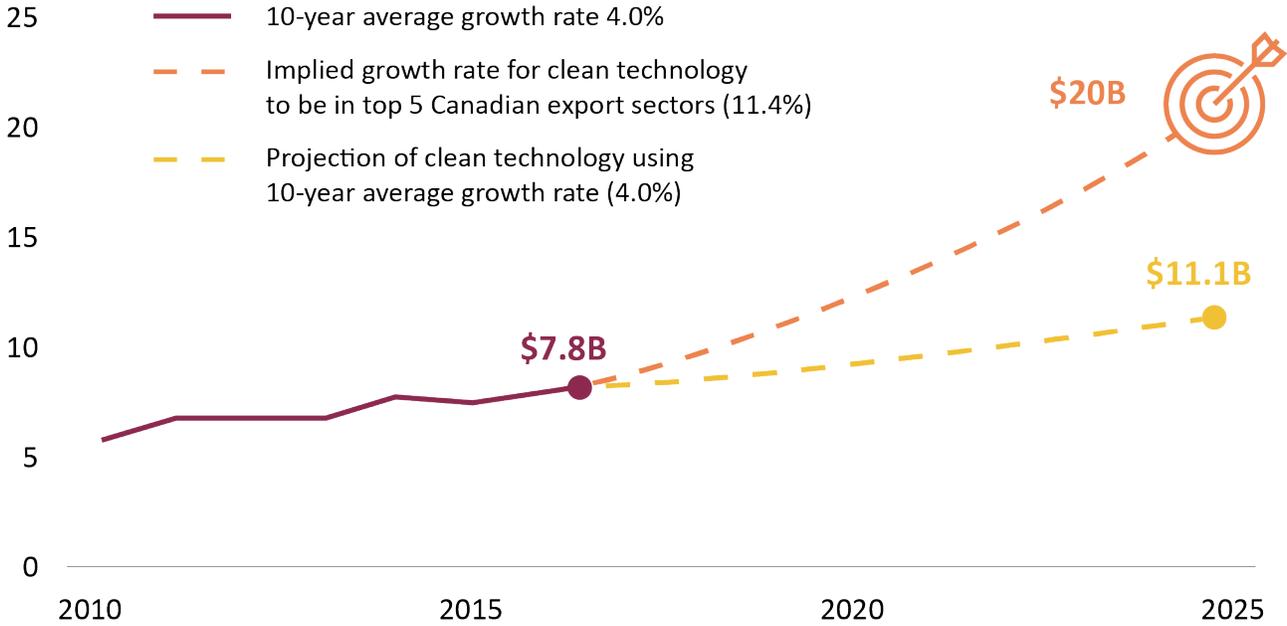


**Figure 1 - Venture & Growth Capital Funds Raised in The Last Decade (The Cleantech Group)**

Notwithstanding the positive alignment of the Canadian cleantech ecosystem, it's important to realize that some longstanding challenges for the sector are being exacerbated by the COVID-19 crisis. In the [Report from Canada's Economic Strategy Tables: Clean Technology](#) published in 2018, the following factors were identified as hindering the transformative growth of the cleantech sector in Canada:

- a risk-averse domestic market with low adoption rates of clean technology;
- low access to patient growth capital, scale-up investments and grant funding suited to the unique risks and costs of clean technology;
- disconnect between environmental policy targets and regulations;
- lack of stringent domestic environmental regulations hinders the adoption of new technologies;
- small relative firm size, a lack of strategic expertise, market information and participation in targeted international bodies hamper market access for Canadian clean technology firms;
- women and Indigenous people are insufficiently represented in the workforce; and
- limited entrepreneurial/business and soft skills among startups.

### Clean Technology Exports (\$ billions)



**Figure 2 – Historical and Projection of Clean Technology Exports to 2025**

The report also indicates that the cleantech sector with its strong innovation and production of clean technology solutions has the potential to capitalize on global industry demand, which is expected to reach \$2.5 trillion by 2025. It also identifies that cleantech solutions will be key to supporting Canada’s transition to a low-carbon economy. The report identified an ambitious target for the Canadian cleantech sector: In 2025, it would represent \$20 billion in annual exports, as well as being one of the country’s Top 5 exporting sectors.

Statistics Canada estimates that in 2018, there were more than 300,000 Canadian jobs in this sector<sup>1</sup> and cleantech represented about \$1.8 billion in international trade. While this estimate doesn’t fully capture the cleantech sector, it provides a baseline to measure progress. If we use these numbers as a guide and recognize there’ll likely be a reduction caused by the COVID-19 crisis, significant work will be needed to meet that target.

At Export Development Canada (EDC), we see our role as supporting the growth of cleantech companies and the ecosystem. Since 2012, we’ve been executing a cleantech strategy that has enabled us to provide more than \$9 billion in financial support. In 2019, we provided more than \$2.4 billion in support to 227 cleantech companies and provided financial solutions across all cleantech sub-sectors, with the largest support to renewable power generation. In addition, 83% of cleantech customers served in 2019 were small- to medium-size enterprises (SMEs).

<sup>1</sup> To note that cleantech data remains difficult to find and that these numbers represent specific NAICS codes, which are included in the Environmental and Clean Technology Products Economic Account only.

## SUB-SECTOR IMPACTS

Canadian cleantech companies have developed solutions for all industrial sectors, each with distinctive profiles and impacts caused by the COVID-19 crisis. The following is a high-level review of these impacts.

### OIL AND GAS

- EDC's blog, [COVID-19: Navigating the turmoil in Canada's energy sector](#), indicates that Canadian petroleum producers have announced more than \$5 billion in cuts to planned capital expenditures, equivalent to 20% of the total capital spending expected in 2020 by the Canadian Association of Petroleum Producers. The Bank of Canada's *Business Outlook Survey*, reported an even more pessimistic outlook, finding that oil companies have revised their 2020 capital spending plans down 30% compared with 2019 and were planning to cut employment immediately.
- Cleantech companies that provide solutions to the oil and gas sector have been doubly hit by the challenges that sector has been experiencing. They've lost their partners, and in some cases investors, as oil and gas companies retrench to focus on core operations and preserve liquidity.

### BIOFUELS

- The biofuels sector has been the hardest hit because of the steep drop in oil prices. Industry is calling the combination of the heavily impacted oil and gas sector and COVID-19 crisis "a potential destructive event".
- Most biofuels are blended with regular oil and plummeting demand is negatively impacting the sector.
- Pricing differential between the biofuels and crude oil is exacerbating this in markets where there's a lack of regulatory incentives to increase fuel blending levels and schemes such as the Renewable Fuel Standard (RFS) in the United States.
- There were challenges pre-COVID-19 in the application of the RFS in the U.S. with the latest government administration, as well as price competitiveness of biofuels.
- The lack of a renewable fuel standard across Canada pre-COVID-19 had been cited as a challenge for the industry.
- While the European Union (EU) remains a large target market, its Renewable Energy Directive (RED) remains complex. According to the [Advanced Biofuels](#) report by the International Renewable Energy Agency (IRENA), the lack of certainty in implementation across member states has stagnated investment activity in the last 10 years.

### ELECTRIC VEHICLES

- Lower fuel prices are also having an adverse impact on electric vehicles. What's not yet clear is the impact this will have on longer-term consumer choices. In the immediate future, production disruptions and restrictions of labour movement are expected.
- In a recent [story](#) published by Reuters, projects related to production of lithium and rare earths in the U.S. are expected to slow down because of the COVID-19 impact to their operations—both in their ability to physically pursue projects and potential oversupply of minerals while demand for electric vehicles is reduced.

### RECYCLING, RECOVERY AND REMEDIATION

- Will the move away from plastics continue during the pandemic? Will recycled resins be attractive with historically low oil prices? The impact is currently unknown.

- What is known is that in the short term, reliance on single-use plastics has increased with COVID-19, according to a World Bank blog. But this spike in demand isn't expected to last. Countries are also expected to revert to their stated goals of transitioning to a circular economy that includes:
  - a reduction of plastics;
  - reuse through recycling;
  - new business models for plastics collection and sorting;
  - new technologies to recycle mixed plastics; and
  - policy incentives that encourage circularity.

## ENERGY AND POWER

- This is a broad sector that covers renewable energy, energy efficiency and energy infrastructure. Pre-COVID-19, the Cleantech Group's [Global Cleantech 100 Report](#) indicated that utilities were struggling to manage large volumes of data and deal with critical network bottlenecks. They also pointed to decentralization of power as a growing trend. Overall global investment in energy and power—this includes renewable energy—was \$3.85 billion in 2019, with two-thirds in energy storage, energy efficiency and solar.

## RENEWABLE ENERGY

- The impact on long-term renewable energy prices is still unclear, but given the price of electricity generated by renewables sources continues to decrease and countries haven't abandoned their emissions reduction plans, a potential slowdown on building new projects is expected, although the market will likely remain solid.
- In North America, Wood Mackenzie expects market disruptions to last 18 months as they're impacted by a decreased demand for power, cancellations or delays of auctions and tenders and travel bans. Shelter-in-place orders will also reduce the ability for companies to wrap up permitting, commissioning and interconnections and decreased project finance liquidity.
- The International Energy Agency (IEA) predicts that the crisis could disrupt renewable energy markets worldwide—it predicted in October 2019 that 2020 would be a record year for renewable electricity—and they've identified several factors for impacting their initial prediction:
  - slowing down of construction projects;
  - lockdown measures in place in many countries;
  - liquidity concerns of smaller project developers; and
  - the need for in-person work to secure permits and acquiring land.

## ENERGY EFFICIENCY AND GREEN BUILDINGS

- Before the crisis, the International Energy Agency (IEA) in its [World Energy Investment 2019](#) identified that a total of \$240 billion was invested in energy efficiency across buildings, transportation and industry sectors. This number stagnated from 2018 and the IEA says increased investments in energy efficiency will be needed to meet global sustainability goals.
- The pandemic is likely to slow down investments by asset owners. And according to a recent article published by the [Energy News Network](#), energy efficiency work requires a lot of on-site work, including energy audits,

weatherization, installation of new heating and cooling systems and solar installations. While work can continue at some construction sites, it's a challenge to do in the residential sector during the pandemic.

- Since energy efficiency leads to long-term cost savings, the industry is likely to rebound once restrictions are lifted and the economy gets back on track.
- [Canada's Budget 2019](#) also proposed a \$1-billion increase to energy efficiency in residential, commercial and multi-unit buildings through funding provided to the Federation of Canadian Municipalities. That spending commitment continues to exist and should help propel investments once the crisis subsides.

## ADVANCED WATER

- A Global Infrastructure survey done by CG/LA Infrastructure and cited in a recent article in [Environment + Energy Leader](#) indicates that of the 13,000 global respondents, 52% now believe infrastructure spending will decline in comparison to 10% before the crisis.
- Respondents feel that the COVID-19 crisis has halted infrastructure investment globally with developing countries being hardest hit.
- Likely to be minimally impacted as demand for upgrades may lower with government money going to fight the pandemic, but there may be increased demand to treat infected water, especially in developing countries.

## AGRICULTURE AND FOOD

- In its [Global Cleantech 100 2020 report](#), the Cleantech Group identified that venture investment into agriculture and food companies grew to \$5.7 billion in 2019 from \$4.7 billion the previous year. 2019 was a strong year for alternative proteins, controlled environment agriculture (CEA) and biological crop inputs and protection.
- Ensuring food security will be paramount. While it's unclear if the investments will continue to increase at the same pace, we continue to expect positive outcomes given the importance of developing systems to feed the planet's growing population more sustainably.
- In a recent [Robotics article](#), a challenge is having foreign workers enter countries and potentially cause a labour shortage of agricultural workers. In this same article, the investments that have occurred in the last few years in this sector are driving to healthier, more sustainable food. It's felt that the market "jolt" will lead to further interest in companies in the sector, as well as increased adoption of Agtech technologies.

## RECOVERY EXPECTATIONS

With the usual optimism of this sector, the ecosystem is thinking of what recovery will look like for Canada. The industry survey data shows that even with the immediate health crisis over, challenges will remain for Canada's cleantech companies. Their sales pipelines will need to be rebuilt, they may experience new product development delays, loss of key employees and continued liquidity shortages. There is also concern about the amount of debt that companies may take on and their ability to pay it back on a short-term basis as they rebuild their sales and start generating income. Therefore, there's hope that government support programs, which have sustained the development of the ecosystem, will continue to provide support and adapt as needed.

From a longer-term perspective, the ecosystem is looking at recovery as a "once-in-a-generation investment opportunity." [Standard Chartered](#) advises that the biggest challenge and opportunity will be the unprecedented

amount of stimulus spending that has been announced globally and how it’s allocated. A total of US\$7 trillion—and counting—has been announced across tax breaks, government spending, money printed by central banks, and more.

In Clean Energy Canada’s April 17, 2020 [opinion piece](#), they suggest a model based on developing a competitive economy, developing new secure jobs, a recovery that’s not done at the expense of the environment, safe, healthy and connected communities, as well as Canada’s continued ambition to meet our 2050 net-zero climate commitments will be key. In that vein, they suggest the following model, which is a good summary of many of the recovery ideas that have been presented in the last two weeks.



**Figure 3 - Clean Energy Canada Recovery Model, (Woynillowicz, 2020)**

These recovery ideas, continued innovation in the sector and alignment of the ecosystem players are expected to benefit Canada and position its cleantech sector to capture niche and high-value markets abroad. Sustaining the cleantech ecosystems focused on R&D, financing, information exchange, talent development and retention are all critical to future Canadian prosperity, as well as competitiveness in export markets.

**ABOUT THIS REPORT**

This report is part of a publication series of concise reports written by EDC Economics staff on the impact of COVID-19 on Canadian international trade and investment. The views expressed in this report are those of the author and should not be attributed to Export Development Canada or its Board of Directors.

This report was written by Lynn Côté with contributions and review from Michael Borish and Stephen Tapp.

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