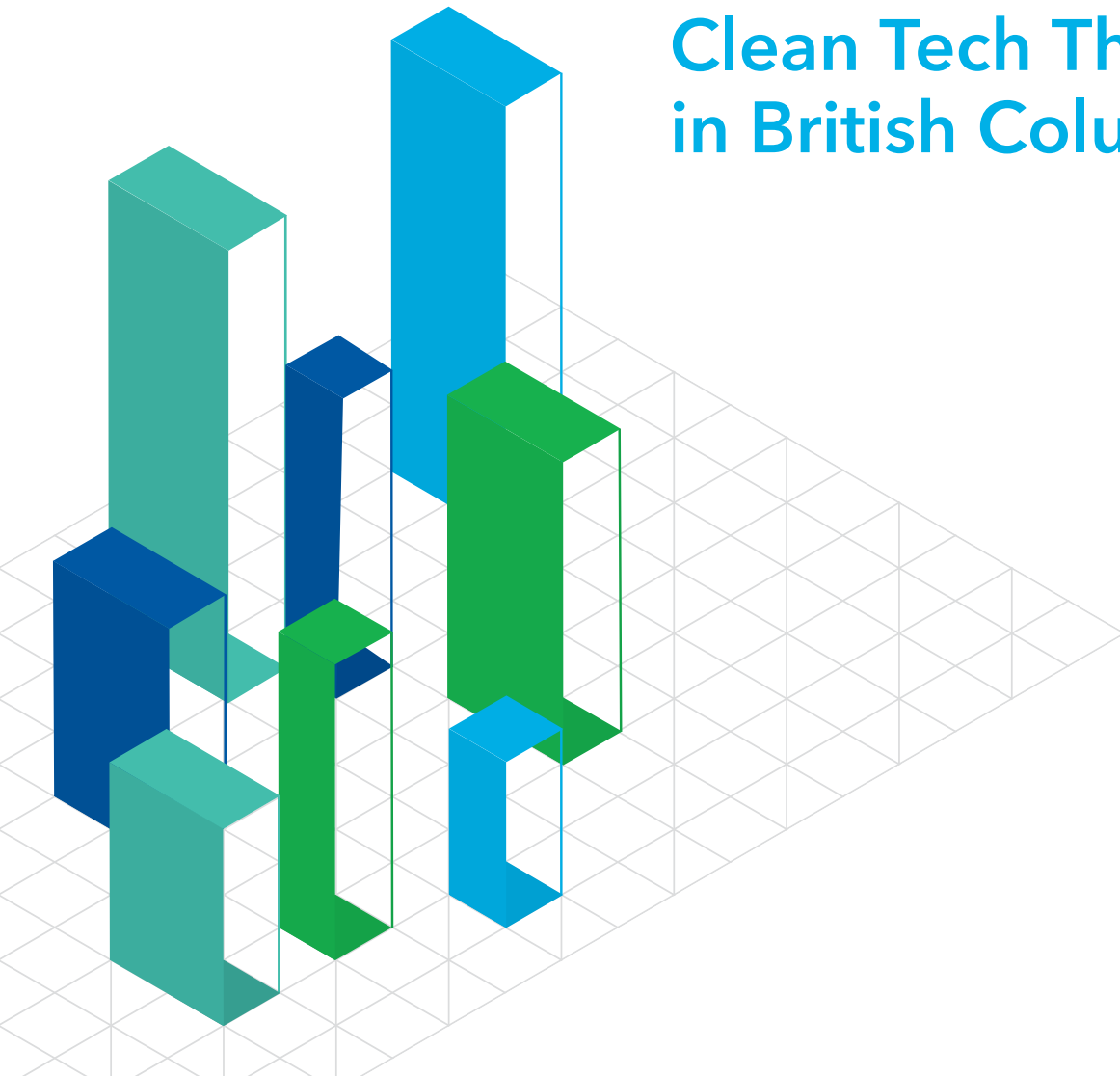


Bloomberg



Sustainability Dialogue: Spotlight on Vancouver

Clean Tech Thrives
in British Columbia



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With Vancouver's goal to be the world's greenest city by 2020, British Columbia is at the forefront of Canada's climate change efforts. To keep its momentum, various business, education, and not-for-profit leaders are assessing the province's clean-tech industry to see what's working, what's not, and what needs to be done.

Guided by the Pan-Canadian Framework on Clean Growth and Climate Change, the Canadian government is committed to reducing greenhouse gas emissions to 30 percent below 2005 levels by 2030, while building resilience to a changing climate and enabling clean sustainable growth.

One of the strengths of the framework is it sets national goals but does not dictate how the provinces must carry them out. This is proving especially helpful to British Columbia, which launched its Climate Leadership Plan in 2008. In fact, the province became the first jurisdiction in North America to introduce a carbon tax.

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British Columbia updated its plan in 2016, setting a greenhouse gas emissions target 80 percent below 2007 levels, to be reached by 2050. The plan also established sector-specific strategies and incentives to build on the province's strengths in clean-tech industries such as electric vehicles and liquefied natural gas. Today, it has about 270 clean-tech companies employing some 6,000 people, and it accounts for 25 to 30 percent of Canada's clean-tech sector.

In March 2018, Bloomberg and TD Bank Group convened a group of leaders from British Columbia's business, education, and not-for-profit communities to discuss the state of the province's clean-tech industry and role in driving clean economic growth for Canada. The meeting took place in Vancouver and coincided with the GLOBE Forum, a major sustainable business conference held in the city that week.

The discussion, summarized below, was part of the TD-Bloomberg Dialogues taking place across Canada. The Dialogues focus on the country's transition to a low-carbon economy—and how business can help accelerate it.

Momentum Builds

In the past five years, about \$300 billion in capital has been deployed globally in the clean energy sector, said Ethan Zindler, Head of Americas at Bloomberg New Energy Finance. This trend is expected to continue. The cost of clean technologies is coming down, and in many parts of the world, these technologies are now cost-competitive without subsidies.

Globally, the electric vehicle is one of the strongest performers in the clean energy marketplace. Zindler said that by 2040, about 54 percent of all cars sold worldwide will be EVs, and about one-third of all cars on the road will be plug-in electric vehicles.

That suits British Columbia, whose Clean Energy Vehicle Program supports research, job training, and economic development in electric vehicles. Dav Cvitkovic, chief operating officer of Plug'n Drive, said, "There is every reason to be bullish on EVs in Canada." Plug'n Drive is a non-profit organization that advocates for EV use in Canada and recently opened the world's first Electric Vehicle Discovery Centre in Toronto, Ontario.

"The goal is to deliver environmental benefits in real time."

British Columbia is doing its part to drive EV sales. In 2017, the province invested \$40 million for vehicle purchase incentives and infrastructure. "We'll see a power shift," Cvitkovic said. "In the next five years, we'll see more changes in the auto sector than we've seen in the last 50 years."

The federal government created Sustainable Development Technology Canada, a non-profit foundation with a mandate to fill the funding gap for Canadian clean-tech ventures. SDTC works with entrepreneurs to help them bring their clean-tech innovations to market. Its portfolio includes makers of electric vehicle batteries, waste management solutions, and new technologies in the mining sector.

Chief executive Leah Lawrence said she sees continued strong public-sector funding for green technologies. In 2017, the federal government funded its Clean Growth Hub at \$2.3 billion, with \$400 million allocated specifically for SDTC.

Another trend, Lawrence said, is “data-enabled clean tech,” which applies data science and analytics to clean-tech products and services. Big Data, for example, enables utilities to better analyze energy demand and integrate renewable sources, improving efficiency, and reducing costs. “The goal is to deliver environmental benefits in real time,” she said.

Promising Jobs Outlook

The surge in clean-tech innovation points to a positive future for green jobs in British Columbia. Lawrence said there will be opportunities across numerous sectors including chemicals, oil and gas, and renewable energy. She also expects growing demand for data scientists as clean-tech evolves toward technology-based solutions.

Cvitkovic said job prospects are strong in the EV industry, and that demand will be felt throughout the supply chain.

“EVs have 200 moving parts. An internal combustion engine has about 1,200 moving parts,” Cvitkovic said. “That’s a profound difference that affects the entire supply chain.”

She expects job opportunities in research and development, as new battery technologies are developed for EVs. She also anticipates added employment in industries that supply support equipment for EVs, such as charging stations and equipment, and specialized power sources, such as backup generators.

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Missing Link

For all the progress British Columbia has made since 2008, its low-carbon economy is still in an early stage.

Merran Smith, executive director of Clean Energy Canada, a renewable energy think tank at Simon Fraser University, applauds the policy efforts that have helped build the industry in the province. “Clearly, policy matters,” she said, noting that the newest Cleantech 100 list of top private companies in clean technology includes six companies from British Columbia.

“What we don’t have is a real commitment to an industrial strategy” for clean technologies that would propel the industry to the next level, Smith said. “Other countries, like Norway and the U.K., have done a good job of linking climate action with industrial strategy. We haven’t done that yet.”

Need for Talent

One critical issue in scaling the clean-tech sector is talent development. What kind of talent is needed, and where will it come from? Karen Hamberg, a vice president of Westport Fuel Systems, cited a study on Canada’s Clean Tech Energy Strategy, suggesting the industry will need much more than workers with STEM skills.

Talent development needs to shift and adapt along with technology-driven change.

“Yes, sustainability challenges are inherently technical, and we need engineers and scientists,” Hamberg said. “But as the industry matures, companies will need people with a wide range of business skills, from policy and regulatory development, to product management and planning, to sales and marketing.”

Marcelo Lu, president of BASF Canada, said big data will be central to how companies operate, and, therefore, how people need to be trained and educated.

BASF creates products and solutions through chemistry, which historically has meant lengthy research and development using the company’s large team of chemists. As Lu said, however, the R&D process is now significantly shorter thanks to computing power. “Our supercomputer can work through 95 percent of the experiment,” he said.

“Now, we can achieve something in a couple of months that used to take 10 to 15 years.”

This raises two points. First, a data-driven R&D process means greater demand for data scientists and analysts. But it also means the traditional role of chemists is changing.

“Some of them need to be coming up with new ideas that we can test and develop,” Lu said. “Others can shift into new roles, like technical service.”

BASF’s computing power is already allowing it to diversify its business model, adding services to its production and manufacturing functions.

The larger point is that talent development needs to shift and adapt along with technology-driven change. “You need more than IQ to be successful,” Lu said. “IQ gets you the job, being adaptive—AQ keeps you there.”

Education and Training

For British Columbia, the rise of clean tech means the educational system must adapt. Universities can update their curricula. All the stakeholders—business, education, and government—can create opportunities for life-long learning, so established professionals can continually update their skills.

“Now it’s time to take the next step.”

None of this will be easy. Two attendees at the March 13 meeting noted obstacles.

Neil Hawkins, chief sustainability officer at Dow Chemical, said his organization is encouraging universities to add sustainable chemistry to their curricula, but has not made much progress. “It’s not that they don’t recognize the value,” he said. “It’s that there are many topics to cover in an undergraduate degree. They don’t feel it’s feasible right now.”

Coro Strandberg, who heads her own consulting firm, said her organization has examined professional and trade associations to see how committed they are to educating their members on clean-tech and sustainability. Strandberg looked at 85 associations in Canada and found a handful providing educational information on sustainability. But none offer programs for their members, nor do they provide metrics to measure sustainability performance at their member organizations.

“We’re at a pivot point right now,” said Velma McColl, principal, Earnscliffe Strategy Group. “We should recognize that the sector is becoming increasingly competitive, and that competition is good for spurring the development of human capital. But now it’s time to take the next step.”

British Columbia is well-positioned in clean-tech, with a powerful legacy, a renewed public sector commitment, and a strong talent pool with a disproportionate number of leading companies in a region with less than five million people. The next step—and the big challenge—is to elevate clean-tech in British Columbia into a leading industry for Canada.

“In the last century, our country focused on the oil sands and how to get that product to market,” Clean Energy Canada’s Smith said. “It was a national economic priority. We need that kind of focus now to get our clean energy and technologies to market.”