

# British Columbia

## RISKS AND OPPORTUNITIES IN THE GLOBAL LOW-CARBON TRANSITION

With an abundance of natural resources, a growing and diversified hub of transition-opportunity companies, and a low-emissions electricity grid, **British Columbia** is positioning itself for success in the global low-carbon transition. An ambitious policy framework provides investors and businesses with clarity on how British Columbia can achieve its longer-term climate and economic goals. The challenge is how to accelerate progress and scale up new growth opportunities.

Questions also remain on how the province's more vulnerable sectors will manage as global markets shift. Metallurgical coal and natural gas are among the province's two largest exports and employ high concentrations of workers in rural and remote communities. Shifting provincial support away from these demand-decline sectors and toward scaling up new areas of growth across the province—leveraging existing momentum and success—could take British Columbia's transition readiness to the next level.

### About this series of provincial profiles

The Canadian Climate Institute's 2021 *Sink or Swim* report assessed Canada's readiness for the wave of economic change being driven by the global net zero transition. The report stress-tested publicly traded companies under different global low-carbon scenarios to better understand the risks to Canada's economy and, more specifically, the risks to workers, communities, Indigenous Peoples, and the financial sector. The report also used new data from PitchBook Data Inc. to gain insights on the opportunities created by the transition, identifying significant potential sources of new growth for the country across several sectors.

Building on that research, the Climate Institute has now done a deeper analysis of the transition risks and opportunities facing specific provinces and regions. In addition to assessing risks, these province-by-province profiles provide in-depth analysis and insight on where provinces and regions can generate new sources of growth, the barriers that may be holding them back, and how to address those barriers. An overview report, *Net Zero Opportunities: A province-by-province comparison*, provides detailed analysis of how provinces and regions across Canada can navigate the net zero transition.

### Risks-and-opportunities profile

#### Workforce and communities

- The proportion of workers in transition-vulnerable sectors in British Columbia is among the lowest in Canada, at 3%. Of these exposed workers, about half are employed in either oil and gas or mining and quarrying, while the other half are in emissions-intensive manufacturing (plastics, metals, chemicals).
- Several rural and remote communities have high workforce concentrations in transition-vulnerable sectors, including Fort St. John (13%, oil and gas), Dawson Creek (8%, oil and gas), Williams Lake (5%, mining and quarrying) and Cranbrook (3%, mining and quarrying).
- In smaller communities, these proportions are even higher. For example, nearly half of the workforce of Elkford (population: 3,000) is employed at the Teck Coal mine (Columbia Basin Rural Development Institute 2020).
- Indigenous workers in British Columbia are disproportionately exposed to the global low-carbon transition.<sup>1</sup>

#### Economic and fiscal risks

- Although British Columbia has a relatively diversified economy, transition-vulnerable sectors (e.g. metallurgical coal, natural gas, emissions-intensive manufacturing) generate a large share of provincial goods exports and represent high-value-added economic activity and high-paying jobs (Finlayson 2021).<sup>2</sup>
- In global low-carbon transition scenarios, demand for metallurgical coal and natural gas declines in the medium term (however, the exact timing is uncertain).<sup>3,4</sup>

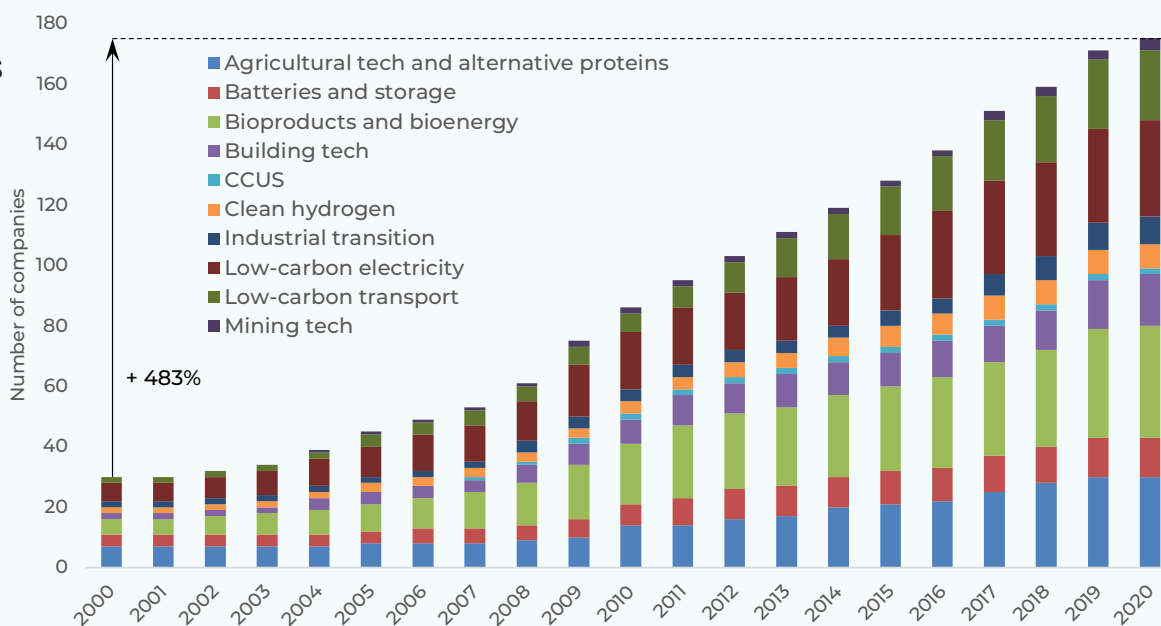
## Growth in transition-opportunity companies headquartered in the province

- British Columbia has 175 companies active in several transition-opportunity areas (see Figure below).
- British Columbia has a foothold in all 10 transition-opportunity markets, including companies in bioproducts and bioenergy (21%), low-carbon electricity (18%), agricultural technology and alternative proteins (17%), low-carbon transportation (13%), and batteries and storage (7%).
- Three-quarters of these companies are located in Metro Vancouver. Other regional concentrations of clean technology are emerging (e.g. Prince George, Vancouver Island, the Okanagan Valley, and the Trail Region).<sup>5</sup>
- Six British Columbia clean tech companies were on the 2022 *Global Cleantech 100* list (Cleantech Group 2022).

## Competitive strengths

- The province's flagship roadmap to achieve its climate goals—*CleanBC*—and its Economic Plan send strong signals to markets and investors.
- A low-emissions electricity grid that can enable greater electrification in buildings, transportation, and industry, along with green hydrogen potential for decarbonizing hard-to-abate sectors.
- Significant natural resources and related assets (e.g. forestry and biomass, mining, and transition-critical minerals such as copper).
- Geographic proximity to the western United States and rail, truck, and port facilities with access to substantial international markets, particularly Asia (CORE Cleantech Cluster and Foresight 2020).

### Growth in transition-opportunity companies in British Columbia



Source: PitchBook Data Inc. (2022). Notes: This figure shows the number of companies headquartered in British Columbia operating in each of our 10 transition-opportunity markets in each year between 2000 and 2020. This analysis only counts “pureplay” companies whose primary business line involves a product, technology, or service that falls into one (or more) of our 10 transition-opportunity markets (see our [overview report](#) for a full description). Thus, large multinationals and conglomerates with only a portion of sales in these markets are excluded. The analysis also only counts companies that are currently active (i.e. excludes bankrupt companies) and still operate as a subsidiary in cases when the company has been acquired.

## Trends in B.C.'s transition readiness

**Demand-creation companies are attracting significant investments and high valuations across a range of markets.<sup>6</sup>**

- The top 20 companies in British Columbia (measured by total investment raised) showcase the diversity of the province's growth opportunities (see Figure on p. 4).
- **General Fusion**, a developer of fusion energy technology, secured US\$132M in late-stage venture capital in 2021 to help commercialize its fusion power plant.
- CCUS company **Svante** raised US\$75M in late-stage venture capital in 2021 for developing a commercial-scale capture facility (among other initiatives).
- Hydrogen producer **Ekona Power** raised US\$62.5M in early-stage venture capital in 2022.
- **Semios**, developer of an agriculture data analytics platform, secured US\$79M in late-stage venture capital to accelerate research and development and deployment.
- Market capitalizations: **Ballard Power Systems** (hydrogen fuel cells, \$3.9B), **Westport Fuel Systems** (clean transport fuel systems, \$292M), **Loop Energy** (hydrogen fuel cells, \$87M), **ElectraMeccanica** (electric vehicles, \$216M), **Tantalus** (smart grids \$71M).<sup>7</sup>

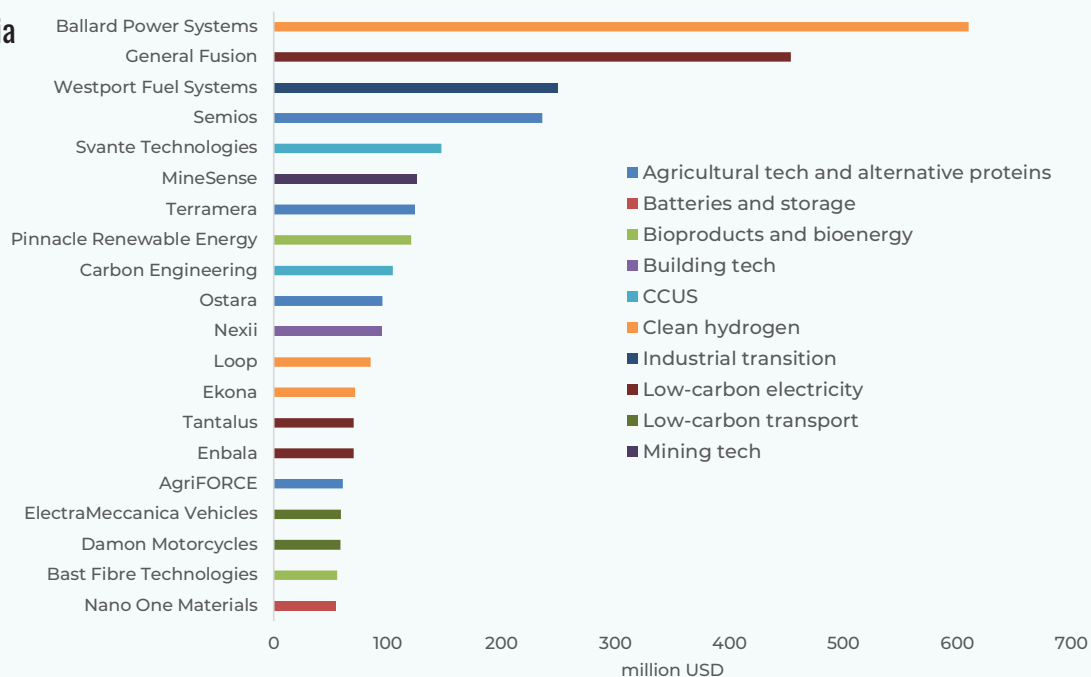
**Carbon-cost companies (e.g. mining, marine transportation, heavy manufacturing) are making significant investments to reduce emissions.**

- **Teck Resources** is piloting an all-electric haul truck at its Highland Copper Mine, along with a pilot to help commercialize a bulk ore sorting technology by British Columbia-based company **MineSense** (MineSense 2022, Gleeson 2019, Bennett 2022b).
- Marine transport companies are piloting cleaner fuels and energy storage: **Corvus Energy** is supplying six battery-hybrid ferries for **BC Ferries**; **Seaspan** is testing a biofuel cargo vessel (Government of British Columbia 2022b).
- **Lafarge Canada** has partnered with **Svante** (a CCUS company) to develop and demonstrate the first full-cycle solution to capture and reuse CO<sub>2</sub> from its Richmond cement plant.<sup>8</sup>
- The **Arbios Biotech** project, a joint venture between **Canfor** (British Columbia) and **Licella** (Australia), intends to convert sawmill residues into biofuels in Prince George for **Shell's** oil upgraders (Bennett 2021).
- Several forestry companies (including **Catalyst Paper Corp.**, **Mercer Celgar Ltd.**) have received funding from **CleanBC** to improve energy efficiency and biomass energy production (Government of British Columbia 2022a).

Select **demand-decline** companies in British Columbia have started making investments to reduce emissions and diversify into new product lines.

- **FortisBC** plans to invest in low- and zero-carbon vehicles and infrastructure, grow its low-carbon gas supply to reach 15% of all gas delivered by 2030,<sup>9</sup> and introduce hydrogen into its gas distribution (Government of British Columbia 2021a).
- **Shell** and **Chevron** are among multiple investors in US\$15M of Series A funding for **Ionomr**, a British Columbia green hydrogen company (Bennett 2022a).
- **Tourmaline Oil**, Canada's largest natural gas producer, runs an emissions testing centre to help clean technology companies go from early-stage development to commercialization (Tourmaline 2021).
- Financed through the CleanBC Industry Fund, several natural gas companies (**ARC Resources**, **NorthRiver Midstream**, **Canadian Natural Resources**) are making investments to electrify operations. Other projects include methane emissions reductions (**ConocoPhillips Canada**) (Government of British Columbia 2022a).

Top 20 British Columbia transition-opportunity companies by total investment raised



Source: PitchBook Data Inc. (2022). Notes: This figure shows the top transition-opportunity companies headquartered in British Columbia by total capital raised, which is the net of all capital injected into a company to date. It excludes certain deal types, such as buyouts, corporate asset purchases, debt repayments, and merger/acquisitions. Note that not all identified transition-opportunity companies in our analysis have capital raised data in PitchBook, as not all company deals are disclosed and available.

## Potential barriers to scaling up growth opportunities

Despite the ambition behind the CleanBC strategy, the design and implementation of policy could be better aligned to support domestic companies and leverage their benefits in British Columbia.

- The goals of CleanBC are not fully operationalized across the various departments and institutions tasked with overseeing key components of the low-carbon transition. For example:
  - » The provincial government does not include climate change as a core objective of the British Columbia Utilities Commission, which regulates the province's electricity and natural gas systems (Ecotrust Canada 2021). Misalignment may be slowing company-level growth in renewables, smart grids, storage, district heating, and distributed energy resources more generally.
  - » Substantial financial support for consumers and producers of fossil fuels weakens market signals that would otherwise encourage greater clean investment.<sup>10</sup>
- While deploying and de-risking first-of-their-kind technologies can lead to large public benefits, some large provincial climate programs focus on multinational companies and incumbents, which could exclude opportunities for domestic small and medium-sized companies.<sup>11</sup>
  - » Nearly 90% of clean tech revenues are expected to be generated outside British Columbia over the next 3–5 years (Kondopulos and Burns 2020), highlighting challenges (and lost opportunities) with domestic adoption.

There is ongoing reliance on natural gas and metallurgical coal for regional employment and export growth.

- Decreasing global demand for coal and liquefied natural gas could have disruptive, localized, and long-term employment implications for British Columbia, especially if global markets shift faster than expected.<sup>12</sup>
- The long-term return of these investments is uncertain, whereas public funding targeted at demand-creation and carbon-cost companies could generate larger public benefits.
- The province's royalty review, and the new Economic Plan's focus on economic diversification, offer an opportunity to improve the resilience of the economy and generate transition-consistent jobs for British Columbians.

## Conclusion

Looking across the full set of provincial profiles, we see strong signs of progress in transition readiness, although provinces are at different stages in terms of developing and capturing these opportunities.

Government policy can—and must—play a major role in accelerating this momentum. In addition to the broad recommendations laid out in the *Sink or Swim* report, we recommend five specific policy actions in *Net Zero Opportunities: A province-by-province comparison* that can help each province position its economy for success in the net zero transition.

## ENDNOTES

- <sup>1</sup> Indigenous Peoples comprised 6% of the population in British Columbia and 7% of transition-vulnerable workers in 2016 (Statistics Canada 2022a, Samson et al. 2021).
- <sup>2</sup> For example, British Columbia gas production hit a record 59 billion cubic metres in 2018, nearly double 2007 volumes (Lee and Klein 2020). In 2020, coal was British Columbia's second largest commodity export (Statistics Canada 2022c, Government of British Columbia 2022c).
- <sup>3</sup> Even if the world as a whole does not take enough action to meet global 1.5- or 2-degree temperature goals, the *Sink or Swim* report (Samson et al. 2021) highlights several trends that show it is reasonable to expect major global markets—including Canada's closest trading partners—to experience large-scale change.
- <sup>4</sup> The fiscal impact to the British Columbia government from declining coal and gas demand could be relatively modest. All resource revenues (including oil, gas, forestry, and mining) totalled \$2.2B in 2020–21, approximately 4% of total government revenues. Of that total, only \$467M came from natural gas royalties, drilling rights, and other energy-related revenue sources. As of spring 2021, natural resources revenues were projected to grow in 2021–22 to a projected \$2.5B before levelling in 2022–24 at \$2.4B (Government of British Columbia 2021b).
- <sup>5</sup> In the Trail region, Metal Tech Alley was initially co-funded by the government and industry with an emphasis on marketing local services to attract technology providers and talent to strengthen the cluster. Programs and facilities focus on digital fabrication, advanced metallurgy, industrial recycling, and the circular economy (Metal Tech Alley 2022).
- <sup>6</sup> All statistics within the demand-creation section are from PitchBook Data Inc. (2022) unless otherwise stated.
- <sup>7</sup> Observed valuations on March 8, 2022 (PitchBook Data Inc. 2022).
- <sup>8</sup> The funders for this project partnership are CCP (CO<sub>2</sub> Capture Project), the Province of British Columbia, Canada's federal government through the National Research Council of Canada Industrial Research Assistance Program (NRC IRAP), LaFarge Canada Holcim, and international energy company Total (Foresight Canada 2020).
- <sup>9</sup> In March 2017, amended *Greenhouse Gas Reduction Regulation* to include a renewable portfolio allowance of up to 5% RNG on the natural gas system. Also, in 2022, Fortis submitted a proposal to provide 100% RNG for new residential builds (Alden 2022).
- <sup>10</sup> British Columbia provided an estimated \$530M in producer support for fossil fuels in 2020, mainly for deep well royalty credits for natural gas producers. British Columbia also provides tax and financial support for infrastructure related to new wells. The provincial government provided an estimated \$190M in consumer support in 2020, mainly through exemption from PST for residential natural gas and fuel oil use (Samson, Drummond, and Phillips 2022).
- <sup>11</sup> For example, the British Columbia Hydrogen Strategy notes that small-scale clean tech companies are of interest. However, the the provincial \$105M Centre for Innovation and Clean Energy focuses on attracting established international technologies to the province (Government of British Columbia 2021a). The province has, however, announced the creation of Integrated Marketplaces, proposed in its 2022 Economic Plan, to improve the connection of local businesses with customers.
- <sup>12</sup> Several proposals for new or expanded metallurgical coal mines in British Columbia are under consideration. While near-term demand may be secure, new green steel-making technologies could lead to abrupt changes in demand toward 2030 and 2040 (Samson et al. 2021). Major LNG investments, such as the LNG Canada facility under construction in Kitimat, come with enhanced carbon-risk exposure for the British Columbia economy and local communities, both in terms of rising carbon costs and declining demand in overseas LNG markets.

### Disclaimer

This analysis is provided by the Canadian Climate Institute for informational purposes only. None of the information in this analysis is intended to provide, nor should it be construed as, investment, financial, legal, or other advice. The Institute is not an investment adviser and makes no representations regarding any investment strategy or the suitability of investing in any particular company, investment fund, or other vehicle. For our full disclaimer, see page 122 of the full *Sink or Swim* report.

The information and data contained in this analysis have been obtained or prepared from publicly available documents and other sources prepared by third parties, some of which may be proprietary and used under license. In particular, the company and investment trends included in the two figures are obtained from PitchBook Data Inc., drawn from customized searches that have not been reviewed by PitchBook analysts. These data and trends also underestimate total market activity. The PitchBook database contains information on over three million companies globally, but it is not exhaustive. Within this database, not all deals are included and not all deals have a disclosed value. Total investment raised includes company-level data through March 2022. All dollar values included in this document are expressed in Canadian dollars unless otherwise stated.