

Atlantic Canada

RISKS AND OPPORTUNITIES IN THE GLOBAL LOW-CARBON TRANSITION

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.

Pockets of new economic growth are emerging in **Atlantic Canada**, especially in Nova Scotia. With one of the highest densities of universities and research institutions in the country, Atlantic Canada is attracting investment in several areas, such as batteries and storage, renewables and smart grids, and low-carbon marine transportation. Core climate policies are starting to help, creating early momentum in technology adoption and innovation. Yet growing new opportunities has proven difficult. Companies in the region are typically smaller, younger, less profitable, and have less access to capital markets.

Scaling new opportunities is critical to diversifying the regional economy and building long-term prosperity, especially in provinces and communities that still rely heavily on the oil and gas sector (Newfoundland and Labrador and New Brunswick). New opportunities can help existing industries transition and stay competitive as global markets shift, and they can also lift up communities that are struggling with the long-term impacts from past transitions (e.g. coal, cod).

Risks-and-opportunities profile

Workforce and communities

- Two communities with populations over 10,000 people have 4% of their workforce concentrated in a transition-vulnerable sector: Kentville, Nova Scotia (plastics and rubber) and Summerside, P.E.I. (transportation equipment, including aerospace).
- Some smaller communities also likely have high workforce concentrations in transition-vulnerable sectors. Atlantic Canada in general is more rural than the rest of Canada with more small communities (Canadian Rural Revitalization Foundation 2021).
 - Belledune, New Brunswick (population ~1,500) is home to the last coal-fired generating plant in the province, which is a major source of employment.
- At 5.8%, Newfoundland and Labrador has the greatest share of workers in transition-vulnerable sectors in the Atlantic region (oil and gas).¹
 - Parts of Newfoundland and Labrador (South Coast-Burin Peninsula and Notre Dame-Central Bonavista Bay) had the highest unemployment rates in the country between 2015 and 2020.
- A portion of the workforce in Newfoundland and Labrador and parts of Nova Scotia is employed in Alberta's oil and gas sector, signifying the need to generate new sources of local employment.²
- Visible minorities and Indigenous Peoples, on average, comprise a relatively small share of transition-vulnerable workers in the region.³



Economic and fiscal risks

- There is a risk that slow economic growth in the region, combined with rising health-care costs and high debt levels, could increase fiscal vulnerability to market changes and constrain public investment capacity for building transition readiness (Atlantic Provinces Economic Council 2021).⁴
- Declining economic activity, export revenue, and royalties from the oil and gas sector—which currently support critical government services, such as health care and education—present a major risk in Newfoundland and Labrador and New Brunswick.
 - In Newfoundland and Labrador, 11% of provincial goods exports were from oil and gas in 2020 and accounted for one-sixth of government revenues in 2018–19 (down from one-third in 2012–13) (Drummond and Lévesque 2021).⁵
 - In New Brunswick, petroleum manufacturing (i.e. refined petroleum products) comprised 46% of provincial international exports in 2020 and 14% of provincial GDP (Statistics Canada 2022c, Statistics Canada 2022h).
- Growing competitive pressures in offshore oil and gas (Newfoundland and Labrador) and coal phase-outs (New Brunswick, Nova Scotia) could increase economic and fiscal risk.⁶

Growth in transition-opportunity companies headquartered in Atlantic Canada region

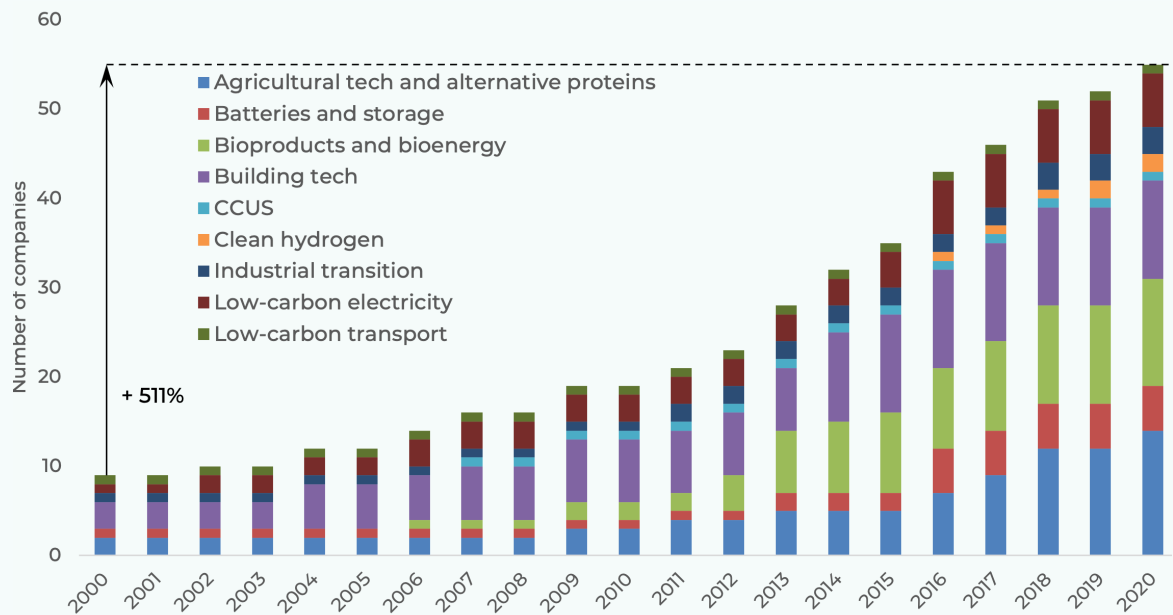
- In 2021, the Atlantic Region had 56 transition-opportunity companies active in several areas (see Figure below).⁷
- Nearly two thirds of the transition-opportunity companies are located in Nova Scotia.
- These companies tend to be export-focused. Nearly 80% of foreign sales by clean technology companies surveyed in Atlantic Canada in 2016 were in the United States market (Chaundy and Ripley 2018, Bergman, 2021a).

Competitive strengths

- Have led the country in decoupling GDP growth from greenhouse gas emissions (however, Newfoundland and Labrador lags behind the rest of the country due to its strong links to oil and gas) (Arnold, Samson, and Ahmed 2020).
- Momentum in core climate policies and targets that can drive tech adoption and innovation (Government of P.E.I. 2022, Government of Nova Scotia 2021).
- Natural resource advantages: significant offshore wind (Newfoundland and Labrador, P.E.I., Nova Scotia), hydro (Newfoundland and Labrador), and tidal potential (Nova Scotia), fertile agricultural land (P.E.I., Nova Scotia), and critical minerals/metals (Newfoundland and Labrador) (Durocher et al. 2021b, Government of Newfoundland and Labrador 2018).
- Concentrations of specialized innovation: smart grids (New Brunswick, Nova Scotia), batteries and storage (Nova Scotia), wind power (P.E.I.), marine transport (P.E.I.), small modular reactors (New Brunswick), ocean technology (Newfoundland and Labrador), agricultural technology and alternative proteins (New Brunswick, Nova Scotia) (PitchBook Data Inc. 2022).

- Leading research institutions (e.g. Wind Energy Institute of Canada (P.E.I.); Clean Technologies Research Institute (Nova Scotia), Fundy Ocean Research Centre for Energy (Nova Scotia)).⁸
- Growth in non-climate tech startups, particularly in Nova Scotia; new opportunities to work remotely; and a low cost of living and a high quality of life, attracting young people back to the region (Carpenter-Arévalo 2021, Freestone 2021).

Growth in transition-opportunity companies in Atlantic Canada



Source: PitchBook Data Inc. (2022). Notes: This figure shows the number of companies headquartered in Atlantic Canada 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 Atlantic Canada’s transition readiness

Several demand-creation markets are emerging in Atlantic Canada. As a whole, however, companies are smaller and attract lower levels of investment (see Figure below).⁹

- Nova Scotia leads the other Atlantic provinces in attracting investment, but even after adjusting for the size of its economy, the total amount of investment raised in British Columbia is more than three times higher.
- Recent investments include:
 - » **Mysa** (Newfoundland and Labrador), a smart thermostat company, raised US\$20M in later-stage venture capital in 2021.
 - » **CarbonCure Technologies** (Nova Scotia), a company that reduces the carbon footprint of concrete, entered into a strategic partnership in 2021 with a global equipment, asphalt, and concrete manufacturer **Astec Industries** (investment details unknown).
 - » **Outcast**, a food upcycling technology company, raised US\$10M in early-stage venture capital in 2021.
 - » **ARC Clean Energy** announced a \$30M investment to deploy its small modular nuclear reactor technology, with the government of New Brunswick contributing an additional \$20M (Tisheva 2021).
 - » There are numerous investments in Indigenous-led renewable energy projects in the region (Lynch 2017).

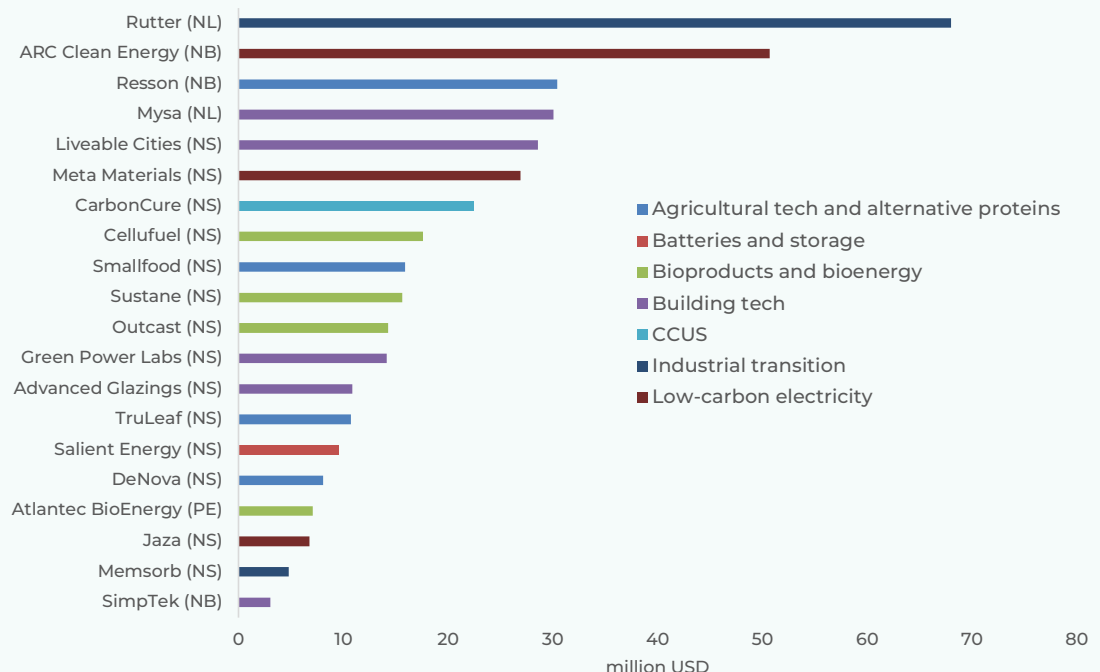
Notable carbon-cost companies are making investments to reduce emissions.

- Investments by **J.D. Irving, Ltd.** are helping reduce emissions at several of its enterprises, including: \$29M to turn waste into biogas at the **Lake Utopia Paper** mill, reducing GHG by 25%; using biomass at the **Irving Pulp and Paper** plant (Saint John) to reduce GHG emissions by 55% (Bergman 2021a, McLean 2021).
- Atlantic Towing Ltd.** received \$4.9M through Petroleum Research Newfoundland & Labrador for integrating battery systems into marine vessel diesel-electric propulsion (J.D. Irving, Limited 2021).
- McCain Foods** invested an undisclosed amount in **TruLeaf's** vertical farming technology in 2018 to grow produce closer to market, reducing transportation costs, spoilage, and reliance on imports (Bergman 2021a).
- Cavendish Farms**—P.E.I.'s largest GHG emitter—has invested in a biodigester at their french-fry plant in P.E.I. to produce biogas from potato scraps, reducing its use of fuel oil by 30% (Martel 2018).

Select demand-decline companies in the oil and gas sector are committing to decarbonize and diversify, while other large projects are being cancelled and decommissioned.

- TC Energy** and **Irving Oil** signed an MOU in 2021 to explore upgrades to reduce GHG emissions (low-carbon electricity, CCUS) and diversify into new business lines (hydrogen) (Irving Oil 2021).
- The closed **Come by Chance** oil refinery in Newfoundland and Labrador was acquired by a Texas-based private equity firm in 2021, with plans to refit the facility to produce sustainable aviation fuels and renewable diesel (The Canadian Press 2021a).
- Offshore gas projects in Nova Scotia are being decommissioned (Deep Panuke, Sable). A slate of fossil fuel projects has also been delayed indefinitely or cancelled (Canada Energy Regulator 2021b, Willick 2022).

Top 20 Atlantic transition-opportunity companies by total investment raised



Source: PitchBook Data Inc. (2022). Notes: This figure shows the top transition-opportunity companies headquartered in Atlantic Canada 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

Continued government support and investments in demand-decline industries, even as other policy signals (e.g. carbon pricing) encourage decarbonization and growth in demand-creation industries.

- All Atlantic jurisdictions offer some form of tax rebates and/or consumer support to reduce the cost of fossil fuels such as heating oil and natural gas, targeted to residential uses as well as specific industries, such as agriculture and fishing.¹⁰
- Newfoundland and Labrador holds equity stakes in several offshore oil projects and has not ruled out the potential of investing in the recently approved Bay du Nord Project (Roberts 2022). In 2022, Newfoundland and Labrador also provided \$11.2M in producer support (including \$6M for oil and gas innovation and business development) (Samson, Drummond, and Phillips 2022).

Companies are often small, have less access to capital, and fewer opportunities to scale.

- Despite high rates of public funding for research and development, transition-opportunity companies in the Atlantic region tend to be smaller, younger, and less profitable than firms nationally, with lower rates of tech adoption (The Conference Board of Canada 2018, Chaundy and Ripley 2018, Bergman 2021a, Statistics Canada 2022i).
- Atlantic Canada has only two companies that have raised over \$50M in investments and only one publicly listed company (Meta Materials) (PitchBook Data Inc. 2022).
- There are limited opportunities to pilot, deploy, and commercialize technologies, and a limited industrial base for startups looking for a host for demonstration projects.

There are signs of mismatch between growth opportunities and workforce readiness.

- Atlantic companies consistently rank the lack of skilled labour as a major barrier to growth, and in particular the lack of candidates with education and skills in sciences, technology, engineering, and math (Atlantic Provinces Economic Council 2021, Chaundy and Ripley 2018).
- Nearly two-thirds of the transition-opportunity companies in the region are based in the four provincial capitals, while transition-vulnerable companies are often based in rural areas.
- Indigenous, racialized, and remote communities face additional barriers to access employment in transition-opportunity sectors.¹¹
 - » For example, Black Nova Scotians have a 16.2% unemployment rate compared to 10% unemployment for the province overall.

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

¹ The share of workers in transition-vulnerable sectors in Newfoundland and Labrador is also the fourth highest in Canada (Samson et al. 2021).

² In 2008, 6% of the entire labour force in Newfoundland and Labrador and Cape Breton (Nova Scotia) worked in the Alberta oil and gas sector (Lionais, Murray, and Donatelli 2020). This share has likely decreased since 2008.

³ In most Atlantic provinces, the share of visible minorities and Indigenous Peoples employed in transition-vulnerable sectors is below the total share of the population (Statistics Canada 2020a, Samson et al. 2021). The one exception is in P.E.I., where 2.4% of transition-vulnerable workers are Indigenous, whereas Indigenous Peoples comprise 1.9% of the total provincial population (in 2016).

⁴ Newfoundland and Labrador's debt-to-GDP ratio at 51% is the highest in the country (RBC Economics Research 2021), signalling structural economic and fiscal challenges for the province moving forward (Drummond and Lévesque 2021, Government of Newfoundland and Labrador 2013).

⁵ Mining and quarrying (excluding oil and gas) accounted for an additional 63% of exports from Newfoundland and Labrador in 2020 (Statistics Canada 2022h).

⁶ Several offshore projects in Newfoundland and Labrador were delayed in 2020 due to the pandemic and low oil prices, including the West White Rose expansion project (Dean-Simmons 2021); however, the Bay du Nord offshore oil and gas was approved by the federal government in spring 2022.

⁷ A study by the Atlantic Provinces Economic Council (APEC) (Bergman 2021b) identifies 160 clean tech and environmental companies in the Atlantic region. This larger estimate is due primarily to APEC's broader definition of clean tech companies, which includes foreign-owned companies with operations in the region.

⁸ Other major research institutions include: Verschuren Centre for Sustainability in Energy and the Environment (Cape Breton University, Nova Scotia), Research Centre for Smart Grid Technologies (University of New Brunswick), Applied Research Lab (Nova Scotia Community College).

⁹ All statistics within the demand-creation section are from PitchBook Data Inc. (2022) unless otherwise stated.

¹⁰ In 2020, Nova Scotia provided \$49.8M in consumer support for a 10% sales tax rebate on home heating bills (not linked to income or fuel type). P.E.I. provided \$7.4M in consumer support for fuel tax exemptions for farmers, fishing, forestry, and aquaculture. New Brunswick provided \$9M in support for natural gas distribution to offset the impact of the carbon tax and reduced the provincial excise tax on gasoline when the carbon tax took effect. Newfoundland and Labrador provided \$7.9M in consumer support, including farm fuel tax exemptions, and rate reductions for electricity generation and municipal government vehicles (Samson, Drummond, and Phillips 2022).

¹¹ There is a lack of specialized and technical training—and official industry accreditation—in the renewable energy field in First Nations and rural communities (Lynch 2017). Specific barriers include: fewer education opportunities, lack of understanding for Indigenous ways of knowing and being, insufficient cultural sensitivity and awareness, limited connections to established networks, and lack of access to capital (Balintec 2021, Black Business Initiative 2022, Smith 2021).

See our webpage for our [Master Reference List](#).

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