

Manitoba

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.

Manitoba is well positioned for success in the global low-carbon transition. It has one of the cleanest and cheapest sources of electricity in North America, which could enable greater electrification, attract industrial investment, and drive growth in new markets, such as clean hydrogen, batteries and storage, and smart grid technologies. Manitoba also has large deposits of transition-critical minerals and a mature agricultural sector with a foothold in agricultural technology and alternative proteins—markets that are expected to increase significantly in the coming decades.

Capturing these opportunities, however, will take concerted effort. Outside of the market for agricultural tech and alternative proteins, Manitoba has a low number of successful transition-opportunity companies. Public and private investment in early-stage development is low. And whereas other provinces with a low-carbon electricity grid and large deposits of transition-critical minerals are aggressively pursuing new opportunities, Manitoba is falling behind. The province could make major gains by prioritizing its competitive strengths, developing supportive policy frameworks to attract and grow innovative companies, and empowering rural and Indigenous communities to pursue new growth opportunities (particularly with large-scale projects in mining, bioenergy, and low-carbon electricity).

Risks-and-opportunities profiles

Workforce and communities

- Roughly 4% of workers in Manitoba are employed in transition-vulnerable sectors (Samson et al. 2021).
- Two communities in Manitoba (with populations above 10,000 people) have workforces with a high concentration in transition-vulnerable sectors: Thompson (mining and quarrying, 17%, and emissions-intensive manufacturing, 4%) and Winkler (emissions-intensive manufacturing, 6%).
- Among workers in transition-vulnerable sectors, 23% are visible minorities and 12% are Indigenous.
 - » Relative to the total provincial population, visible minorities are disproportionately exposed to transition (Statistics Canada 2019, Samson et al. 2021).¹

Economic and fiscal risks

- Unlike some other provinces, Manitoba has not managed to decouple economic and job growth from its greenhouse gas emissions (driven largely by increases in transport and agriculture emissions) (Government of Canada 2019, Samson et al. 2020).
- Roughly 20% of Manitoba's goods exports were from transition-vulnerable sectors in 2020, including chemical manufacturing (10%) and transportation equipment manufacturing (6%).²
- Manitoba had the fourth-highest debt-to-GDP ratio among provinces in 2020 (39%) and the highest debt per capita (RBC Economics Research 2021, Government of Manitoba 2021b), which increases fiscal risks associated with transition and could limit capacity for public investment in opportunities.

- Manitoba ranks fourth last among provinces and territories for economic benefit agreements between mining companies and Indigenous communities and governments (2.7% of exploration and mining projects) (Government of Canada 2022b).

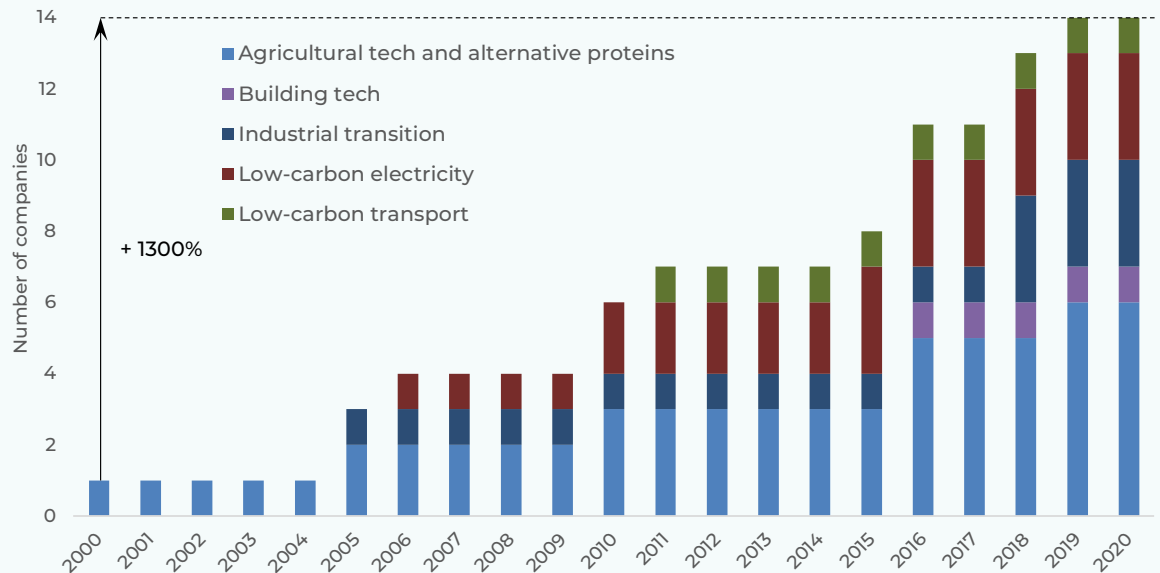
Growth in transition-opportunity companies headquartered in the province

- Manitoba has 14 active companies in transition-opportunity markets, highly concentrated in agricultural technology and alternative proteins (43%) (see Figure below).
- Areas with no company-level representation: CCUS, clean hydrogen, batteries and storage, bioproducts and bioenergy, and mining tech.
- Over 85% of transition-opportunity companies are based in the Winnipeg Metropolitan Region.

Competitive strengths

- Deposits of copper, gold, rare earth metals, and lithium, with existing mining operations in nickel (Thompson) and zinc (Snow Lake) (Government of Manitoba 2021a).³
- A mature agricultural sector, with a growing agricultural tech and alternative protein industry.⁴
- A mature hub of advanced manufacturing with several research and development institutions: University of Manitoba’s Material Institute, Red River College’s Vehicle Technology and Energy Centre and Smart Factory, and the NRC Advanced Manufacturing Program (Economic Development Winnipeg 2022).
- Some of the lowest electricity rates in North America (Hydro-Québec 2021), with potential to increase intra-provincial and international transmission (Canada Energy Regulator 2021a).

Growth in transition-opportunity companies in Manitoba



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

Aside from a few large private investment deals in agricultural technology and alternative proteins, companies in Manitoba's demand-creation markets are not yet attracting significant investment.⁵

- **Farmers Edge**, a leading agricultural tech company, raised US\$98M in its 2021 initial public offering.
- In 2018, French company **Roquette** invested \$600M to build the world's largest pea processing facility, in Portage la Prairie (Juhasz 2022).
- **EnerPure**, which turns recycled waste oil into diesel fuel, raised US\$6M in late-stage venture capital in 2019.
- **Carbon Block**, a blockchain technology company, received a \$122,000 grant in 2021 to reduce the environmental footprint of fertilizer application (Government of Manitoba 2021c).
- **Power HV**, which develops sensor technology to increase grid efficiency and stability, raised US\$200,000 in seed funding in 2020 (primarily from Sustainable Development Technology Canada).
- **SoilReader**, a developer of precision agriculture tech, was awarded a US\$500,000 grant from Sustainable Development and Technology Canada in 2019.
- **Charbone**, a Montreal-based renewable energy and electrochemical company, signed a memorandum of understanding with the **City of Selkirk** to build Manitoba's first green hydrogen facility (Baxter 2022).

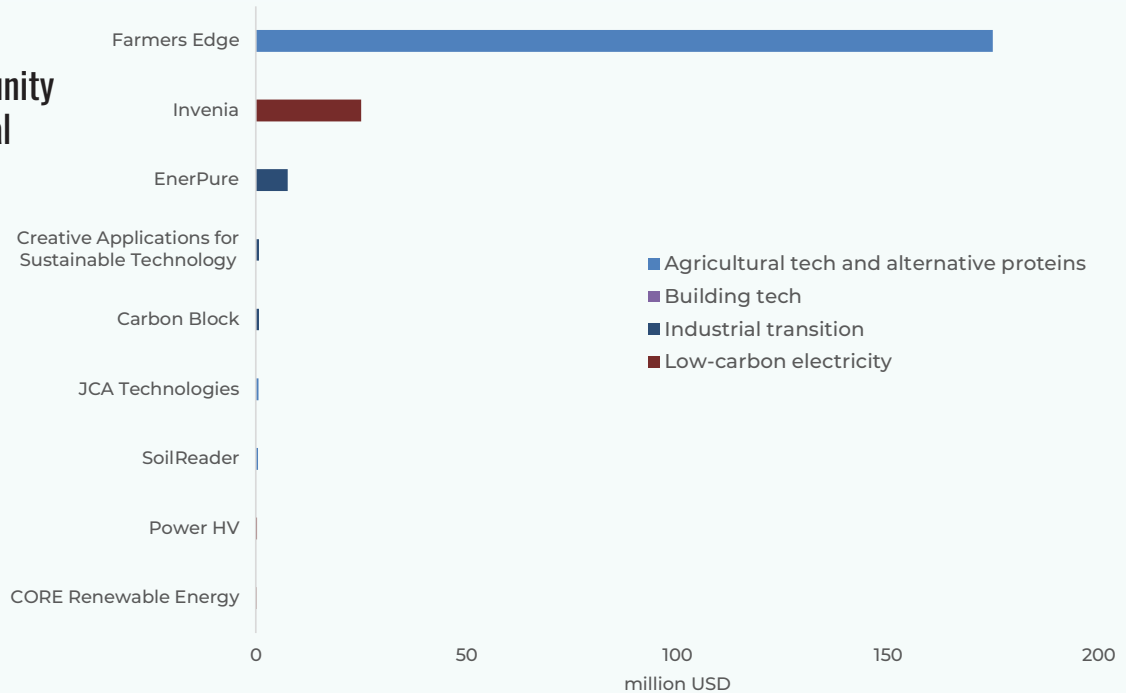
Some companies in carbon-cost sectors are looking to electrify their operations and invest in efficiency to improve transition readiness.

- The new **Minago Project**, a planned nickel mine south of Thompson in northern Manitoba, aims to create the lowest-environmental-impact nickel mine in the world and guarantee jobs and economic spinoffs for Norway House Cree Nation (CBC News 2022, ACCESSWIRE 2021).
- **Gardewine**, a Manitoba-based trucking company, recently launched the first electric truck in Manitoba and plans to add electric vehicles such as forklifts and parcel delivery trucks (Menzies 2021).
- Food production companies, such as **Merit Functional Foods**, are getting support from **Efficiency Manitoba** to improve their energy-efficiency performance and pursue electrification.⁶
- **Northlands Dēnesuᑭīnē First Nation** is working to move off diesel-fired electricity and develop new investments and income streams, including solar photovoltaic technology, biomass, and geothermal systems (Boke Consulting 2022, Assembly of Manitoba Chiefs 2018).

Manitoba has limited exposure to demand-decline markets, however, efforts to diversify in the automotive and oil and gas sector have important implications for the province.

- **New Flyer**, a major manufacturer of public transit buses and motor coaches, is making big investments to scale up its production of electric- and hydrogen-powered vehicles and can now manufacture zero-emissions buses (ZEBs) at all of its North American facilities (NFI 2022a).
 - » ZEBs comprised 1% of company revenues in 2010 and grew to 6% by 2020. The company is targeting 40% of revenues from ZEBs by 2025 (NFI 2022b).⁷
- **Bison Transport**, one of Canada's largest trucking companies, based out of Winnipeg, is piloting two battery electric long-haul trucks on one of the company's cross-border routes (Park 2021).
- **Cenovus**, a Calgary-based oil and gas company, now owns the only ethanol production facility in Manitoba through its acquisition of **Husky Energy**.⁸
 - » The company is exploring the potential for using carbon capture and storage technology at this facility to reduce emissions by as much as 100,000 tonnes per year (Graney 2021, Husky Oil Operations Limited 2021).

Top Manitoba transition-opportunity companies by total investment raised



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

Manitoba's low-carbon electricity, agriculture, and mineral resources position the province well for future opportunities; however, it lacks the policies and enabling environment necessary to attract and grow transition-opportunity companies.

- Manitoba has a small number of companies in transition-opportunity markets compared to other provinces, and federal and provincial governments remain a significant source of funding.
- Compared to other provinces and high-income countries, Manitoba ranks among the lowest for public and private funding for research and development (The Conference Board of Canada 2021a).
 - » The Conservation and Climate Fund is Manitoba's only funding program for transition-opportunity companies and is small, offering a total of \$1M in 2021 (Government of Manitoba 2021c).
 - » The province also has a limited number of incubators and accelerators.
- There are few examples of Manitoba's emissions-intensive companies investing in major decarbonization projects.
 - » Manitoba's two largest emitters, the Koch Fertilizer Plant and Graymont's Faulkner lime plant, may have opportunities for decarbonization innovation but have not made significant investments to date.
- Although the province is developing an energy plan and hydrogen roadmap, Manitoba risks falling behind provinces that are aggressively pursuing innovation in low-carbon electricity, batteries and storage, and clean hydrogen.⁹
 - » The pace of electrification in Manitoba has been slow compared to other hydro-generating provinces.¹⁰
 - » Other provinces with low-carbon electricity have developed official hydrogen strategies and have been attracting significant investments (see British Columbia and Quebec profiles).¹¹

- While Manitoba has taken strides to identify and promote its reserves of transition-critical minerals, the province lacks an official government strategy on how to maximize these opportunities (International Trade Administration 2022, Durocher et al. 2021a).

Historic and ongoing harms to First Nations communities associated with large hydroelectric projects and natural resource development have in some cases eroded trust and could hold back future economic development.

- Increasing demand for critical transition minerals could be an economic opportunity for northern First Nations and other rural communities, yet the harmful legacy of historic projects could constrain this potential (Unger 2018, Botelho-Urbanski 2018, Elkaim 2020, Grabish 2021).¹²
 - As of 2016, Indigenous Peoples made up 61% of workers in mining-related jobs in Manitoba (Cooper 2021).
- The Government of Manitoba has indicated an interest in improving the shared management approach for mineral development, including by partnering with First Nations in co-developing a minerals development protocol (Government of Manitoba 2019).
- The boom-and-bust cycle of mining for small and remote communities raises significant challenges for maintaining the economic and social well-being in affected communities.
- The town of Thompson, where nearly 16% of the entire workforce is employed in mining and quarrying and 40% of the population is Indigenous, has been directly affected by the ups and downs in nickel prices (Samson et al. 2021).

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 Whereas visible minorities comprise 17% of Manitoba's total population, they represent 22% of all workers in transition-vulnerable sectors. While the share of Indigenous Peoples employed in transition-vulnerable sectors (10%) is less than the share of Indigenous Peoples in Manitoba's total population (17.5%), they could still be disproportionately impacted by transition.

² Other important sources of exports include: plastics and rubber manufacturing (2%) and primary metal manufacturing (2%) (Statistics Canada 2022h).

³ In 2019, Manitoba mining represented 37% of total zinc production in Canada and 7% of nickel (Government of Manitoba 2020).

⁴ Crops, livestock, and processed food products made up 36.5% of Manitoba's goods exports in 2020 (Government of Manitoba 2021b). The provincial government released its Protein Advantage Strategy in 2019. An estimated \$753M has been invested in the protein sector since then (Wichers 2022).

⁵ All statistics within the demand-creation section are from PitchBook Data Inc. (2022) unless otherwise stated.

⁶ Efficiency Manitoba supported Merit Functional Foods, a pea and canola production facility, to build a new highly energy-efficient facility in Winnipeg. The company cites access to emissions-free hydroelectricity as a factor in locating in Manitoba (Efficiency Manitoba 2022). Malteurop, a malting facility, reduced energy consumption by 20% through Efficiency Manitoba-supported programs (Efficiency Manitoba 2021).

⁷ Growth in New Flyer's ZEB lineup has been driven, in part, by increased investments by governments (in Canada and abroad) to reduce emissions of public transit fleets (Prentice 2021, Manthey 2021). The city of Ottawa, for example, purchased four e-buses from New Flyer in December 2020 (Infrastructure Canada 2020).

⁸ This ethanol facility has existed since the 1980s and remains the only large ethanol production facility in the province (Bedard 2020). Manitoba's requirement for ethanol blending in gasoline increased to 10% in January 2022.

⁹ See other provincial profiles, particularly British Columbia and Quebec.

¹⁰ In 2020, for example, only 0.5% of vehicles registered in Manitoba were electric vehicles, compared to 4.5% in Quebec and 6.7% in British Columbia (Statistics Canada 2022g). Manitoba also falls below the national average for heat pump adoption in buildings: whereas 5.2% of Canadian households had heat pumps in 2018, the share in Manitoba was 3.6% (Government of Canada 2022a).

¹¹ The prospect of using Manitoba's abundant clean electricity to produce green hydrogen was recognized two decades ago (Manitoba Energy Development Initiative 2003), yet there has been little development since. In contrast, Hydro-Québec is building one of the world's largest electrolyzer plants to produce green hydrogen and is attracting significant private sector interest. British Columbia provides a discounted electricity rate for hydrogen production, and regulations enable natural gas utilities to produce or procure hydrogen for the natural gas grid (Government of British Columbia 2021a).

¹² Recent work from The Conference Board of Canada outlines lessons learned from skills development and job training for mining in Indigenous communities in northern Manitoba (The Conference Board of Canada 2021b).

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

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