

Saskatchewan

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.

Investment activity in **Saskatchewan's** transition-opportunity companies has risen steadily over the past decade (albeit from a small base). Companies are primarily concentrated in agriculture (agricultural technology and alternative proteins), but there has also been nascent growth in other areas, such as bioproducts and bioenergy. The province has some of the biggest potential for wind and solar energy in the country, along with large reserves of transition minerals.

Despite pockets of success, Saskatchewan lags behind other provinces in capturing transition opportunities. While the province has put in place policies to reduce industrial and electricity emissions, the scale and scope of these policies is not yet comparable to other provinces. And those provinces are attracting significant transition-consistent investment across a range of markets that Saskatchewan is missing out on. The bulk of private and public investments in Saskatchewan remain focused on the province's incumbent sectors (oil and gas, mining). Saskatchewan could accelerate progress through greater support for research, development, and demonstration of promising technologies beyond agricultural technology and expansion of the ambition and coverage of climate policies to drive new technology adoption.

Risks-and-opportunities profile

Workforce and communities

- Saskatchewan has 6% of its workforce in transition-vulnerable sectors, the third highest in Canada after Alberta (9%) and Northwest Territories (7%).¹
- Four communities (with populations over 10,000 people) have high workforce concentrations in oil and gas and mining: Lloydminster (14%), Estevan (13%), Weyburn (11%), Swift Current (3%).²
- About 10% of transition-vulnerable workers are Indigenous, while 6% are visible minorities.³

Economic and fiscal risks

- Economic and job growth remain linked with greenhouse gas emissions (Samson et al. 2020).
- Saskatchewan is Canada's second-largest oil producer and third-largest natural gas producer. The oil and gas sector generated 16% of provincial GDP in 2019 and 25% of goods exports (Canadian Association of Petroleum Producers 2021).
- The province's debt-to-GDP ratio increased from 5.5% in 2014 to 18% in 2021, driven in part by low revenues from non-renewable resources (Government of Saskatchewan 2021a).⁴
 - » Whereas royalties from oil and gas activities generated \$2.3B in provincial revenue in 2008, they generated only \$347M in 2020 (Statistics Canada 2022a).
- Global climate action (United States policy in particular), growing interest in border carbon adjustments, and technological change could be increasingly disruptive to Saskatchewan's oil and gas sector (U.S. Department of Energy 2022).

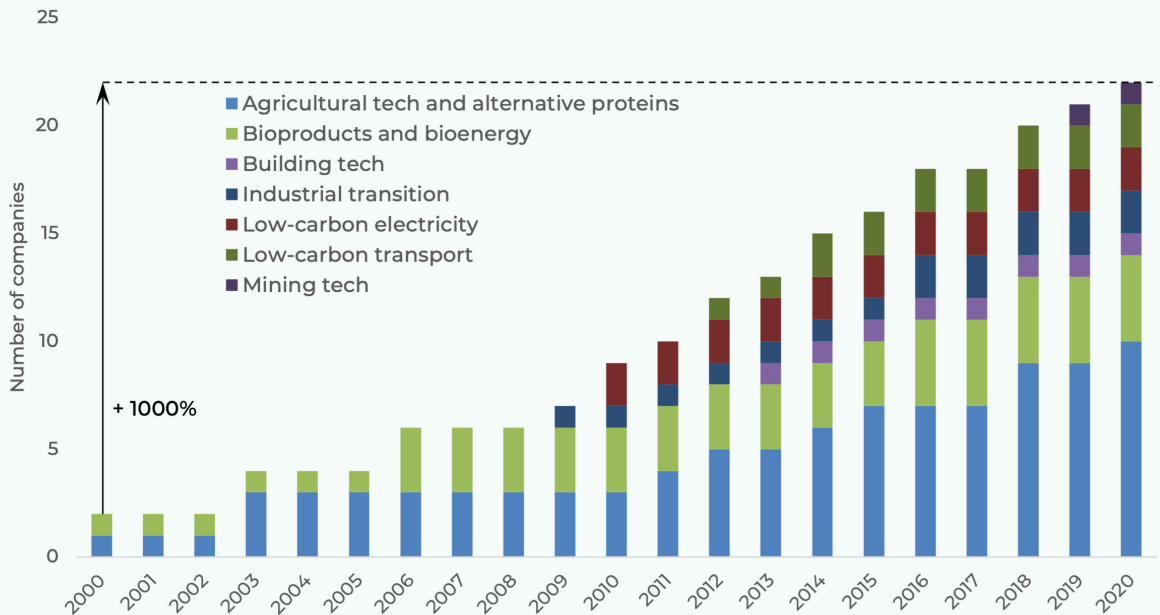
Growth in transition-opportunity companies headquartered in the province

- Saskatchewan has 23 transition-opportunity companies actively attracting investment in agricultural tech (43%), bioproducts and bioenergy (22%), industrial transition (9%), low-carbon transportation (9%), low-carbon electricity (9%), mining technology (4%), and building technology (4%) (see Figure below).
- Areas with no company-level representation: CCUS, clean hydrogen, and batteries and storage (though SaskPower and Alberta-headquartered companies are investing in CCUS and hydrogen in Saskatchewan).
- Nearly three-quarters of transition-opportunity companies are based in Saskatoon (14 companies, or 61%) and Regina (two companies, or 9%).⁵

Competitive strengths

- Some of the biggest potential for wind, solar, and geothermal in the country (Canada Energy Regulator 2022b, Delphi Group 2021, Hurlbert 2021).
- Large salt caverns that could be used for energy storage (Brunskill 2022, Stewart 2021).
- A mature and diverse agricultural sector (including agricultural tech and alternative proteins) (Zlomislac 2019, Legg 2022).
- Natural resource deposits of critical minerals, uranium, and helium (Delaney 2020, Government of Saskatchewan 2021b).⁶
- Expertise in advancing and applying CCUS technologies (e.g. Boundary Dam, Weyburn Whitecap), along with potential for geological storage.⁷

Growth in transition-opportunity companies in Saskatchewan



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

The largest investments in demand-creation markets in Saskatchewan are concentrated in agricultural tech and alternative proteins; however, investments in other areas are picking up steam.⁸

Key investments in agricultural tech and alternative proteins:

- **MustGrow Biologics**, a company that manufactures natural biopesticides, raised US\$5.6M in 2021 to advance development of its patented technology.
- **Precision AI**, a developer of AI-based drones designed for crop protection, raised US\$20M in seed funding and another US\$17M in grant funding from Sustainable Development Canada.
- United States-based **Ingredion**, a global food manufacturer, opened a new plant-protein processing facility in 2021 in response to growing global demand (Danley 2021).

Key investments in other emerging areas:

- **DEEP Earth Energy Production**, a geothermal producer, raised nearly US\$30M between 2019 and 2021 to help build a 5MW thermal plant. Natural Resources Canada is a major investor (DEEP 2021).
- In 2021, United Kingdom-based company **Renewable Energy Systems** and the **Cowessess First Nation** announced plans to build a 200MW wind farm in Bekevar (Crider 2021).
- In 2020, **Proton Technologies** (Alberta) announced the world's first zero-emission hydrogen production using oil reservoir extraction technology (Government of Saskatchewan 2020).
- In 2020, **Prairie Lithium** (Saskatchewan) and **LiEP Energy Ltd.** (Alberta) created a joint venture to pilot producing lithium hydroxide from oilfield brines (Stephenson 2020).

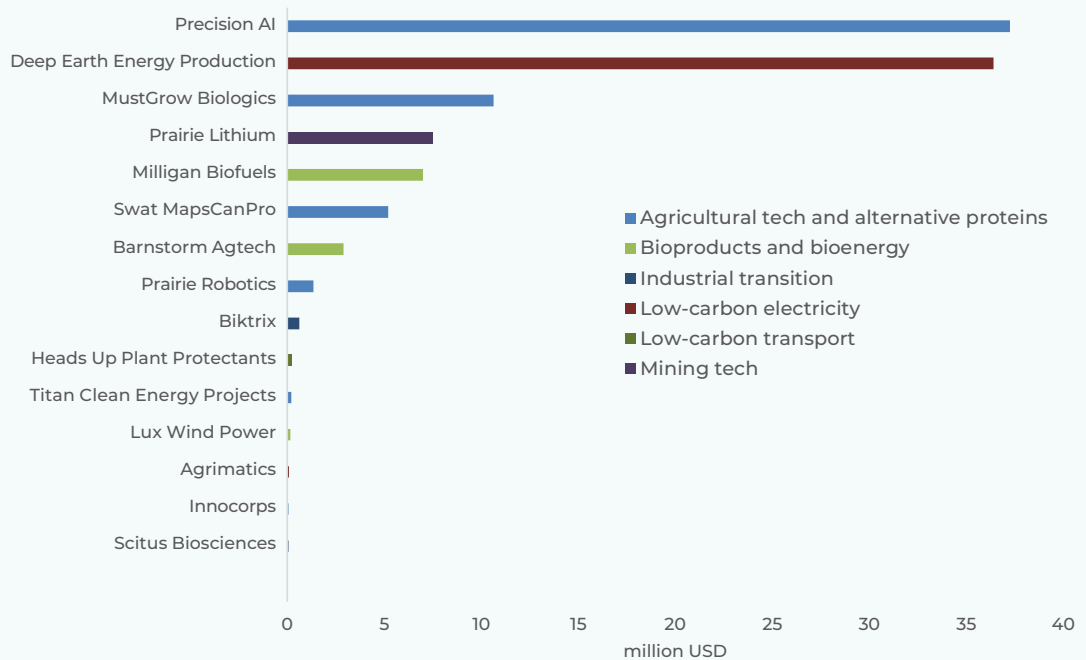
Large multinational corporations in Saskatchewan's carbon-cost sectors are making investments in alternative proteins and biofuels, and reducing emissions from mining and steel production and wastewater treatment.

- **Federated Co-operatives Ltd.** and **AGT Food & Ingredients Inc.** have partnered on a \$2B facility to produce renewable diesel, including a \$360M canola-crushing facility in Regina (Graney 2022).
- **Evrax Regina**, a Saskatchewan-based steel producer, invested \$112M in 2019 to upgrade its Regina and Red Deer facility furnaces, improving both production capacity and its greenhouse gas emissions footprint, supported by \$40M from the federal Strategic Innovation Fund (White-Crummey 2019).
- **Foran Mining** committed to making its McIlvenna Bay project the first carbon neutral copper mine in the world by using renewable energy, electric vehicle fleets, and carbon offsets (MINING.COM 2021, Westhaver 2022).
- **Nutrien**, the world's largest fertilizer company, headquartered in Saskatchewan, is collaborating with **EXMAR** (a global transporter of liquified products) to develop and build a low-carbon, ammonia-fuelled vessel (Nutrien 2022).
- **Red Leaf Pulp** is investing \$350M to build a pulp mill to turn waste wheat straw into paper products with a lower carbon footprint relative to traditional wood pulp (White-Crummey 2021).

Investments by Saskatchewan's demand-decline companies have focused primarily on capturing and utilizing flared methane emissions. However, a shift into helium exports represents a potential source of new growth for the sector.

- The province's helium reserves offer potential for oil and gas companies to diversify into new product lines with growing global demand (Duncanson, Brinker, and Sanger 2021).
- In addition to having Canada's largest helium purification facility, owned by **North American Helium**, the provincial government is contributing \$140,000 for a Helium Liquefaction Hub Study (Burgess 2022).
- **Steel Reef**, an oil and gas infrastructure developer, is investing \$40M to build two facilities to process and utilize flared methane emissions (Government of Saskatchewan 2021c).

Top Saskatchewan transition-opportunity companies by total investment raised



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

Saskatchewan lacks the early-stage policies and initiatives necessary to develop and grow transition-opportunity companies.

- When adjusted for the size of its economy, Saskatchewan ranks second last among provinces on the total amount of capital raised by transition-opportunity companies between 2015 and 2020 (PitchBook Data Inc. 2022).
 - » In 2018, Saskatchewan companies accounted for less than 0.5% of venture capital investment in Canada, while its economy represented 4% of national GDP (Mandel 2021, Statistics Canada 2021b).
- Aside from general tax incentives, such as the Saskatchewan Technology Startup Incentive and a few specific funds in agricultural tech (e.g. the Agtech Growth Fund and Strategic Research Initiative), dedicated funding for transition-opportunity companies remains scarce (Innovation Saskatchewan 2022a, Innovation Saskatchewan 2022a, Government of Saskatchewan 2022b).
- Compared to other provinces and high-income countries, Saskatchewan ranks among the lowest for public and private research and development funding (The Conference Board of Canada 2021a).

At the same time, weak and inconsistent policy and market signals are increasing investor uncertainty in future demand for technologies and products that could decarbonize and transform Saskatchewan's economy.

- Saskatchewan has sector-specific targets to increase renewable electricity (50% of generation capacity by 2030) and reduce methane emissions (40–45% reduction in emissions by 2025) (United Nations Framework Convention on Climate Change 2021).⁹ However it lacks the policies necessary to drive transformational change in other sectors such as transportation and buildings.¹⁰
- Substantial provincial subsidies to the fossil fuel sector work against market signals driving investment in clean energy and technology.
 - » In 2020, the Saskatchewan government provided an estimated \$380M in consumer subsidies and \$32M in producer subsidies (Samson, Drummond, and Phillips 2022).¹¹
- The centralized structure of Saskatchewan's electricity system makes it challenging for independent producers to supply clean electricity to the grid or large industrial users, and early efforts on small modular reactors are years from coming to fruition (Hurlbert 2021).¹²
- Even within the agricultural tech sector there are barriers to scaling up new opportunities. The high capital intensity of new technology, combined with the high degree of risk with using these technologies to experiment on single-season crops, has led to low levels of investment.

Developing new opportunities in areas where global demand is expected to grow is critical to ensuring a smooth transition for workers, communities, and Indigenous Peoples. Yet Saskatchewan lags behind other provinces in developing this potential.

- The oil and gas sector is a major employer in small communities. Impacts from declining global demand could ripple across local economies, especially when considering indirect or induced jobs.
 - » In Coronach, Saskatchewan, nearly 44% of the town's workforce was employed in either the coal mine or the coal-fired electricity plant in 2016. By 2041, the town estimates an 89% drop in household incomes, a 50% cut in the municipal tax base, and a two-thirds drop in population (MDB Insight 2019).
- Mobilizing private capital in strategic areas (e.g. geothermal, transition minerals, hydrogen) could help offset future job losses in the fossil fuel sector.
- Recent examples highlight the need to improve how Indigenous nations and communities are engaged in siting, developing, managing, and sharing the benefits from these major projects (Canadian Mining Journal 2021, Haig 2021).
- Despite some initial planning at the local level, and federal coal transition funding, it is unclear where alternative employment opportunities will come from, or the extent to which workers will receive training and upskilling (Logan 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 Workers in transition-vulnerable sectors are concentrated in mining and quarrying, support activities for mining and oil and gas extraction, and emissions-intensive manufacturing (Samson et al. 2021).

² Small communities with populations less than 10,000 people are not captured in this data, yet may have even higher concentrations of their workforce in transition-vulnerable sectors (e.g. Coronach).

³ The share of visible minorities and Indigenous Peoples employed in Saskatchewan's transition-vulnerable sectors in 2016 was below the total share of visible minorities and Indigenous Peoples in the total population (Statistics Canada 2020a, Samson et al. 2021).

⁴ The province's net debt per capita increased from \$4,200 in 2014 to \$11,600 in 2021. Non-renewable resources generated 21% of total government revenues in 2012 but fell to 7% in 2021. While high oil prices in 2022 will likely help reverse some of these fiscal trends in the short term, the Canadian Climate Institute's *Sink or Swim* report (Samson et al. 2021) highlights several reasons why it is reasonable to expect global oil and gas demand to decline through the global low-carbon transition.

⁵ Other companies are headquartered in Naicam (2), Craik (1), Senlac (1), Arborfield (1), and Foam Lake (1).

⁶ Global demand for helium, a non-renewable resource used in several key technologies, such as fibre-optic cables, computer chips, industrial leak detection, and nuclear power plants, is expected to increase in the coming decades (Duncanson, Brinker, and Sanger 2021).

⁷ To date, the bulk of this expertise has been to use CO₂ for enhanced oil recovery (Piller 2021).

⁸ All statistics within the demand-creation section are from PitchBook Data Inc. (2022) unless otherwise stated.

⁹ The Prairie Resilience Plan and Growth Plan recognize the potential of clean technology and innovation but with limited implementation details, commitments, or actions (Olive, Eaton, and Besco 2018, Government of Saskatchewan 2017, Government of Saskatchewan 2019).

¹⁰ In addition, lax environmental regulations for new oil and gas development prioritize sector growth over emissions reductions and industrial transformation. New oil and gas activity is exempt from environmental assessment, and fracking wells are approved without impact statements (Olive and Valentine 2018).

¹¹ The producer subsidies primarily include a temporary reduction in fees for oil and gas producers during the pandemic, while consumer subsidies include PST exemptions for residential natural gas and electricity use and fuel tax exemptions for farmers, loggers, and peat harvesters (Samson, Drummond, and Phillips 2022).

¹² It should be noted that the Government of Saskatchewan (2022) has committed to exploring and developing small modular nuclear reactor technology in conjunction with Ontario and New Brunswick. However, research in this area is nascent, and it is unclear whether this technology represents a viable pathway for emissions reductions.

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

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