

ECONOMIC VIEWPOINT

Securing Canada's Position as a Critical Minerals Superpower: The Ontario Mining Industry

By Marc-Antoine Dumont, Senior Economist, Marc Desormeaux, Principal Economist, and Randall Bartlett, Senior Director of Canadian Economics

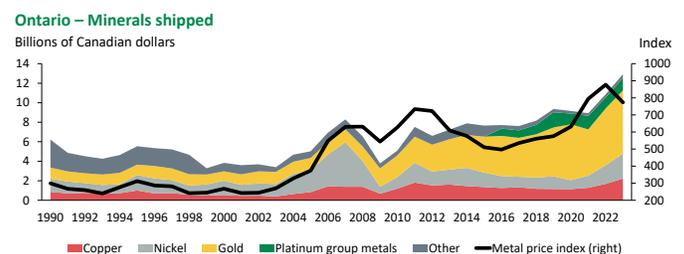
- ▶ In this second in a series of Economic Viewpoints on critical minerals in Canada, we explore the achievements and future of the Ontario mining industry.
- ▶ While its production is currently concentrated in copper, nickel, gold, and platinum group metals, Ontario holds a variety of economically viable mineral deposits.
- ▶ Some of the most promising are in the Ring of Fire in northern Ontario, and exploration of that region has already started.
- ▶ Although the province can capitalize on its diversified economy to develop a complete supply chain from mine to consumer, it still needs to address its lack of infrastructure in rural and remote regions. At a time when construction workers are a rare commodity and interest rates remain high, this endeavour could prove to be more difficult than expected.
- ▶ That said, the Toronto Stock Exchange is not only the financial capital of Canada, but also a hub of the global mining industry, with 40% of the world's mining companies listed on the exchange. For Ontario's mining industry, this means companies can tap into an almost endless well of domestic and foreign capital.
- ▶ Extracting and refining Ontario's minerals could create significant wealth for the province, but it comes with environmental risks. Only by analyzing and effectively managing these risks can the province take full advantage of the immense opportunity presented by its mining industry.

Industry Overview

Ontario is Canada's leading mineral producer. Its mining production is concentrated in four minerals: copper, nickel, gold, and platinum group metals. In recent years, the refurbishment of the Copper Cliff lithium mining complex in 2023 and the completion of the Seymour Lake lithium mine in 2024 expanded the province's production capacity. While Ontario hasn't historically been a lithium producer, the provincial government hopes to develop a few promising deposits in the north.

Ontario's mining production value has doubled over the past 30 years, from \$6B in 1990 to \$13B in 2023 (graph 1). Although higher prices have contributed greatly to these gains, volumes are also up. And while the total production value might decrease

Graph 1
Ontario Mineral Production Is Concentrated in Four Metals



Based on available public data
Natural Resources Canada and Desjardins Economic Studies

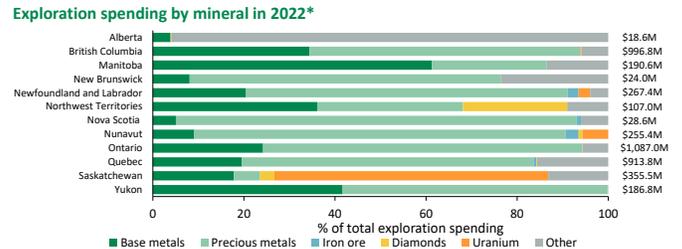
somewhat in the coming years, that should mainly reflect price normalization rather than an industry downturn.

Like all other industries, mining, quarrying and oil and gas extraction saw its real GDP decline in 2020 and 2021 due to the COVID-19 pandemic. This was true in Ontario and around the world. However, its quick return to growth in 2022 (5.1%) significantly exceeded the all-industry (3.7%) and goods-producing industry (2.0%) averages (table 1). With 19 projects in the pipeline ranging from mines to refineries, the medium-term outlook for mining real GDP and production in Ontario is promising. However, productivity has been trending lower over the past decade. For a discussion on ways to address this challenge, please see our note on the [Quebec mining sector](#).

The spike in mineral prices and interest in mining due to the energy transition has led to a new wave of investment in the industry. Combined with the federal and provincial programs to supplement exploration spending, total investment in mining

in Ontario increased 28.1% in 2021 and 39.6% in 2022. The province is also the number one destination for exploration investment across Canada, with \$1.1B spent in 2022—25% of the national total. That said, precious metals accounted for 70% of that figure (graph 2). And while precious metals always top the

Graph 2
Most of Ontario's Outsized Exploration Outlay Is Spent on Precious Metals



* 2022 was used because it's the last year with actual data.
Statistics Canada and Desjardins Economic Studies

TABLE 1
Ontario Mining Industry Overview

Key indicators	Mid-term outlook	2020	2021	2022	2023	2015–2023 average
Economic statistics						
Industry real GDP (% change)	●	-11.9	-4.6	5.1	n/a	-2.7
As a % of total real GDP		0.7	0.6	0.6	n/a	0.8
Investment (\$B)	●	3,562	4,564	6,370	6,469	4,122
% change		-1.2	28.1	39.6	1.6	11.1
Capital assets and repair and maintenance (\$B)	●	2,321	2,840	4,350	4,621	2,667
% change		2.6	22.4	53.2	6.2	14.3
Exploration and deposit appraisal (\$B)	●	566	897	1,087	952	666
% change		8.2	58.4	21.2	-12.4	12.5
Jobs (number)	●	28,210	29,665	30,545	n/a	27,861
% change		-1.9	5.2	3.0	n/a	2.4
Compensation per hour worked (\$)	●	63	62	64	n/a	59
% change		11.4	-1.5	3.2	n/a	2.9
Productivity (\$)	●	109	103	104	n/a	121
% change		-5.6	-6.1	1.4	n/a	-3.7
Total production (\$B)	●	5,103,208	7,523,585	6,601,293	7,246,242	9,151,951
% change		-2.2	-2.5	21.6	18.9	6.0
Key metal prices (\$US/ton)						
Cobalt	●	31,441	52,434	63,269	33,924	28,442
Copper	●	6,175	9,312	8,832	8,486	6,878
Gold*	●	1,770	1,800	1,805	1,945	1,516
Graphite	●	485	560	830	716	634
Lithium	●	486	546	827	726	634
Nickel	●	13,792	18,460	26,263	21,505	15,431
Palladium*	●	2,191	2,396	2,108	1,339	1,420
Platinum*	●	884	1,090	961	967	959

Legend ● Challenging ● To be monitored ● Promising

*US\$ per ounce; n/a: not available.
Statistics Canada, Natural Resources Canada, Datastream, Bloomberg and Desjardins Economic Studies

investment rankings, it's further evidence that the Ontario mining industry is heavily concentrated in these minerals, particularly gold. While investment growth will likely moderate or even decline slightly as metal prices cool, investment should remain at historically high levels. But interest in the Ontario mining industry is also being driven by the energy transition. Recent initiatives by allies such as the United States have identified Canada as a key producer of critical and base minerals. Ontario already has a deep roster of green tech companies to support innovation and the expertise to build and operate mines, giving the province significant competitive advantages.

Key Metals

Ontario is home to 36 active mines, with most of the province's production concentrated in copper, nickel, gold, and platinum group metals.

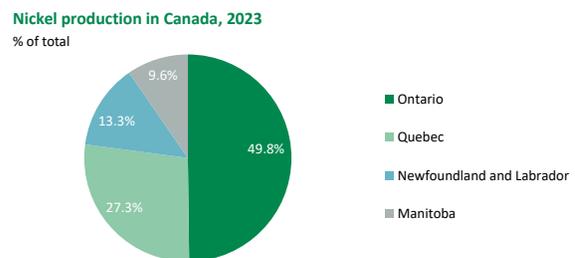
Copper

Ontario produced 31% of the 511K tons of copper made in Canada in 2022, just behind British Columbia with 53%. While Canada is far from the world's largest copper producer, it ranks a still-respectable 12th (table 2). When it comes to producing this mineral, Ontario doesn't have one big advantage but rather a combination of smaller advantages. For instance, the province has an abundant, reliable electricity supply that is relatively cheap compared with electricity in other countries (though Ontario lags behind Quebec for cheapest energy in Canada). The province's geology also supports copper production. The rocks in Ontario, Michigan and southern Quebec are some of the oldest in the world, meaning the minerals are highly concentrated in world-class deposits. According to Natural Resources Canada, there are currently two copper mines operating in Ontario: McCreedy West near Sudbury and Kidd Creek near Cochrane. And nine other mines extract copper as a byproduct. The future looks very promising for this mineral as it's used in all green technologies. It's also the primary metal used in wiring, which should further support demand as the world electrifies everything. (For more on energy transition-driven demand for copper and other minerals, please see our recent [Economic Viewpoint](#).)

Nickel

Nickel is also among the most promising metals for Ontario. The [International Energy Agency](#) expects nickel demand to grow by a factor of 6 to 19 by 2050, depending on the transition scenario and technologies used. Ontario's nine nickel mines produce close to 50% of Canada's total output (graph 3). As we saw with copper, the nickel industry has a number of smaller things going for it, including an abundant electricity supply and rich deposits. That said, Ontario does have a unique advantage: proximity to the industries that use the metal. Nickel ore can be extracted, refined and manufactured into a product all within the province's borders. There's also renewed interest in the mining and refining capacities of Sudbury, home to the Big Nickel. Operations at Glencore's Nickel Rim South Mine are expected to slow as the deposit is depleted, prompting other companies to plan testing at the Crean Hill site in 2024. The proximity of the combined operation allows for vertical integration, economies of scale and supply chain optimization that very few sites in the world offer. It minimizes supply chain risks, as Ontario is less reliant on imports of raw materials and intermediate goods. It also increases the economic dividends as manufactured goods create more value. This is possible thanks to the availability of a wide range of specialized workers. However, these advantages have been slowly eroding since the start of the pandemic as labour shortages have become more acute in the mining and other sectors. And finally, Ontario's proximity to the largest market in the world—the United States—is another big advantage.

Graph 3
Ontario Produces Most of the Nickel Made in Canada



Natural Resources Canada and Desjardins Economic Studies

Table 2
Canada Ranks 12th in the World in Copper Production

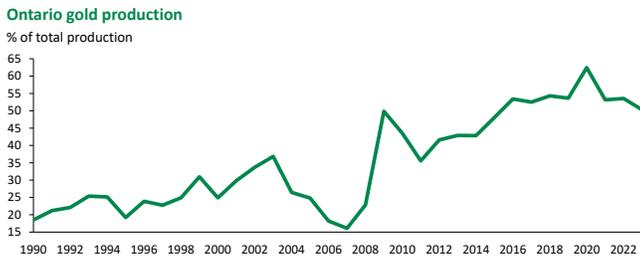
COUNTRY	PRODUCTION	
	THOUSAND TONS	RANK
Chile	5,200	1
Democratic Republic of Congo (DRC)	2,200	2
Peru	2,200	3
China	1,900	4
United States	1,300	5
Canada	511	12
Total	22,000	n/a

n/a : not available
Natural Resources Canada and Desjardins Economic Studies

Gold

Gold may not be a critical mineral, but it's critically important to Ontario, as most of the province's mines extract this metal. Even before gold prices began to spike a few years ago, gold went from 25% of the province's total production value in 2000 to 53% in 2023 (graph 4 on page 4). The new Magino gold mine that opened near Wawa in 2023 added significant production capacity. But the medium-term outlook for this metal is more closely tied to the financial and geopolitical landscape than to the energy transition. We expect the price of gold to decline slightly in the coming years as inflation returns to low, stable and

Graph 4
Gold Has Risen Significantly as a Share of Ontario's Total Production Value



Natural Resources Canada and Desjardins Economic Studies

predictable, and investors slowly move away from safe-heaven assets like gold. This should ultimately weigh on gold production.

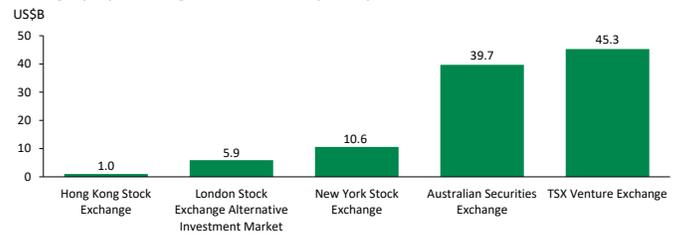
Platinum Group Metals

Finally, there are the platinum group metals of platinum, palladium, rhodium, ruthenium, osmium and iridium. Platinum and palladium are considered both precious and industrial metals. And like gold, they will likely experience a price decline in the next few quarters as inflation comes down. That said, their role in the energy transition landed them a spot on the critical minerals list. Platinum and iridium can be used in hydrogen fuel cells. In contrast, palladium is mostly used in internal combustion vehicles, leaving its future uncertain. Indeed, platinum group metals that can be used in the energy transition should fare better than those that can't. Moreover, their use will depend on which technologies come out on top, and there's still a great deal of uncertainty on that count. Platinum group metals can also often be substituted for one another, limiting the price growth potential of any single metal. This explains the wide variability of their medium-term outlook in table 1 on page 2. But projects are in the works in Ontario. For example, a junior mining company wants to develop a new [palladium and platinum mine](#) 50 km north of Thunder Bay.

The Financial Hub of the Global Mining Industry

Ontario's mining sector generates positive spillovers well beyond the industrial sector. Toronto is a global hub for mining finance. Together, the Toronto Stock Exchange (TSX) for major corporations and the TSX Venture Exchange (TSXV) for junior companies account for 40% of global mining company listings—more than any other exchange. This little-known fact is behind one of Ontario's greatest strengths: the large sums of capital available to the province. Over the past five years, 45.3% of all global mining financing was secured by companies listed on the TSXV (graph 5). Only companies on the Australian Securities Exchange (ASX) raised a similar amount of capital. Toronto's role as a financial hub of the global mining industry also helps it attract investment in related service sectors, such as engineering and specialized lenders. It also provides a window to international investors on the mining industry in

Graph 5
More Capital Was Raised by Companies Listed on the TSX/TSXV Exchange than by Companies on Any Other Exchange
Mining equity financing secured over the past 5 years



TSX/TSXV: Toronto Stock Exchange and TSX Venture Exchange
Toronto Stock Exchange and Desjardins Economic Studies

Ontario and the rest of Canada. Given the scale and complexity of the mining projects and infrastructure needed, this is a significant advantage.

Ring of Fire

Key to the Ontario mining industry's future prosperity is the development of the Ring of Fire. It's located about 500 km northeast of Thunder Bay and covers about 5,000 square kilometres. The region is one of the province's most promising critical minerals development opportunities, with long-term potential to produce chromite, cobalt, nickel, copper and platinum group elements. Zinc, gold and diamond have also been found there.

Exploration activity is well underway in the Ring of Fire. As of January 2022, there were about 26,167 active mining claims held by 15 companies and individuals, covering approximately 4,972 square kilometres. Back in 2014, the [Ontario Chamber of Commerce](#) estimated that developing the Ring of Fire could generate up to \$9.4B in GDP, sustain up to 5,500 jobs annually and bring in nearly \$2B in government revenue. Wyloo Metals, which holds most of the established mining claims in the region, says the Ring of Fire contains minerals worth around \$90B ([CBC, 2024](#)).

With Great Opportunities Often Come Great Challenges

Ontario's economy is at the intersection of many competing forces, all of which will impact the province's ability to advance its mining sector ambitions.

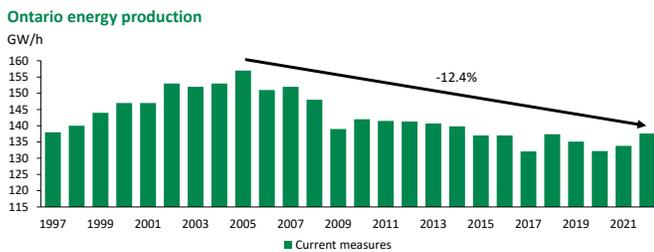
Infrastructure Is Still Lacking

One of the biggest hurdles to developing Ontario's mineral deposits is infrastructure. The Ring of Fire, for example, is currently served by winter roads in the coldest months and air transportation during warmer weather. Proposed all-weather road projects will help create a north-south corridor connecting the Ring of Fire to the provincial highway network, known as the "Corridor to Prosperity." The Government of Ontario has committed \$1B to support legacy road infrastructure projects in the area provided that the federal government matches that commitment. But traffic will be intense, carrying up to a hundred

70-ton truckloads per day when the mines are in production, requiring thoughtful consideration around design to mitigate environmental impacts and facilitate transportation for other purposes. The problem is even more dire further north, where some of the province’s richest deposits are found. However, the lack of local infrastructure has made them economically unviable.

On the energy side, electricity conservation efforts in recent decades have cut provincial demand by 12.4% since 2005 (graph 6). This has allowed Ontario to run an electricity surplus and keep prices affordable. But the latest projections from the [Independent Electricity System Operator](#) show that trend reversing as electricity needs are expected to increase by an average of 2% annually until 2050. Ontario will have to expand its energy production, and a [plan](#) has already been drawn up. While the plan offers some details on the province’s strategy through 2030, including increased production capacity at the Bruce Power and Darlington nuclear reactors, it remains relatively vague beyond that date. But many of the new mines, refineries and manufacturers will come online after 2030. Ontario should learn from the experience of Quebec, which was slow to address its future energy needs. (For more details, please see our [note](#) on the Quebec mining industry.) This is particularly true in rural and remote parts of the province, which may ultimately need to be serviced by some combination of renewable energy, hydroelectric power and small modular reactors. Staying ahead of the curve would help to keep Ontario a prime destination for investment.

Graph 6
Ontario Energy Demand Has Been Trending Lower since 2005



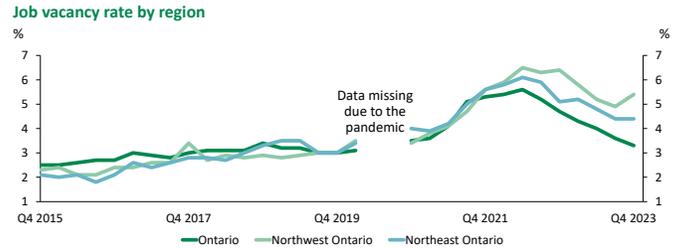
Canada Energy Regulator and Desjardins Economic Studies

Not Enough Skilled Workers

Mining and oil and gas extraction has long provided above-average compensation to skilled workers. Some of this reflects the physical demands and, at times, the remoteness of the work. Getting workers to move to rural and remote regions of the country is one of the biggest obstacles to overcoming the sector’s labour shortages. This is even true in northern Ontario, which boasts the greatest abundance of metals and minerals. And since mines reopened after the pandemic, labour shortages in the region have become even more acute. While the job vacancy rate in the north trailed the provincial average in much

of the five years preceding the pandemic, it has pulled up the average ever since (graph 7).

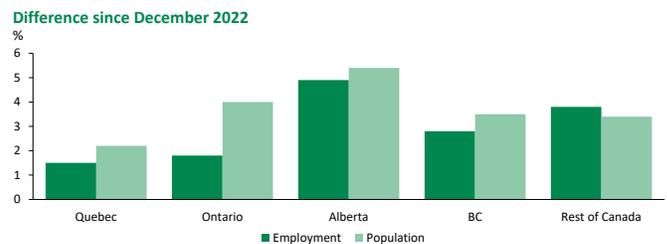
Graph 7
Northern Ontario Is Now Seeing More Job Vacancies than Elsewhere



Statistics Canada and Desjardins Economic Studies

But while job vacancies haven’t come down as rapidly in Ontario’s north as they have elsewhere in the province, the region has shed jobs to start 2024. And this trend may be set to continue. In the next few quarters, we expect the province’s job market to experience some weakness. Ontario has one of the most interest-rate-sensitive economies in Canada. As such, we think it’ll go through [one of the biggest slowdowns](#) as the effects of sharply higher borrowing costs are increasingly felt. Although the broader provincial labour market has yet to experience significant or persistent job losses, it’s being kept afloat by decades-high population gains. But nowhere has job creation lagged the rate of headcount growth more than in Ontario (graph 8). This has also helped to bring the job vacancy rate down more quickly in Ontario than in the other provinces.

Graph 8
Hiring Lags Population Growth Most Significantly in Ontario



Statistics Canada and Desjardins Economic Studies

Ontario’s labour market soft patch could make it easier to ramp up hiring in the years ahead when major projects stimulate demand for labour. But high inflation and material costs have already put a damper on building intentions in mining and infrastructure. Moreover, we recently highlighted

that [competition between the residential and non-residential construction sectors](#) could hinder firms’ ability to attract and retain skilled workers across the country. Competition will be fierce in Ontario, where governments have set ambitious targets for new homebuilding and [infrastructure](#). Meanwhile construction industry productivity has been very poor in Ontario, just as it has in Quebec and across the country.

All of this is occurring against a backdrop of rapid population aging. As more and more workers retire, labour shortages will only get worse. The good news is that Ontario has traditionally been among the Canadian provinces most open to using international migration to address its labour market needs, a philosophy that serves it well when combined with targeted policy. But there’s still work to be done on this front, as Toronto remains the destination of choice for most newcomers. Northern Ontario’s relatively older demographic makeup could also add to the labour market challenges posed by retirements. That’s why communities like Timmins now offer a fast-track to permanent residency for those willing to move there for work ([CBC, 2024](#)). But the federal government’s recently announced plans to reduce the temporary resident population may complicate matters, as Ontario is particularly reliant on this group (graph 9).

[Conservation Is Key](#)

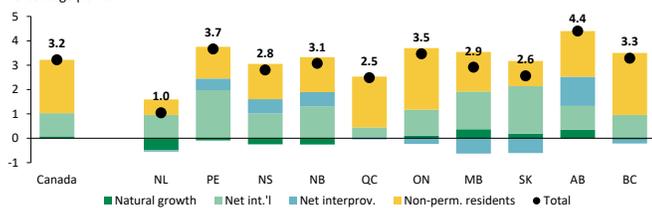
When it comes to developing rural and remote parts of Ontario, environmental concerns are also front and centre. Sensitive wetlands require different extraction techniques than other ecosystems do, including building larger berms, recycling water, limiting surface storage of tailings by returning them underground, and taking other measures to protect the environment downstream. The peatbogs of northern Ontario also act as an important carbon sink in the fight against climate change. But mining companies are aware of the potential environmental and reputational risks. Working with local Indigenous peoples on addressing these concerns will go a long way to ensuring their success.

Conclusion

While the Ontario mining industry is currently centred around a few metals, the province’s soil holds an array of economically viable mineral deposits. With its diversified economy, Ontario has all necessary upstream and downstream supply chain components available within its borders. The Ring of Fire and Corridor of Prosperity initiatives should bolster the sector and Toronto is already the financial hub of the global mining industry. That said, capitalizing on this enormous opportunity isn’t without challenges. Developing mine sites and refineries in northern Ontario will mean addressing the lack of transportation and onsite infrastructure. The province should also take further steps to secure its energy supply for the next decade, especially given the ambitious goals set by the provincial government. Nonetheless, extracting and refining minerals is a double-edged sword that stands to create significant wealth for the province but poses increased environmental risks. Only by analyzing and effectively managing these risks can the province take full advantage of the immense opportunity presented by its mining industry.

Graph 9
Non-permanent Residents Are Still Driving Population Growth

Contribution to year-over-year population growth by component, January 1, 2023, to January 1, 2024
 Percentage points



Statistics Canada and Desjardins Economic Studies

The shortage of skilled labour in northern Ontario poses a significant challenge for developing Ontario’s mining sector. Most mining jobs require at least a high school diploma. However, many people from remote communities don’t have that level of education. The lack of high schools in small, isolated communities is a big part of the problem. Basic public services like clean drinking water can also be in short supply. Investment in community development by industry and other levels of government and directed by local Indigenous peoples may be needed to build adequate public infrastructure for living, learning and thriving. This will also help to address some of the skilled labour shortage in northern Ontario, particularly in remote regions of the province like the Ring of Fire.