The Mining Association of Canada

The Mining Story 2025

CANADIAN MINING INDUSTRY FACTS AND FIGURES

The **Mining Association of Canada (**MAC) is the national organization of the Canadian mining industry. We represent companies involved in mineral exploration, mining, smelting, refining and semi-fabrication. Our member companies account for most of Canada's output of metals and minerals. MAC's functions include advocacy, stewardship and collaboration. Our goals are to promote the industry's interests nationally and internationally, to work with governments on policies affecting minerals, to inform the public and to encourage member firms to cooperate to solve common problems. We work closely with provincial and territorial mining associations, other industries, and environmental and community groups in Canada and around the world.

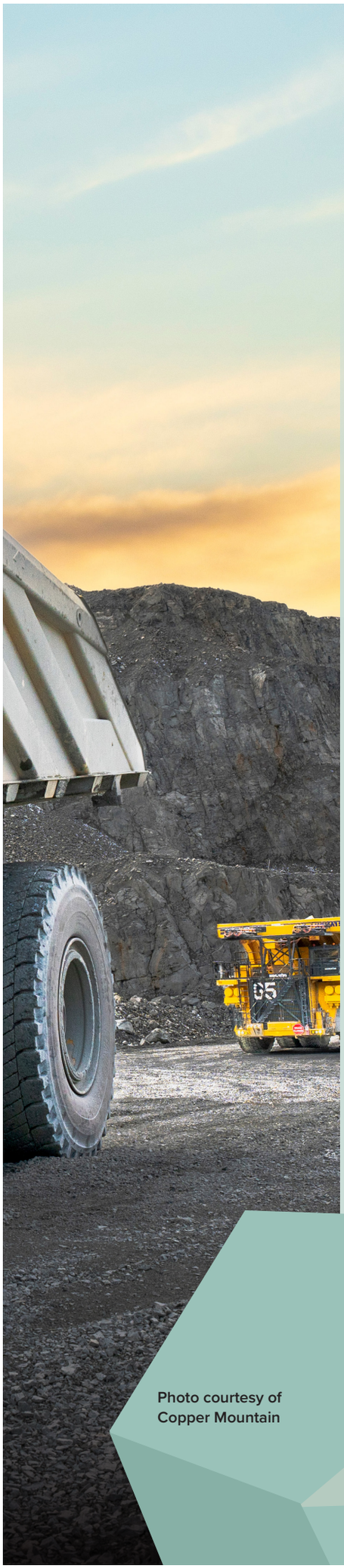

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Photo courtesy of Copper Mountain

Message from our CEO

I am pleased to share *The Mining Story 2025*, the Mining Association of Canada's annual roundup of statistics on the state of the industry.

This year, we find the global economy in a dynamic and unsettled condition. Dominated by conflict, disrupted trade, high inflation, extreme weather and political instability, the future is uncertain. Canada faces its own challenges: the size of the economy is increasing but is not keeping pace with the population. Canada's productivity has failed to match its global peers.

Despite these economic headwinds, mining has been a steady source of growth. The sector was responsible for $117 billion, or 4% of Canada's $2.9 trillion gross domestic product in 2023. There were 430,000 people working in high-quality jobs in the sector, and more in indirect employment. But we cannot rest on our success: increasing national security concerns of Canada and its allies and the ongoing shift to a low carbon economy will require more minerals and metals than we produce now.

By mid-century, demand for minerals is expected to increase substantially, especially for critical minerals like graphite, lithium and cobalt. For Canada to increase its market share, new mines will need to be discovered, permitted, and built. New smelters and refineries will also need to be permitted and constructed. Increasing production to keep up with demand will require increases in investment and improvements in permitting and assessment processes.

The Canadian government has been responsive to our suggestions about the way the tax code can encourage investment in the mining sector, but specific legislation still needs to be passed. Direct government investment can also build for long-term success in the mining sector, and the industry has welcomed recent investment in critical infrastructure and mine development from both the Canadian and United States governments.

Unfortunately, project permitting continues to be a source of frustration. The industry has received repeated promises of timeline improvements from governments of all stripes. Most recently, the federal government has set a target of five years for assessment and permitting of federally designated projects and two years for non-designated projects. We welcome these goals, but they will require rapid, major changes in approach. The mining industry needs a regulatory regime that is efficient, effective and reliable, not just targets.

In recent months, the threat of tariffs has increased stress on the mining sector. Canada and the United States are each other's most important trade partners in minerals and metals: the bilateral trade relationship was worth $146 billion in 2023. Tariffs on trade between our countries will disrupt the essential flow of mineral and metal resources, exacerbate vulnerabilities in supply chains, and raise the cost of doing business across the economy. Because minerals and metals are traded globally, tariffs will lead Canada's mining sector to pursue alternative markets, reducing the strength of our long partnership with the United States.

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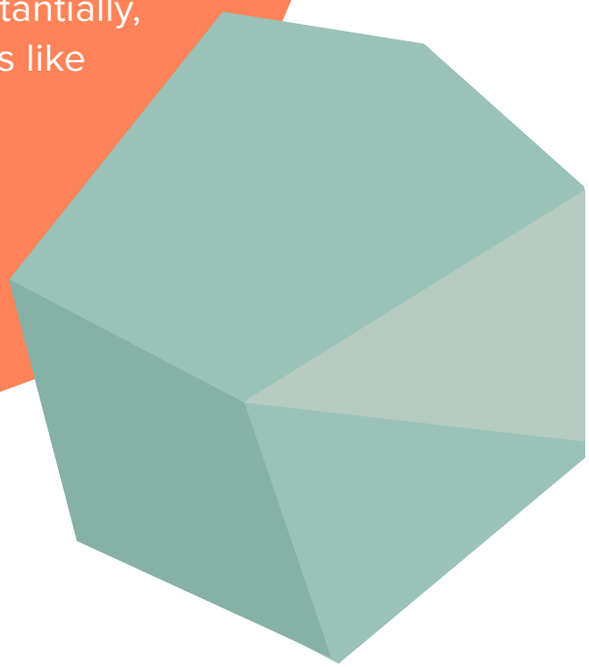
>
> **-PIERRE GRATTON, CEO**
> **MINING ASSOCIATION OF CANADA**



As we look forward, there are many areas of strength for us to build on. The industry has a solid foundation of Indigenous participation: mining companies are among the largest industrial employers of Indigenous peoples. We are unique in our engagement in international human rights and environment, sustainability and governance issues. Global geopolitical instability and trade disputes mean that countries are increasingly concerned about the sources of their goods, so the opportunity for Canada to supply the world with responsibly mined minerals and metals has never been greater.

Canada's mining industry is in a solid position to contribute to the global energy transition and the security of Canada and its allies. We have a generational opportunity to create shared prosperity that is truly pan-Canadian, but we must act quickly. Let's get it done.

Pierre Gratton

Executive Summary

Canada's mining industry is a global leader in producing responsibly mined, low-carbon minerals and metals. More than 60 minerals and metals are produced at almost 200 mines across the country. These minerals and metals are used to make steel for buildings, to build batteries for laptops and cars, to increase crop yields, and to provide low-emission energy. Every day, Canadians rely on the products of Canadian mines.

The current state of mining and the Canadian economy is strong. The mining sector contributed $117 billion to Canada's gross domestic product (GDP) in 2023, or 4% of the total value. This is an increase from its low point in relation to the overall GDP in the last decade, at 3.1% in 2019.

The mining sector is made up of extraction, mining services, primary metal/mineral manufacturing and downstream metal/mineral manufacturing. Each of these areas were stable from 2022 values, after a large increase from 2021.

In 2023 Canada produced diamonds, gold, coal, potash, iron ore and other critical components for the global economy through **mining activities**. The total value of Canadian mineral production in 2023 was $71.9 billion, a slight decrease from 2022 but up from $58.6 billion in 2021.

Canada is among the top producers of metals and non-metallic minerals in the world. It is the top producer of potash, second largest producer of niobium and uranium, and third largest producer of precious diamonds and palladium (by metal content). Each of the top ten minerals and metals had production values of more than $1 billion in 2023. Three (gold, potash, and coal) were valued at more than $10 billion each.

Mining is also used in oil sands extraction. About half of current oil sands production comes from seven open pit mines in Alberta. Mining produced 1.6 million barrels of oil per day in 2023. About 20% of the remaining proven oil sands reserves are likely to be accessible to mining.

The **people** of mining are diverse: they come from all corners of the country and all educational backgrounds. The mining industry directly employed 430,000 people in 2023. Since the Canadian labour force was about 20.2 million, direct employment in mining accounted for 2.1% of all jobs, or one in 48. Indirect employment added 281,000 jobs, for a total of 711,000 jobs in total, or one in 28 jobs in Canada. The minerals industry is an important employer of Indigenous peoples, providing jobs to more than 12,000 people in 2023.

The mining industry is justifiably proud of its safety record. Rates of injury have declined substantially since 2011.

Mining is critical to **the environment**. Climate change is the critical issue facing the globe over the next century. Minerals and metals will help the world transition to a low-carbon future. Electricity networks that provide clean energy, electric vehicles, wind energy, photovoltaic solar cells, and battery storage all require mined materials. Clean technologies trade the use of fossil fuels for materially intensive construction.

Demand for critical minerals increased from 2021 to 2023, primarily due to clean energy demand. Clean energy made up a larger portion of the demand for copper, nickel, graphite and cobalt. Critical mineral demand is expected to grow at least 71% by 2030.

Canada's mining sector is one of the **world's** leaders. Canada's mineral exports were $151 billion in 2023, making up 21% of Canada's total merchandise exports. Minerals and metals made up almost all of the value of the domestic exports of Nunavut and the Northwest Territories and more than 90% of Yukon's domestic exports. Mineral exports were responsible for more than 30% of domestic export values in four provinces: British Columbia, Saskatchewan, Newfoundland and Labrador, and Quebec.

The bulk of Canada's exports ($83 billion) are to the United States, with the European Union ($10.5 billion) and United Kingdom ($8.5 billion) also significant destinations.

In 2023, oil and gas made up a quarter of all of Canada's exports, at $177 billion. In 2022, Canada was the third largest exporter of crude oil, responsible for 9% of global exports. The economy of the future needs minerals and metals from Canada. To provide the resources that are required, Canada must create a more efficient investment and regulatory environment. Given the increasing demand for critical minerals to achieve global carbon reduction, we need to bring new mines and processing facilities into production. We also need to eliminate barriers that create friction in the supply chain.

- The federal government's 2024 Fall Economic Statement included adjustments to tax credits that would increase investment and encourage the development of new mines. These adjustments will ensure that investment dollars continue to support mineral exploration in Canada. The Mining Association of Canada encourages Parliamentarians to work together to pass these key legislative fixes quickly into law.
- Transporting minerals and metals from mines to processing facilities is becoming more challenging. In 2024, Canada experienced its first-ever simultaneous halt of rail service from both Class 1 railways. Lockouts at ports in British Columbia and Quebec threatened to stop the movement of goods by ship. Costs for both road and rail shipping remain well above their pre-pandemic levels. While the government is seized with economy-wide supply chain challenges, concrete solutions, such as legislative fixes to longstanding mining industry recommendations to address transportation network challenges remain elusive.
- Investors and mining companies are interested in investing in new mines, expanding existing mines, and building refining and smelting capacity in Canada. Unfortunately, regulatory inefficiency can slow project momentum. The government has recently set a target of five years for assessment and permitting of federally designated projects. Achieving this target will require changes in outlook and processes at departments and agencies of the federal government. Action is especially important on coordination with provinces, coordination within the federal government, and process improvements on Indigenous consultation.
- The mining sector will require more than a hundred thousand new workers over the next decade. The industry can build on its success in recruiting Indigenous employees, but will need to improve recruitment of women, young workers and visible minorities to reflect the demographics of the Canadian workforce. Increasing the number of university and college graduates in mining-related fields will also help to create a strong pool of mining workers for the next generation.

Continued growth in the mining sector is critical for both the Canadian economy and the environment. A strong mining industry means safe, well-paid jobs for hundreds of thousands of people, and the production of the minerals and metals with high environmental and high labour standards. Canada's trading partners and allies will increasingly rely on us for a secure and stable supply of minerals and metals, and it is the responsibility of government and industry to work together to deliver the mined materials required for the green economy of the future.

SECTION 1

The Canadian Mining Industry: Contribution to the Economy

We use **gold** every day in things like:

- Hi-tech Healthcare
- Aerospace
- Jewellery
- Electronics
- Investment

MINING: A PAN-CANADIAN INDUSTRY

Mining is a significant contributor to the Canadian economy and takes place in communities from coast to coast to coast. The sector provides wages and employment for 711,000 people (of which 430,000 are direct jobs), pays taxes and royalties to governments, and makes major expenditures for project development and operation.

Mining of industrial minerals like salt, gypsum and limestone takes place across the country. Some mine types, however, are found primarily in one area. For example, the Northwest Territories is the country's dominant source of diamonds. Ontario and Quebec lead in the production of gold. Alberta is home to Canada's oil sands sector. Saskatchewan produces all of Canada's uranium and has enormous potash reserves. British Columbia is prominent in steelmaking coal production. Newfoundland and Labrador and Quebec produce virtually all of Canada's iron ore.

Figure 1 illustrates the geographical location of Canada's mining clusters and active mineral development regions. Details for individual mines are presented in Annex 1. Mineral production by province and territory is presented in Annex 2.

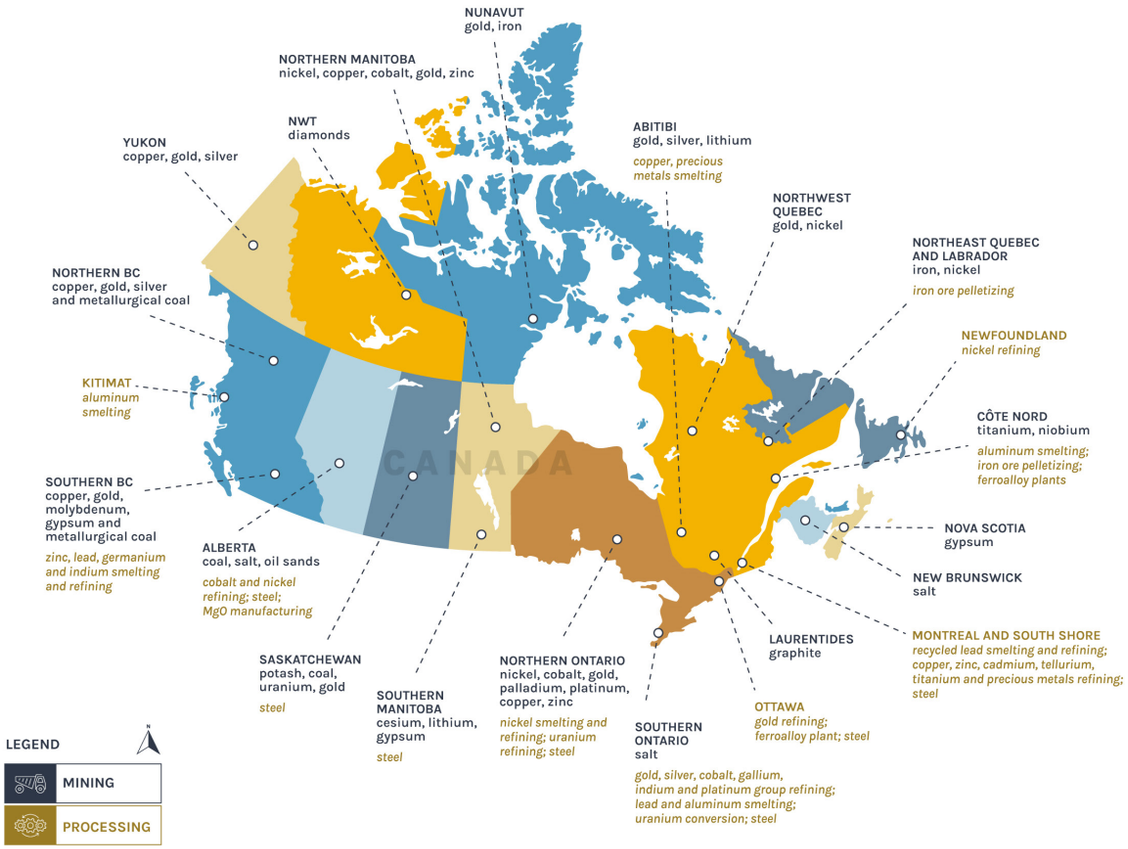


Figure 1: Mines in Canada

The total value of mineral production in Canada in 2023, excluding coal, was $59.7 billion, a 36% increase over the past decade.

Pacific Region

British Columbia produced $5.1 billion of minerals and metals (excluding coal) in 2023.[1] Mining, quarrying and oil and gas extraction accounted for 4.8% of British Columbia's Gross Domestic Product (GDP) in 2023.[2]

There were 25 operating mines in British Columbia in 2023.

In 2022, 3,890 suppliers provided $3.7 Billion worth of goods and services to British Columbia mining operations.[3] Mining suppliers are found in every area of BC, from traditional mining communities like Kamloops and Prince George to BC's urban centres. Metro Vancouver received economic benefits of $1.4 billion in 2022 by supplying goods and services to the mining sector.

Natural Resources Canada (NRCan) is tracking 36 major mining projects in British Columbia, including 31 in the planning stages and five that are already under construction.[4]

The Prairies

The minerals industry in Alberta is a major part of its economy. The Western Canada Sedimentary Basin contains metallic and industrial minerals in addition to oil, gas, and coal. The oil sands are one of the largest proven oil reserve in the world, with 158.9 billion barrels of established reserves.[5]

Saskatchewan is the world's largest potash producer and has almost half of the world's potash reserves. It is home to the world's largest uranium mine and is the world's second largest primary uranium producer. Saskatchewan also produces gold, coal, sodium sulphate and clays.

There are 21 operating mines in Alberta, 21 in Saskatchewan, and seven in Manitoba.

Mining, quarrying and oil and gas extraction accounted for 24% of Saskatchewan's GDP, 25% of Alberta's, and 2.5% of Manitoba's.

NRCan is tracking 18 major projects in the Prairies, including 15 in the planning stages and three under construction: two potash mines and a lithium mine in Saskatchewan.

Ontario

Ontario produced $15.7 billion of minerals and metals (excluding coal) in 2023. Mining, quarrying and oil and gas extraction contributes about 1% to Ontario's GDP.

Toronto is the global centre of mining finance. Between the TSX and the TSX Venture, Canadian exchanges have more than 1,100 mining issuers with a combined market capitalization of almost $650 billion. The fact that Canada is a key player in mining finance means that professional services related to mining and mining finance have had a chance to develop around the exchanges.

1 Preliminary data for 2022 for British Columbia (and other provinces) from Statistics Canada and Natural Resources Canada table Canada, Value of Mineral Production by Province and Territory, Excluding Coal, 2013 And 2023 (preliminary).

2 Statistics Canada. Table 36-10-0400-01, Gross domestic product (GDP) at basic prices, by industry, provinces and territories, percentage share.

3 Mining Association of British Columbia. One Province, One Economy: Benefits of British Columbia's Mining Supply Chain, 2022.

4 From NRCan's Major Projects Inventory. The inventory "provides a snapshot of major natural resource projects in Canada that are either currently under construction or are planned within the next 10 years...To be included in the inventory, projects in the energy and mining sectors must meet a minimum capital worth threshold of $50 million."

5 Natural Resources Canada. Energy Fact Book 2024-25. Section 6: Oil, Natural Gas and Coal.

There were 54 producing mines in Ontario in 2023. Base metals mines are concentrated around Sudbury, industrial minerals mines are found in southern Ontario, and precious metals mines are primarily in northern Ontario.

NRCan is tracking 26 major mining projects in Ontario: 17 are planned and nine are already under construction.

Quebec

Quebec produced $11.3 billion worth of metals and non-metals in 2023. Mining, quarrying and oil and gas extraction contributes 1.6% to Quebec's GDP.

There were 34 producing mines in Quebec in 2023. The mines were concentrated in three regions: gold mining in Abitibi-Témiscamingue, iron mining on the North Shore, and gold, base metals, diamonds, and iron mining in Nord-du-Québec.

Natural Resources Canada is tracking 23 major mining projects in Quebec: 18 in the planning phase and five under construction.

Atlantic Region

In 2023, there were nine operating mines in Newfoundland and Labrador, 12 in Nova Scotia, and six in New Brunswick. Prince Edward Island is Canada's only province or territory without an operating mine.

Mining, quarrying and oil and gas extraction were responsible for 26% of Newfoundland and Labrador's GDP, and less than one percent of the GDP of Prince Edward Island, Nova Scotia, and New Brunswick.

NRCan is tracking 15 major mining projects in the Atlantic provinces: 14 in the planning phase and one under construction.

The North

Mining is the largest economic driver in Canada's North. Mining, quarrying and oil and gas extraction were responsible for 13% of the GDP in the Yukon, 22% of GDP in the Northwest Territories, and 43% of GDP in Nunavut. The mines operating in the Northwest Territories and Nunavut are the largest private sector contributors to each territory's economy.

In 2023, there were three diamond mines operating in the Northwest Territories. In Nunavut, there were three gold mines and one iron mine in operation. Yukon had three operating mines in 2023: one gold, one silver, and one copper mine.

NRCan is tracking 10 major mining projects in the north: nine in the planning phase and one under construction.

INDIRECT EFFECTS

Resource wealth has built communities and infrastructure across the country. Mines create jobs and make direct payments to government through taxes and royalties.

But the mining industry's economic impact far surpasses its direct contribution to the GDP.

Rail companies Canadian National (CN) and Canadian Pacific Kansas City (CPKC), and the Ports of Montreal, Quebec and Vancouver rely on a vibrant mining industry. Specialist firms, including those in the legal, environmental, taxation, engineering, and other fields, support the industry's many requirements to locate, develop, construct, operate and reclaim a mine. These supply relationships are mutually beneficial.

Clusters of expertise, like those in finance, geology and exploration noted above, create opportunities for other companies outside the mining sector.

BROADER CANADIAN ECONOMIC OUTLOOK

Canada's GDP was $2.93 trillion in 2023, an increase of a trillion dollars from $1.93 trillion at the end of 2013.[6]

While the nominal value of GDP has increased, the growing population and inflation have removed almost all gains on an individual level. Real GDP has remained relatively unchanged on a per capita basis over the past decade: it was $57,029 per person in the fourth quarter of 2013 and $58,601 in the second quarter of 2024, as shown in Figure 2.

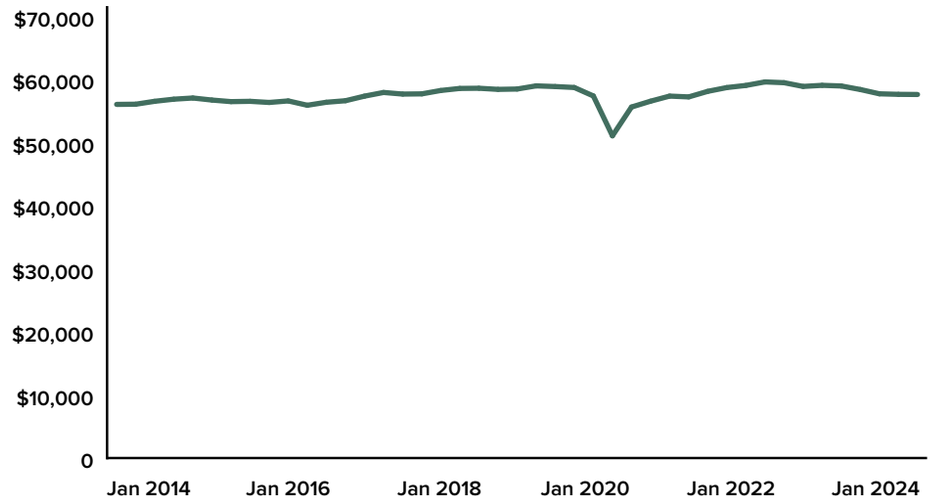


Figure 2: GDP Per Capita, Canada[7]

6 From Statistics Canada. Table 36-10-0104-01. Gross domestic product, expenditure-based, Canada, quarterly.

7 Using Statistics Canada. Table 36-10-0123-01. Gross domestic product, expenditure-based, at 2017 constant prices, quarterly (x 1,000,000) combined with Table 17-10-0009-01. Population estimates, quarterly.

Canadian labour productivity is similarly stagnant across the broader economy. The index based on GDP per hour worked (i.e., "productivity") was up only 6% from the first quarter of 2013 (94.19) to the most recent measurement in 2024 (100.09). The mining, quarrying and oil and gas extraction sector made major improvements from the beginning of 2012 (71.0) through the end of 2015 (98.6) but has faced a similar plateau since then, as shown in Figure 3.

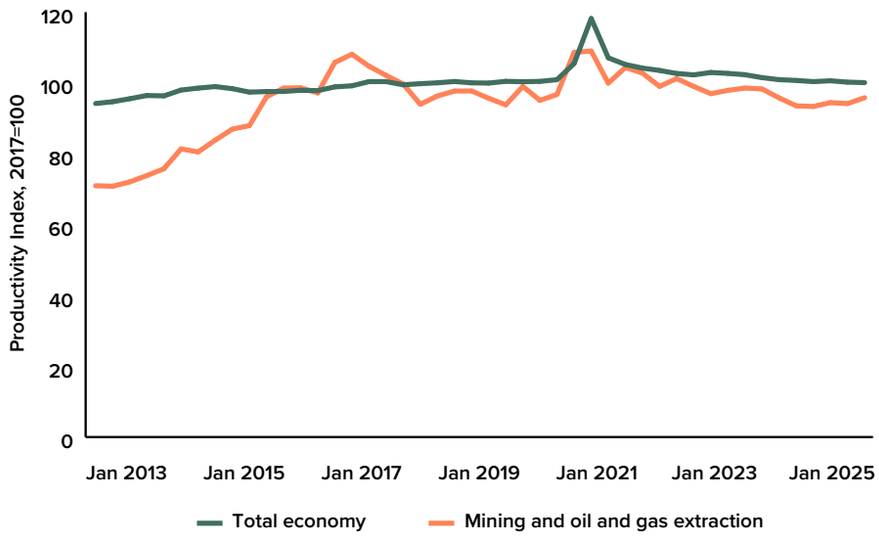


Figure 3: Productivity Index, 2013-2024

Mining, quarrying and oil and gas extraction contributed 5.1% of Canada's GDP in 2023. This contribution has remained relatively constant over the past decade. The sector has contributed between 4.9% and 5.3% of Canada's GDP since 2012, as shown in Figure 4.

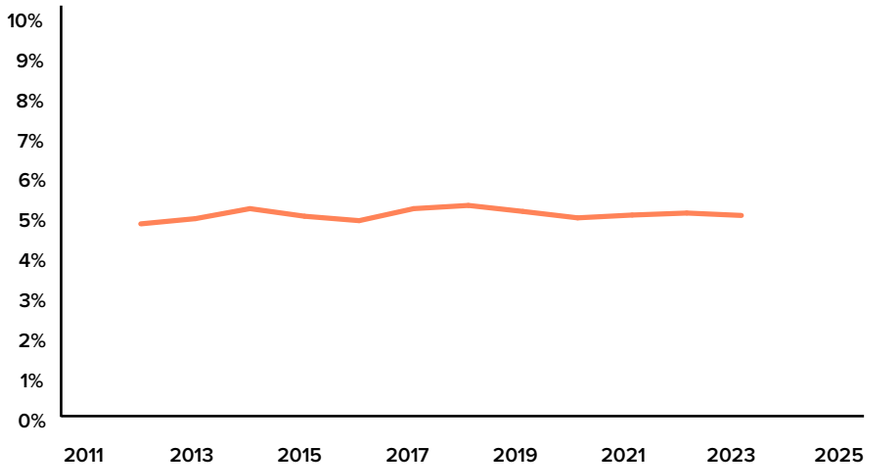


Figure 4: Contribution of Mining, Quarrying and Oil and Gas Extraction to Canada's GDP Since 2012[8]

8 Statistics Canada. Table 36-10-0434-03. Gross domestic product (GDP) at basic prices, by industry, annual average (x 1,000,000).

Excluding oil and gas, mining's contribution to GDP can be separated into four components: extraction, services, primary manufacturing, and downstream manufacturing.

Extraction includes the mining of metals, non-metals, and coal. The nominal gross value added to GDP by extraction in 2023 was $54.8 billion. This was made up of metals mining ($24.7 billion), non-metallic minerals mining ($26.9 billion) and coal mining ($3.2 billion).[9]

Extraction is a major part of the economy: a larger contributor to GDP than non-residential construction and chemical manufacturing, and slightly smaller than food manufacturing and crop and animal production.

In the mining context, **services** means activities including exploration drilling on contract, and contracted services at mines such as water removal or overburden removal. The nominal gross value added for mining services in 2023 was $8.6 billion.

Primary manufacturing for metals includes smelting and refining activities. Primary manufacturing for non-metals includes manufacturing using lime, cement, concrete, and glass. In 2023, the gross value added by primary manufacturing was $21.0 billion.

Downstream manufacturing uses primary manufacturing products as inputs. Secondary metal products use primary products to produce things like iron and steel pipes, rolled steel products like wire, and foundry products. Tertiary metals products include things like cutlery, tools and hardware that require further processing. Downstream manufacturing also includes miscellaneous metals products such as communications cables and stamped motor vehicle components. Finally, services and custom work refer to specialized activities like heat treating, engraving, coating, or other custom work. The total value of downstream manufacturing in Canada's GDP in 2023 was $32.4 billion.

Real gross value added in extraction, services, primary manufacturing, and downstream manufacturing has been stable over the past decade, as shown in Figure 5.

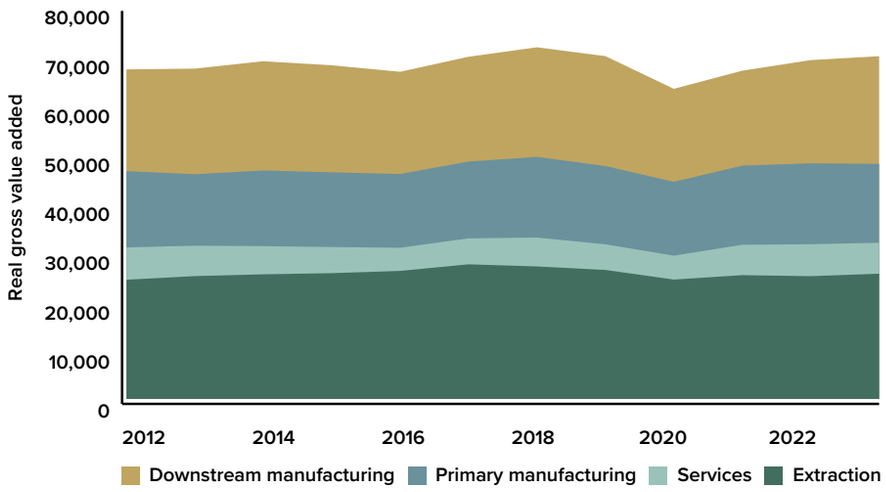


Figure 5: Real Gross Value Added by Sub-Sector[10]

9 This discussion is based on Table 38-10-0285-01 Natural resources satellite account, indicators, annual (dollars x 1,000,000), using current dollars.

10 Statistics Canada. Table 38-10-0285-01 - Natural resources satellite account, indicators, annual. Constant 2017 dollars.

LOOKING FORWARD

The Canadian economy as a whole requires further growth if living standards are to increase. Increases in productivity are the key to unlocking sustainable growth for the future. While the mining sector is more productive than other sectors of the Canadian economy, there are opportunities for improvement.

Since the early 1980s, growth in labour productivity has accounted for over 90% of the increase in Canada's real GDP per capita.[11] The major contributors to improvements in labour productivity have been investment in fixed capital and increases in capital intensity. Since the financial crisis of 2008, the required capital investment and investment intensity has been lacking, causing low productivity growth.[12]

Investments by governments, mining companies and venture capital will help the mining sector be a driving force of the Canadian economy for many years to come.

Investing in Infrastructure

The urgency of addressing climate change, the need for materials to support technological evolution including the transition to electric vehicles, the fragility of supply chains exposed by the pandemic and geopolitical conflicts have highlighted the need for new mines and infrastructure projects. These new projects are often in areas that are difficult to reach, and require access roads, communications networks and power supplies to be developed in new areas.

The Critical Minerals Infrastructure Fund (CMIF) will be an important tool to address infrastructure challenges across the country. The Fund plans to provide up to $1.5 billion over seven years for clean energy and transportation. Recently announced projects include an access road to one of the world's largest undeveloped copper-gold-silver deposits in northwest British Columbia, transmission lines and generation facilities in the Northwest Territories that will increase green energy capacity and reliability, and road/electrical grid access for lithium mines in Ontario.

Financing for mine production, especially for smaller companies, can be addressed with venture capital and specialized financial instruments.

Encouraging construction of mine infrastructure also requires that tax provisions are fair and accurately targeted. Tax provisions like the Clean Technology Manufacturing Investment Tax Credit (CTM-ITC) should be expanded to include more eligible costs for infrastructure. The Mining Association of Canada encourages the Department of Finance to create policies that increase construction of all infrastructure required for mines.

Reducing Project Friction

Investors and mining companies are interested in investing in new mines, expanding existing mines, and building the refining and smelting capacity that Canada requires to be a leader in sustainable mining. Unfortunately, regulatory friction can slow the momentum of these projects. Federal and provincial impact assessment processes can require duplicative work, routine activities can require voluminous studies and documentation, and uncertainties in regulatory interpretation mean that mining companies and others face substantial legal risk.

11 Guy Gellatly and Wulong Gu. July 24, 2024. Understanding Canada's innovation paradox: Exploring linkages between innovation, technology adoption and productivity.

12 Wulong Gu. February 22, 2024. Investment Slowdown in Canada After the Mid-2000s: The Role of Competition and Intangibles.

In fact, instead of building the mines and smelters that are needed for the future, Canada is losing ground. Over the last 12 years, at least four smelters have permanently closed or suspended operations, resulting in significant production capacity losses.

Mining projects are subject to comprehensive provincial regulatory frameworks that are unique to each province, covering the full life cycle of a mine, from exploration through development, operation, closure, and reclamation. These frameworks consider environmental effects and potential impacts on Indigenous peoples, incorporate Indigenous engagement and consultation, and include environmental protection regulations and permits of general application, as well as regulations and permits specific to mining.

Mining projects can also be subject to federal requirements: the *Impact Assessment Act*, the *Fisheries Act*, the *Canadian Navigable Waters Act*, and the *Metal and Diamond Mining Effluent Regulations*. All mines must comply with relevant general federal legislation such as the *Explosives Act*, the *Species at Risk Act*, the *Migratory Birds Convention Act*, and the *Canadian Environmental Protection Act*. Uranium mines are further regulated by the Canadian Nuclear Safety Commission.

Photo courtesy
Impala Canada

The time from a project being approved to the beginning of construction is dictacted by the sum of all the federal and provincial approval processes it must navigate. The multiplicity of government entities involved in mining projects results in overlaps and duplication, and conflicting requirements.

Recognizing the need to accelerate project permitting, the federal government has launched several initiatives to advance the critical minerals sector and to improve regulatory efficiency (e.g., addressing duplication with provincial processes, improving inter-governmental coordination and improving timelines), including commitments expressed in the federal Critical Minerals Strategy, the 2023 and 2024 federal budgets, Building Canada's Clean Future and the 2024 Cabinet Directive on Regulatory Efficiency for Clean Growth Projects.

Budget 2024 outlines ambitious timelines for federally designated projects and federal permits outside of the impact assessment process. That is, five years for federally designated projects, three years for nuclear projects and two years for federal permits for non-designated projects.

While the ambition is encouraging, the industry has yet to see material improvements in regulatory efficiency. Significant challenges with the federal impact assessment process and implementation challenges with the *Fisheries Act* remain obstacles to achieving these goals. Moreover, limited coherence and coordination between the different levels of government are ongoing issues, leading to uncertainty and increased costs for the mining industry.

Canada's Impact Assessment Act (IAA) was amended in June 2024 in response to an opinion issued by the Supreme Court of Canada that found that parts of the Act and its regulations were unconstitutional. The amendments were intended to bring the Act into alignment with the constitution and to ensure its focus on effects in federal jurisdiction.

Subsequently, the Impact Assessment Agency of Canada launched the five-year review of the *Physical Activities Regulation*s (the Project List), as mandated by the Act. The five-year review is an opportunity for the federal government to re-calibrate the regulations to better reflect the potential for adverse effects in areas of federal jurisdiction of the mining sector. Aligned with the spirit of the federal government's clean growth agenda as well as the guidance from the Supreme Court of Canada, the five-year review also provides an opportunity for the federal government to make adjustments to ensure that the Project List respects jurisdictional boundaries and captures only those projects that have the potential to have material adverse effects in federal jurisdiction. The IAA's overlap with existing provincial frameworks combined with policy and technological developments provide a strong justification for amending the Project List to significantly raise production thresholds for new mining projects and exclude specific projects, such as those on brownfield sites, mines with fully electric underground facilities, and mine and mill expansions.

Miners and investors need a regulatory regime that is efficient and effective, and need to know that rules will be consistent over time and space. The continuing churn of federal assessment legislation is not good for investment.

SECTION 2

The Activities: Production, Processing and Transportation

Ti
TITANIUM

We use **titanium** to strengthen & brighten in things like:

- Prosthetic limbs
- Paints & finishes
- Solar panel frames
- Fireworks
- Ultrasound machines
- Spacecraft

Canada's strength in mining rests on its ability to extract and process minerals and metals competitively and to transport products efficiently to and from domestic and international markets. Production, processing and transportation are the foundation that allows the industry to stay globally competitive and expand its Canadian investments.

MINERAL PRODUCTION

Canada has historically been among the top producers of metals and non-metallic minerals in the world. It is the top producer of potash, second largest producer of niobium and uranium, and third largest producer of precious diamonds and palladium (by metal content).

Canada's rank as a producer for its most high-value metals and non-metals is shown in Figure 6 and presented with further detail in Annex 3. Canada recently displaced the United States as the fourth largest producer of gold in the world, but its rank as a producer of copper has fallen from 9th in the world in 2013 to 12th in 2023.

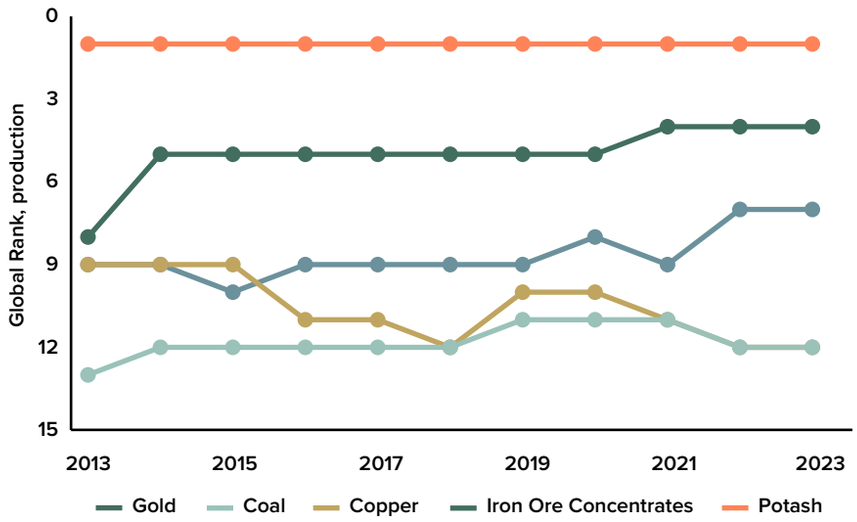


Figure 6: Canada's Global Rank for Its Largest Value Minerals and Metals

Canada produces 60 minerals and metals and is among the top ten producers in the world for 26 of those. These materials are obtained from open pit or underground mines. The mined products are often transferred to concentrators, where the mined ore is converted to usable raw material through crushing and concentrating the ore.

The preliminary estimate for the value of metals production in 2023 is up 2% from 2022, to $38.9 billion. The value of nonmetals production decreased 18% to $20.8 billion. The coal production value was down 20% to $12.2 billion. The total value of Canadian mineral production in 2023 was $71.9 billion, down from $78.5 billion in 2022, as shown in Figure 7.

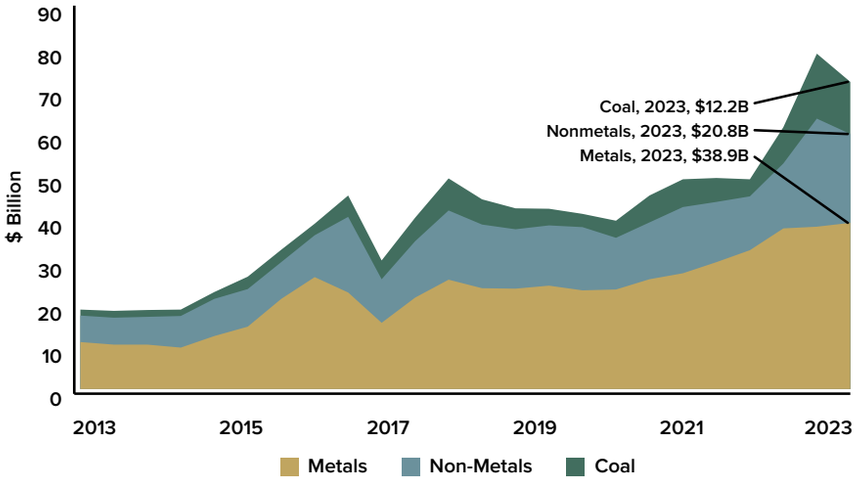


Figure 7: Value of Canadian Mineral Production, 2013-2023[13]

Canada's top 10 minerals and metals (see Figure 8) each had projected production values of more than $1 billion in 2023. Three (gold, potash, and coal) were valued at more than $10 billion each.

Since 2014, production quantity of at least five of the top ten minerals and metals has declined. An increase in most commodity prices means that none have seen a decline in the nominal value of production over that period. Details of Canada's mineral production for the past decade are presented in Annex 4.

	Unit of Measure	2014		2023 (p)		Change 2014-2023	
		Quantity	$ Value (millions)	Quantity	$ Value (millions)	Quantity	$ Value
Gold	tonnes	151	6,817	199	15,144	+31%	+122%
Potash	kilotonnes (muriate of potash)	17,188	5,581	22,282	12,927	+30%	+132%
Coal	kilotonnes	69,035	3,897	48,067	12,214	-30%	+213%
Iron ore (concentrates only)	kilotonnes	43,173	4,174	48,043	6,054	+11%	+45%
Copper	kilotonnes	654	4,984	537	5,177	-18%	+4%
Nickel	kilotonnes	218	4,069	141	4,326	-35%	+6%
Diamonds	thousands of carats	12,012	2,236	16,676	2,331	+39%	+4%
Sand and gravel	kilotonnes	223,407	1,831	206,144	2,282	-8%	+25%
Uranium	tonnes	9,780	934	9,515	1,633	-3%	+75%
Platinum group	tonnes	31	1,059	22	1,569	-31%	+48%

Figure 8: Mineral Production, Selected Minerals, 2014 and 2023[14]

13 Sources: Natural Resources Canada; Statistics Canada. Data for 2023 are preliminary. This table includes the production of coal but excludes the production of petroleum and natural gas. Numbers may not add to totals due to rounding. As of 2017, Statistics Canada is no longer conducting the monthly survey of cement, and values are no longer included in Canada's mineral production. Cement production has also been excluded from 2000 to 2016 values for comparability.

14 Sources: Natural Resources Canada; Statistics Canada. For metals, the quantity refers to the recoverable metal in concentrates shipped. The quantity of potash reported for 2013 has been converted from K2O to muriate of potash (MOP). As of 2019, iron ore only includes "Iron Ore Concentrates", since "Iron Ore agglomerates" is suppressed by the source.

Companies also use mining techniques in the oil sands. Oil sands are mined in open pits, and bitumen is then separated in extraction plants. In 2023, seven oil sands mines produced 1.6 million barrels of oil per day. Today, 48% of oil sands are extracted through the mining method, while the remaining 52% use *in situ* steam injection. About 20% of the remaining proven reserves are likely to be accessible to mining techniques.[15]

Mining is an important part of the $166 billion contributed to Canada's GDP by petroleum and the 181,000 direct jobs in the industry.

PROCESSING MINERALS

Once materials are mined, they must be processed to obtain a product that is useful to the customer. This processing may include:

- Smelting, which removes metal from ore by heating it, often in the presence of other materials to oxidize or reduce the target metal.
- Secondary smelting, which is similar, but uses recycled material as a feedstock rather than mined ore.
- Refining, which removes impurities from metals by chemical or physical processes.

Canada has a significant mineral-processing industry, with 12 refineries, 13 smelters, five secondary smelters, one conversion facility, and four plants operating in 2023. With other facilities in eight provinces (see Annex 1). Canada's processing industry is shown in Figure 9.

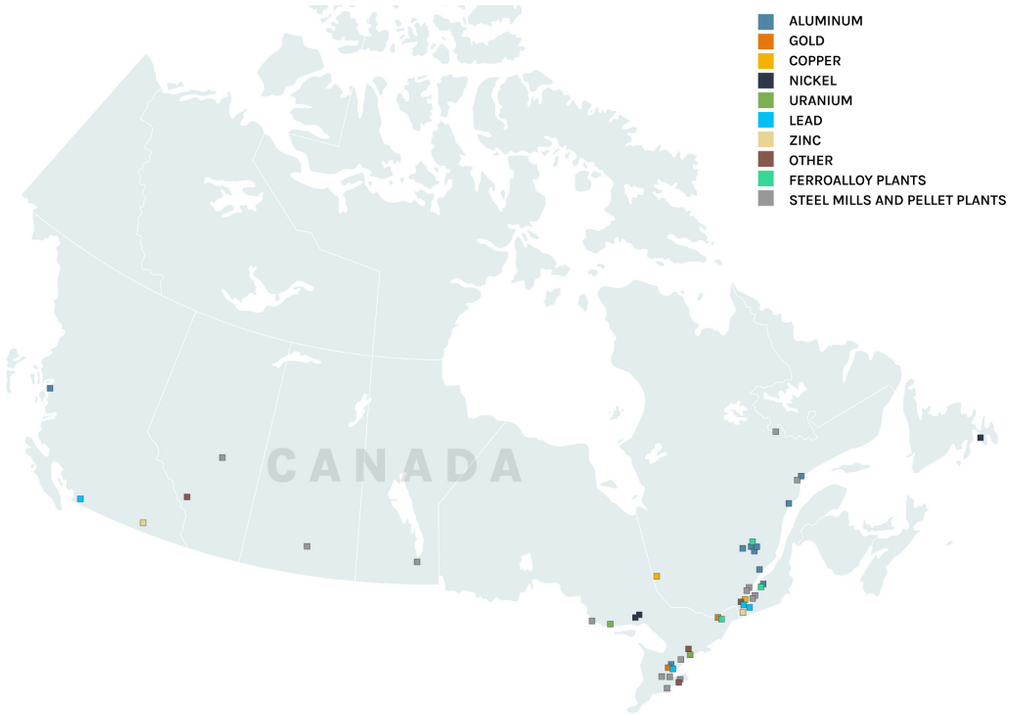


Figure 9: Non-Ferrous Smelters, Refineries, Plants and Conversion Facilities in Canada[16]

15 Natural Resources Canada. Energy Fact Book 2024-25. Section 6: Oil, Natural Gas and Coal.

16 Source: Natural Resources Canada. Canada's Minerals and Mining Map, Layer: Smelters and Refineries.

Canada's integrated smelters and refineries were originally built near mines, which were mostly inland, without access to affordable marine transport. As local ore reserves become depleted and the production of base metal concentrate declines, these smelters and refineries must move from integrated production to the more expensive custom treatment of concentrates imported from other countries.

As another method of addressing declining local ore reserves, Canada's refineries and smelters are using more secondary raw materials and scrap feed.

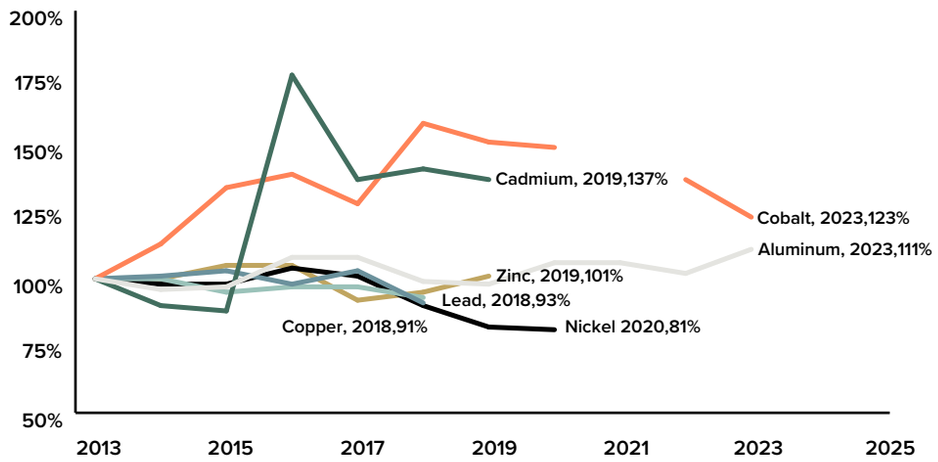


Figure 10: Canadian Refined Metals Production, Selected Metals[17]

The quantity and value of refined metal production in Canada have become irregular due to the depletion of reserves and greater dependence on imported concentrates. Figure 10 shows the production volumes for refined metals in 2013 and the years since for which data is available. Of the seven metals assessed, three are produced at levels higher than a decade ago, one is approximately the same, and three have less production in the most recent year measured.

TRANSPORTATION

The mining industry is one of the largest users of Canada's transportation sector, is the single largest industrial customer group of Canada's railways and is a major user of Canada's ports.

Mines and production facilities are often far from the manufacturers and consumers that will use what they produce. Mining products are bulky, heavy and must travel long distances over inhospitable terrain. Some mines are far outside Canada's main transportation networks and require transportation of goods by air, water or temporary ice roads.

As a result, Canada's logistics system is critical to the flow of mined and refined products to both domestic and international markets. Canada's strength in mining rests on its ability to produce

17 Sources: Natural Resources Canada; Statistics Canada, Table 16-10-0019-01. Missing data points are confidential.

and process minerals competitively and to transport products efficiently to and from domestic and international markets.

Mining companies require a reliable transportation network to compete internationally. This is especially true for Canada, the world's second largest country by land mass. Rail, truck and marine shipping are all important means of transportation for the industry.

RAIL

For more than a decade, crude and processed mineral products have made up more than half of the total freight volume transported by rail in Canada. In 2023, the total freight volume was 296.0 million tonnes, of which 135.3 million tonnes was crude minerals, and 29.5 million tonnes was processed mineral products. This means that crude and processed minerals made up about 56% of the total freight volume in Canada as shown in Figure 11.[18]

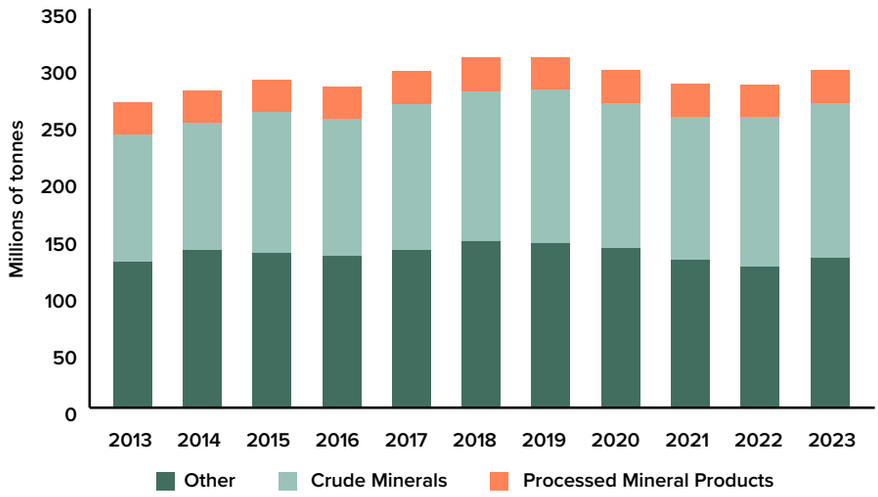


Figure 11: Crude Minerals and Processed Minerals Transported by Canadian Railways 2013-2023

Costs for shipping by rail have increased substantially since 2019 as shown in Figure 12. The Federal Rail Service Price Index tracks price changes for the mainline freight rail industry. Costs are compared to a reference year (2018), which is assigned a value of 100.

18 Statistics Canada. Total freight volume reflects revenue freight, which refers to a local or interline shipment from which earnings accrue to a carrier. Total crude minerals include coal, but not oil and gas.

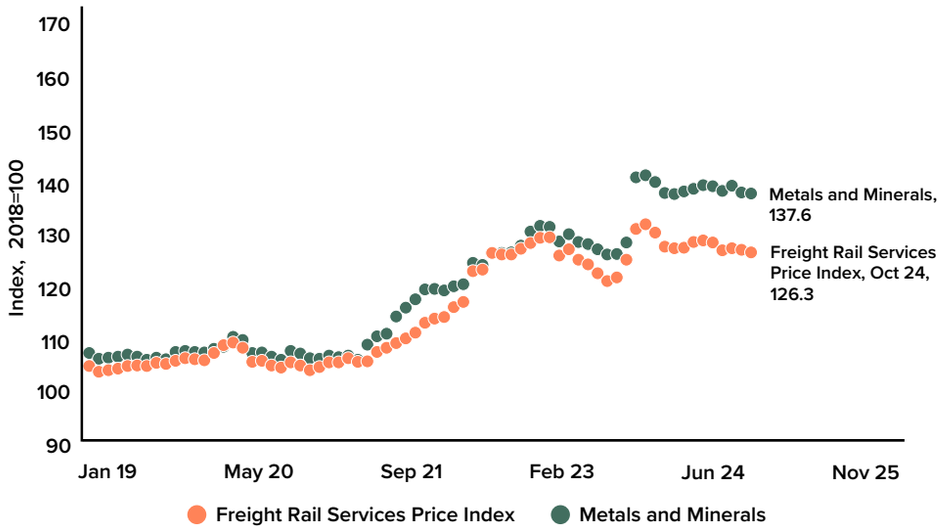


Figure 12: Freight Rail Service Price Index[19]

For all commodities, rail prices have increased by 26% since the index was set to its baseline in 2018. Prices remained relatively stable until the middle of 2021, when they began to increase dramatically. While costs began to drop in early 2023, they have resumed an upward trend. Of special concern, the index for metals and minerals has increased more than the rate for all commodities, up 37.6% since 2018.

In Canada, freight rail is primarily handled by only two Class I railways: CN and CPKC. Of the $17.7 billion in industry revenues from freight in 2022, CN and CPKC were responsible for more than 96%.[20] Communities and businesses are often captive, served by only one of these companies, which gives rail customers little or no competitive choice, and gives the railways market power over their customers.

Both CN and CPKC charge customers fuel surcharges in addition to regular carload rates. In recent years, these fuel surcharges spiked and have slowly declined as shown in Figure 13. Despite declines, in 2024 they still remain well above rates from the late 2010s.

19 Statistics Canada, Freight Rail Services Price Index, monthly, Table 18-10-0212-01.

20 From Statistics Canada. Table 23-10-0045-01 Railway industry operating and income accounts, by mainline companies (x 1,000) and Table 23-10-0046-01 Railway industry operating and income accounts of regional companies (x 1,000).

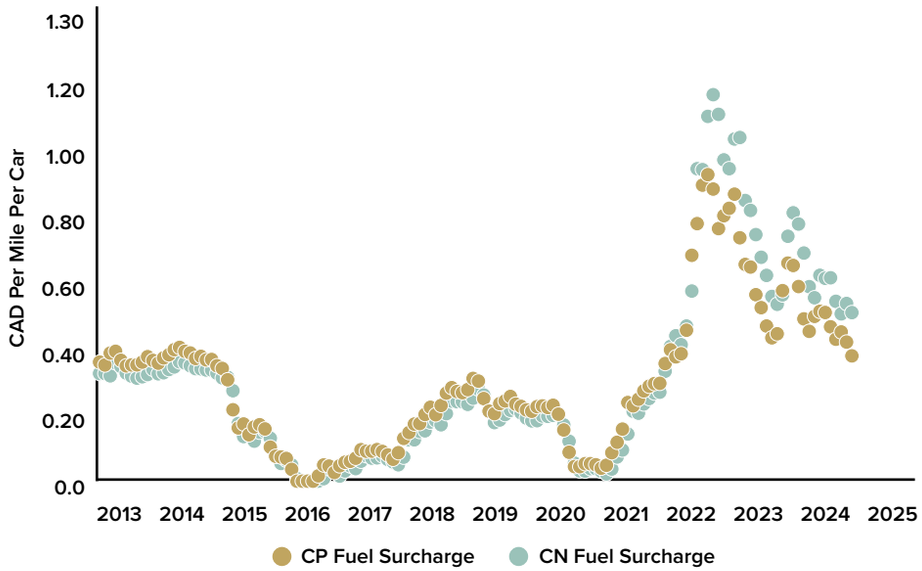


Figure 13: Freight Rail Surcharges[21]

Fuel surcharges are based on benchmark costs for diesel for both railways. When the price of highway diesel exceeds a set rate per US gallon, the railways charge an additional per-mile per-car rate to shippers.

The increasing fuel surcharges do not consider substantial improvements in efficiency by the railways. CN and CPKC both reportedly increased fuel efficiency by 30% between 2007 and 2021 without major revisions to fuel surcharge rates.[22]

ROAD

Trucking also plays an important role in moving mining products. Trucks move mining products from mines to production facilities and customers, and deliver mining supply inputs to mine sites, such as fuel for operations. Mining sites that do not have access to rail rely on truck and marine shipping for these essential materials.

As with rail transport, trucking prices have risen dramatically in recent years. The for-hire motor carrier freight services price index is based on a comparison of current trucking prices to a baseline year (currently 2021) and is maintained by Statistics Canada. While the increase has dropped from its high point in 2022, costs for truck transport are still up substantially from the pre-pandemic era as shown in Figure 14. The index average in 2019 was 96 for local trucking and 97 for long-distance trucking. The value in June 2024 was 118 for local trucking and 117 for long-distance trucking. This is an increase of 23% for local trucking and 21% for long-distance trucking between 2019 and 2024.

21 From the United States Department of Agriculture's Railroad Fuel Surcharges data set. Fuel surcharges are per mile per car in Canadian dollars, converted from USD using the Bank of Canada monthly average rates.

22 Ryan Gallagher and Julia Loney. Rail Fuel Surcharges – History and Recent Developments. Published in the proceedings of the 57th Annual Meeting of the Canadian Transportation Research Forum, 2022

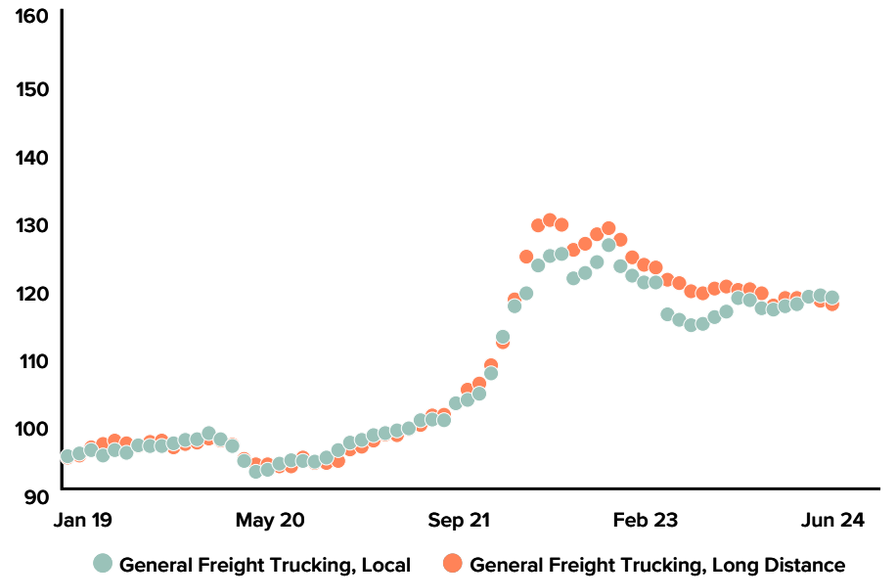


Figure 14: For-Hire Motor Carrier Freight Services Price Index[23]

These increased costs put pressure on all producers of goods. The mining industry is particularly vulnerable to these increases in costs because of the high volume and long distances required to ship its products, and because of the need for transportation of essential supplies to mines.

MARINE

Mining is among the largest customers of Canadian ports.

The Port of Montreal handles large volumes of mineral products. Total dry bulk mined products accounted for approximately 3.7 million tonnes in 2023, or 46% of the port's dry bulk cargo shipments for the year. Inbound bulk shipments arrive by ship are transported by rail or truck to the region's smelting and refining facilities, and outbound products include iron ore and metal wastes being shipped for processing. On the container side, the port moves metallurgical products, steel, and mineral products, which together accounted for 2.06 million tonnes of goods moved, or 16% of total container volume.[24]

Steelmaking coal accounts for 23% of the bulk sector volume handled at the Port of Vancouver annually, which moves shipments to China, Japan and other Asian markets. Fertilizer potash represents another 8% of the port's bulk volume, and minerals another 9%. All told, mining products account for 62 million tonnes, or 56% of the port's bulk volume.[25]

Cargo ships are expensive and take a long time to build. Shipowners do not typically maintain substantial excess capacity and plan for demand years in advance. This means that small increases in demand at the margins can cause substantial price increases. Large swings in demand in recent years have raised prices across the board for shipping.

23 Statistics Canada. Table 18-10-0281-01. For-hire motor carrier freight services price index, monthly.

24 Port of Montreal historical data tables: containerized cargo and dry bulk cargo for 2023. Bulk cargo mined products include iron ore, salt, fertilizers, gravel, gypsum, other minerals, metal waste, ferro-alloys, and coal.

25 Using Principal Commodities, All Cargo table from the Port of Vancouver's 2022 Statistics Overview.

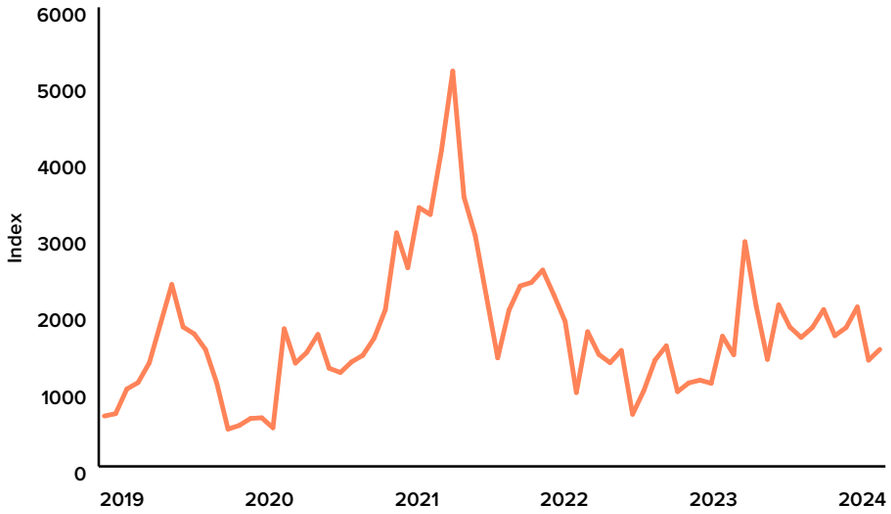


Figure 15: Baltic Dry Index[26]

The Baltic Exchange's dry bulk sea freight index measures the cost of shipping goods around the world. Prices have declined since their high point in 2021 but were still about 38% above 2019 levels through October 2024 as shown in Figure 15.

LOOKING FORWARD

Mineral Production

Canada's mineral production industry faces challenges: Canada is no longer a top producer of minerals critical for a low-carbon economy like copper and nickel, and many minerals are not even being produced at the level they were a decade ago. A decrease in mineral exploration and investment is responsible for part of this decline in production. Canada should be the top jurisdiction in the world to invest and explore.

In order to increase mineral production, Canadian governments should undertake comprehensive mineral resource assessments, based on geoscientific studies, in order to understand and incorporate the value of mineral potential into regional assessments and land management decisions. This is particularly true of northern Canada, where the potential for new discoveries is high.

Canada will also need to support mineral production by building infrastructure – transportation, energy and communication. Substantial investment in building the economic backbones of road, rail, power lines and communication lines will ensure that Canadians can benefit from the rich natural resources of our country.

Finally, strong fiscal policy is a requirement for competitiveness in the global mineral industry. Incentives, competitive taxation levels, and efficient and reliable securities regulations are critical for positively influencing investment in Canada's mineral sector.

26 Using data for BDI Baltic Exchange Dry Index BDIY:IND from investing.com.

Photo courtesy of Agnico Eagle

Mineral Processing

The competitiveness of Canada's mineral-processing industry depends on its ability to secure reliable sources of feedstock from domestic mines. Transportation costs have increased in recent years, making it expensive to import feedstock from abroad. If the processing industry is to remain competitive, enhancing domestic levels of mineral production through investment in exploration and mine development is essential.

Canada's processing facilities operate in a global market, where China and other countries are expanding their capacity with new facilities and competing fiercely for raw materials. The cost of electricity is also a factor in some Canadian jurisdictions. Given the energy-intensive nature of mineral processing, high-power-cost jurisdictions dampen the competitiveness of existing operations and deter future investment.

Finally, the age of some Canadian operations, and their ability to meet potential regulatory requirements, also affects their viability.

In the face of these factors, the downstream Canadian mining industry risks being left behind.

The projected need for large volumes of minerals and metals, including critical minerals, means that demand both domestically and globally will be high. With the lowest carbon intensity nickel production in the world, Canada must signal that it no longer takes its smelting and refining industry for granted, nor the extractive supply chain that supports these critical mineral assets. Action to protect its competitiveness is essential to the low-carbon economy both in Canada and abroad.

Supply Chain

A robust, dependable supply chain with stable prices is a significant determinant for mining industry investment given the volume of mineral and metal products transported in Canada. Natural disasters and labour disputes have had a negative impact on Canada's logistics network.

In August 2024, the two Class 1 railways in Canada locked out more than 9,000 employees. Less than 17 hours later, the labour minister asked the Canadian Industrial Relations Board (CIRB) to impose binding arbitration on the rail companies and unions.

In November, lockouts at British Columbia and Quebec ports threatened to stop the movement of $1.3 billion a day.[27] The government again intervened and directed the parties to binding arbitration at CIRB.

These labour disruptions are an indication of the fragility of the current system. The mining industry depends on rail and maritime transportation to deliver its product to market. Strikes and lockouts create uncertainty that can propagate backwards: it is difficult to plan for future production when transportation services can shut down with no alternative.

The costs of uncertain supply chains to Canada are high: reputational damage as a reliable trade partner; additional operational costs to businesses; and reduced confidence in Canada as a destination for business investment for supply-chain reliant businesses, such as mining. While the government is seized with economy-wide supply chain challenges, concrete solutions, such as legislative fixes to longstanding mining industry recommendations to address transportation network challenges, (see Rail section below) remain elusive.

Rail

CN and CPKC are Canada's only Class 1 railways. CN and CPKC form a dual monopoly that causes a lack of balance in the shipper/rail relationship. Many communities and businesses are captive to a single Class 1 railway, which can use its market power to increase rates for freight and provide substandard services. This is particularly true for locations in remote and northern regions of Canada, including many members of the Mining Association of Canada.

One example of the CN/CPKC dual monopoly at work is the fuel surcharges that are imposed by the railways in excess of the cost of fuel: CN and CPKC claim their fuel surcharges are mechanisms for recovering fuel costs not covered by their base rates. In 2023, a coalition of shippers commissioned an independent study that confirmed the overcharging by the railways.

Public disclosures indicate that excess fuel surcharges have resulted in net gains of hundreds of millions of dollars for both railways. Fuel surcharges have outpaced costs by between 30% and 40% for the railways. CN gained more than $500 million from excess fuel surcharges and CPKC gained more than $300 million in the decade to 2022.

These high costs have not come with increased service or a more robust network. Instead, Canada has seen transportation infrastructure failures due to extreme weather events, rail blockades, and protracted labour disputes.

In 2024, Canada experienced its first-ever simultaneous halt of rail service from both Class 1 railways.

27 Robb M. Stewart. Canada's Government Intervenes to End Port Shutdowns. *Wall Street Journal*, November 12, 2024.

The complexity of railway operations mean that CN and CPKC began to shut down their operations two weeks before the potential strike date in August 2024. This shutdown had knock-on effects to other parts of the transportation network, with some companies refusing to accept shipments to Canada that would require transportation by rail even before the strike began.

While the strike was relatively short lived due to government intervention, the Canadian rail industry does not appear to have improved its relationship with labour: additional industrial actions have been threatened for later in 2024.

Canadian miners need a reliable, efficient partner in the rail industry that works hard to reduce its costs and passes part of the savings on to its customers rather than considering the money as windfall profits.

Marine Shipping

The International Maritime Organization (IMO) is the United Nations' Special Agency responsible for the safety of life at sea and the protection of the marine environment. As a signatory to the IMO's conventions, Canada's domestic maritime shipping policies tend to move in tandem with those of the IMO. The Canadian mining industry is committed to upholding the highest environmental protection standards pertaining to shipping in the marine environment.

The Mining Association of Canada appreciates the constructive and solutions-oriented engagement our industry has had with Transport Canada, who lead and coordinate Canada's delegation to the IMO, on a range of marine issues, including most recently support from department and Canadian delegation to oppose a proposal by the Australian delegation to amend the current individual schedule for Coal in the International Maritime Solid Bulk Cargoes Code.

Canada's opposition was based on a specific technical problem related to the correct assessment and identification of the self-heating hazard of coal (while being shipped in bulk via marine vessel), the basis for the Australian proposal. Canada was not alone in this position at the IMO meeting, and a decision on the proposal was delayed with more study and discussion to be undertaken by an IMO technical committee.

As a regular observer on Canadian delegations to IMO, the Mining Association of Canada appreciates Canada's reputation for excellence and collaboration at the IMO, and attributes this to the hard work and expertise of our diplomats and technical experts in these areas.

Photo courtesy of Suncor

SECTION 3

The Money: Reserves, Prices, Financing, Exploration, Investment and Fiscal Policy

Fe
IRON

We use **iron** to build things like:

- Cities
- Public transportation
- Appliances
- Roads & bridges
- Manufacturing plants
- Cars & trucks

Identifying mineral resources is the first step in a capital-intensive process. Mining companies require money to operate as they identify, qualify, and quantify reserves. They require capital to build mines, to construct roads and bridges, to generate power, and to upgrade existing facilities. Only at the end of the process, once actual production has begun, does a mine generate income.

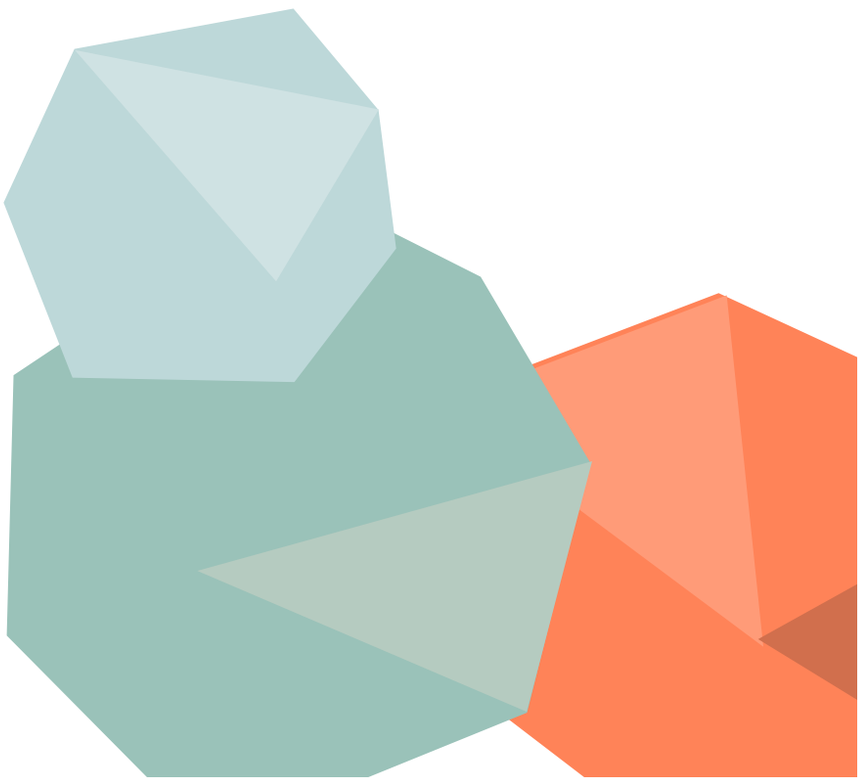
Investment in infrastructure, construction and repairs depends on complicated interactions between global prices for minerals, the regulatory environment, and the cost and availability of capital.

As a result, mining requires sophisticated capital markets. Markets connect investors with companies that require capital for exploration, capital investment, and research and development. Access to capital is what transforms mineral resources from a potential asset into a real one.

CANADIAN RESERVES

Mineral resources of metals, non-metals and precious stones are present across the country. The process of determining whether it is economic to extract these resources begins with exploration.

There are specific names attached to mineral resources, depending on the level of confidence with which they are known. Mineral resources may be *inferred*, *indicated* or *measured* in increasing levels of confidence and measurement. *Indicated* and *measured* resources can be converted into *probable* or *proven* reserves depending on the confidence that a qualified person has in the estimates, and on the factors that affect the costs of extraction. A diagram of the relationship between resources and reserves is presented in Figure 16.



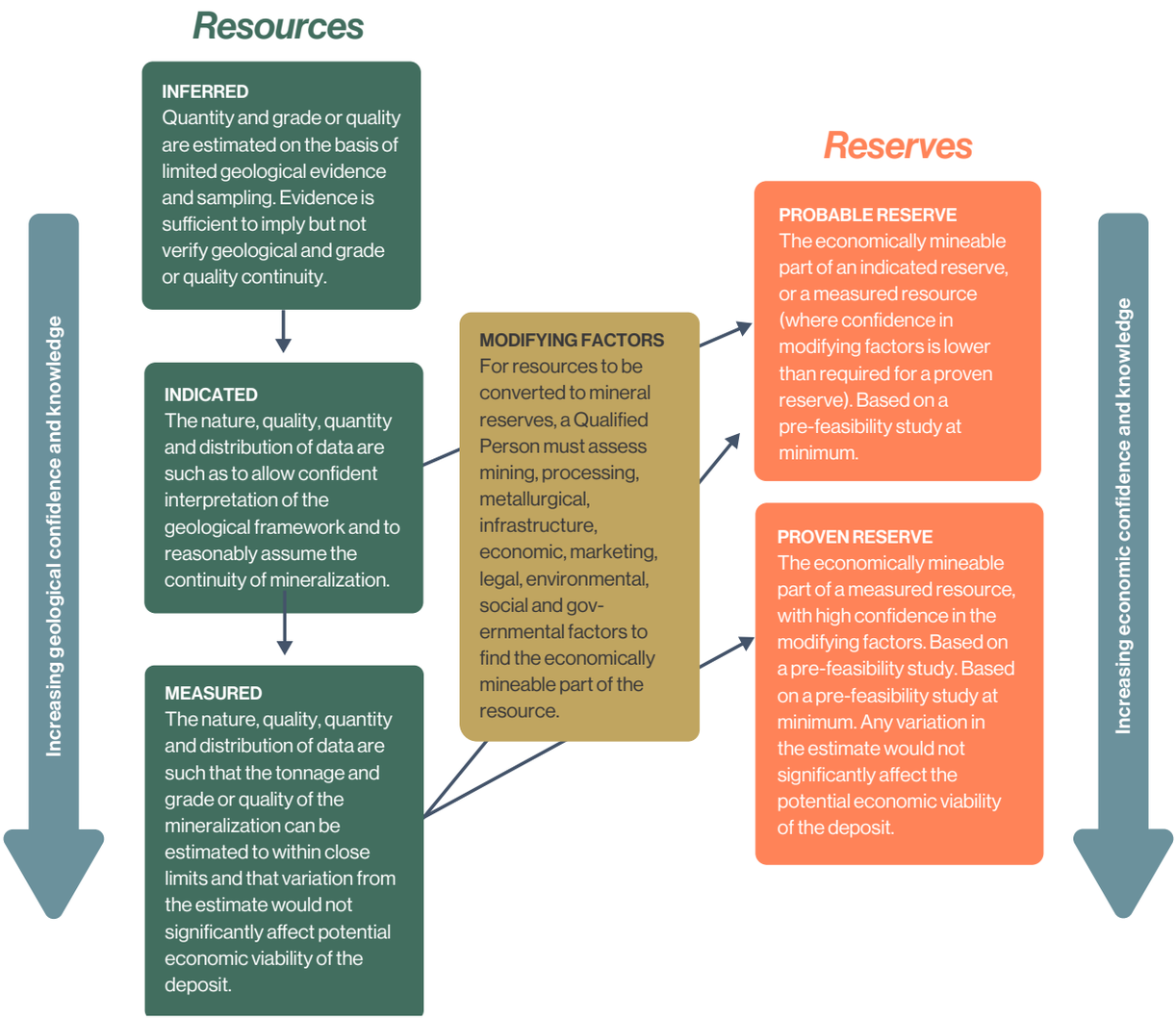


Figure 16: Resources and Reserves[28]

Mineral reserves decrease through mining activities but can increase through exploration and the development of new technologies.

28 Based on definitions and Figure 1 from the CIM Definition Standards for Mineral Resources & Mineral Reserves by the Canadian Institute of Mining, Metallurgy and Petroleum Standing Committee on Reserve Definitions.

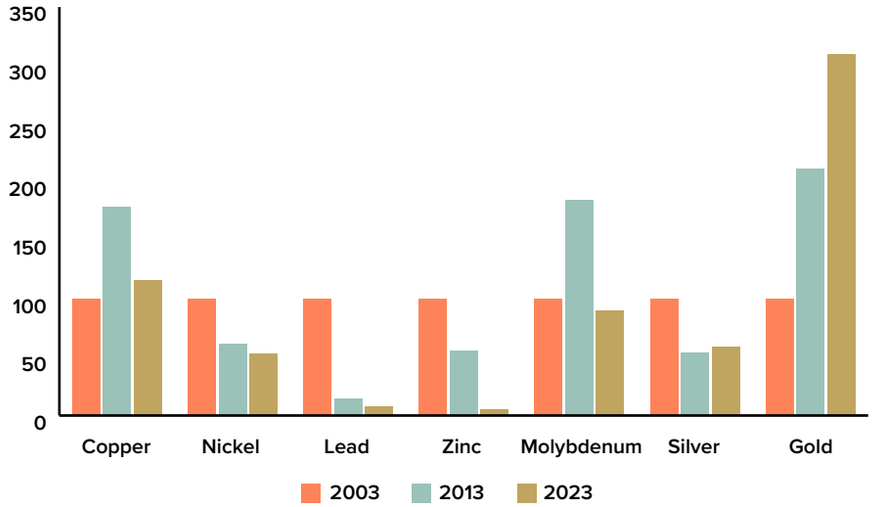


Figure 17: Proven/Probable Mineral Reserve Changes in Canada in 2003, 2013 and 2023[29]

Figure 17 shows percentage change in proven and probable reserves from 2003 to 2023. In the past 20 years, there have been marked declines in Canadian mineral reserves in all major base metals except gold and copper (see also Annex 5). The most dramatic declines have been in lead, down by 92% from its 2003 level; and zinc, down by 95% since 2003.

Consistent investment over time and access to large tracts of land to explore are needed to reverse the long-term decline in proven and probable reserves. Identifying new reserves to be mined and then used in manufacturing requires investment in both exploration and mining development.

New technologies may also be helpful in increasing reserves. Libraries of core samples containing many years of data can be re-evaluated using new algorithms aided by artificial intelligence to identify potential resources that were originally missed. Increasingly sophisticated methods for modelling the size of resources can also increase reserves. Because the economic viability of extraction is an important part of the calculation of reserves, extraction costs are important inputs. More efficient methods of extraction can increase reserve size when costs are reduced, and it becomes economical to extract larger amounts of lower grade ore.

29 Canadian reserves are estimated by Natural Resources Canada and l'Institut de la statistique du Québec (Quebec) from information contained in annual and other corporate reports. Reserves reported here include only metal contained in material that is classified by companies as "proven reserves" or "probable reserves" at producing mines and in deposits that are firmly committed to production. Data from 2022 is preliminary.

EXPLORATION

Exploration is the first step in mineral resource extraction. Identifying and quantifying reserves mean that mines can be developed, smelters and refineries can be built and operated, and manufacturing is provided with the inputs it needs.

The goal of exploration is to locate mineral resources that may become reserves. Technological advances in surveying, airborne technologies and down-hole seismic imaging have enabled companies to find deposits with less environmental impact and more success than ever before. Increasing reserves over the long term, however, requires ongoing investments in exploration and deposit appraisal.

Exploration and Deposit Appraisal in Canada

Spending on exploration is a leading indicator for the future success of mineral production in Canada. Natural Resources Canada defines spending on finding and assessing mineral resources as follows:

- **Exploration expenditures:** Spending on activities up to and including the first delineation of a previously unknown mineral deposit.
- **Deposit appraisal expenditures:** Spending on activities that bring a delineated deposit to the stage of detailed knowledge required for a production feasibility study.

The two expenditures combined are “exploration spending.” Spending rose to almost $4 billion in 2023, with intentions for 2024 even higher as shown in Figure 18.

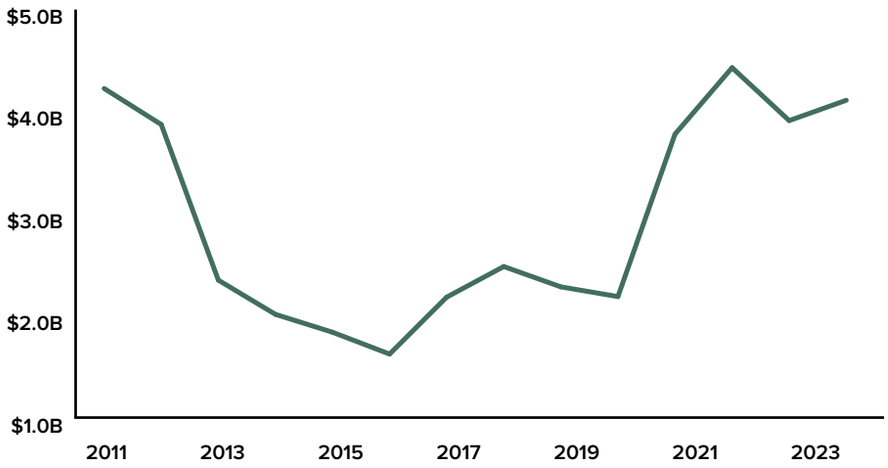


Figure 18: Mineral Exploration and Deposit Appraisal Expenditures, 2011-2024[30]

The boom in exploration spending in the early 2010s was driven by the cyclical peak in metals prices, caused by rapid economic expansion in China and elsewhere in the developing world. Decreases in

30 From Natural Resources Canada, based on the Federal-Provincial-Territorial Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures. Data for 2023 are preliminary. The number for 2024 is intended spending. The reported values include on-mine-site and off-mine-site activities. Includes field work, overhead costs, engineering, economic and pre- or production feasibility studies, environment, and land access costs.

prices for metals and minerals meant less spending on exploration through the rest of the decade, with a strong recovery after the pandemic lockdowns of 2020. Even in nominal terms, however, exploration and deposit appraisal spending was lower in 2023 than it was in 2011.

Exploration and deposit appraisal work is spread across the country, with spending recorded in every province and territory except Prince Edward Island. Spending in 2023 was highest in Ontario ($952M), Quebec ($835M) and British Columbia ($765 M) as shown in Figure 19.

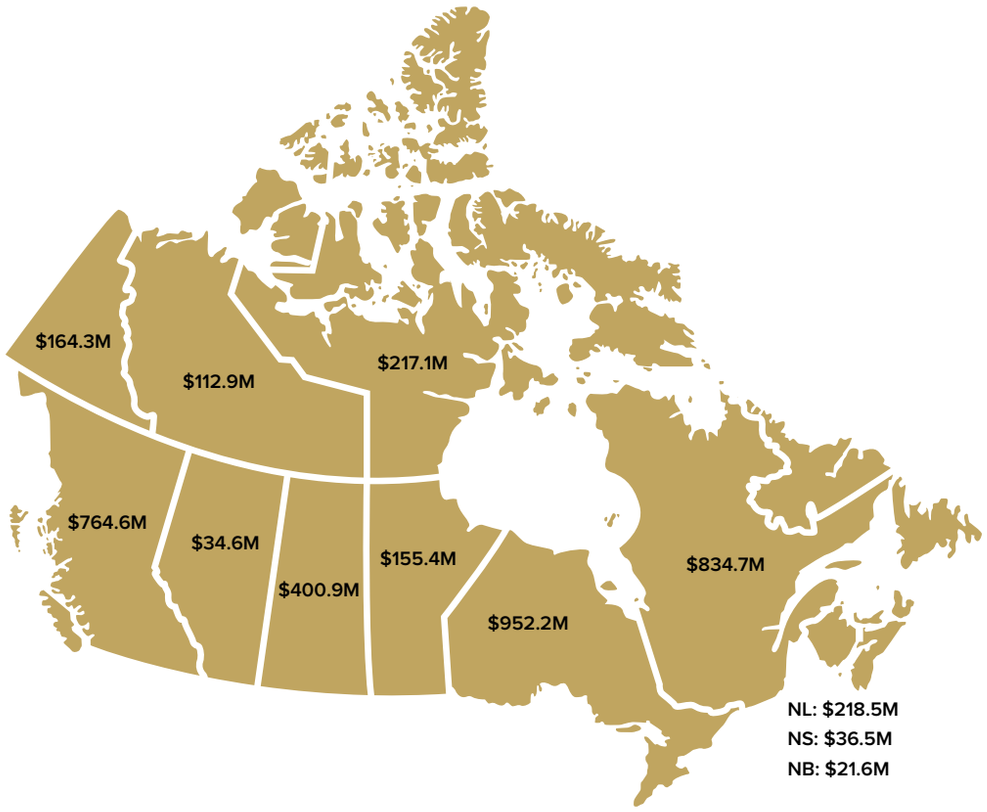


Figure 19: Mineral Exploration and Deposit Appraisal Spending by Province and Territory, 2023[31]

Precious metals attracted most of Canadian exploration and deposit appraisal spending in 2023, accounting for half of overall spending (see Figure 20). High gold prices have driven interest in precious metals exploration. Base metals are responsible for about a quarter of exploration and deposit appraisal spending.

31 From Natural Resources Canada, based on the Federal-Provincial-Territorial Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures. Data for 2023 are preliminary. See previous note for inclusions and exclusions.

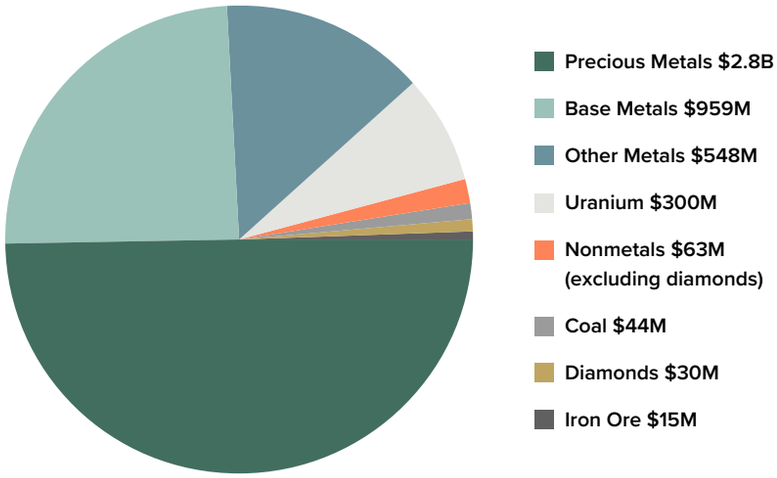


Figure 20: Mineral Exploration and Deposit Appraisal Expenditures in Millions of Dollars, By Target, 2023[32]

Canada as a Global Destination for Exploration Spending

Globally, Canada has been a top destination for mineral exploration investment for the past forty years. In 2023, 19% of global exploration spending was in Canada, the top national destination.

Global spending on exploration declined slightly in 2023 to $12.8 billion. Global exploration spending remains substantially below the peak of US$20.5 billion in 2012. Expenditures on exploration around the world are forecast to remain stable in 2024.[33]

MINERAL AND METAL PRICES

Mineral and metal prices have a direct effect on the attractiveness of investment. When prices are high, investors are more likely to provide the capital required for projects. Given that most projects involving metals and minerals have a multi-year timeline, stable, increasing prices are the most desirable trend.

Metal	Unit	High Value (month)	Low Value (month)	% Difference January-December
Aluminum	USD/lb	$1.13 (January)	$0.97 (August)	-12.8%
Gold	USD/tr. oz	$2,026.18 (December)	$1,854.54 (February)	6.8%
Silver	USD/tr. oz	$25.01 (April)	$21.92 (February)	1.0%
Copper	USD/lb	$4.10 (January)	$3.60 (October)	-7.1%
Nickel	USD/lb	$12.79 (January)	$7.47 (December)	-41.6%
Zinc	USD/lb	$1.51 (January)	$1.08 (June)	-24.7%
Iron Ore	USD/DMT	$137.05 (December)	$105.15 (May)	12.1%
Uranium	USD/lb	$91.00 (December)	$50.48 (March)	79.7%

Figure 21: 2023 Minimum and Maximum Monthly Prices for Selected Metals[34]

32 Natural Resources Canada, based on the Federal-Provincial/Territorial Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.

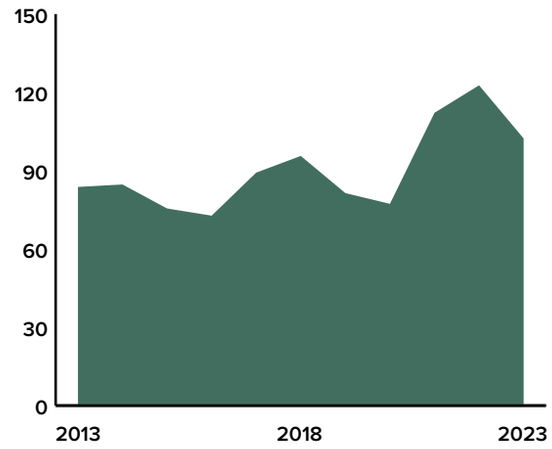
33 S&P Global Market Intelligence. World Exploration Trends 2024, PDAC Special Edition, March 2024. https://pages.marketintelligence.spglobal.com/rs/565-BDO-100/images/world-exploration-trends-2024.pdf

34 Price data from Cameco (uranium) and Market Insider (all other metals).

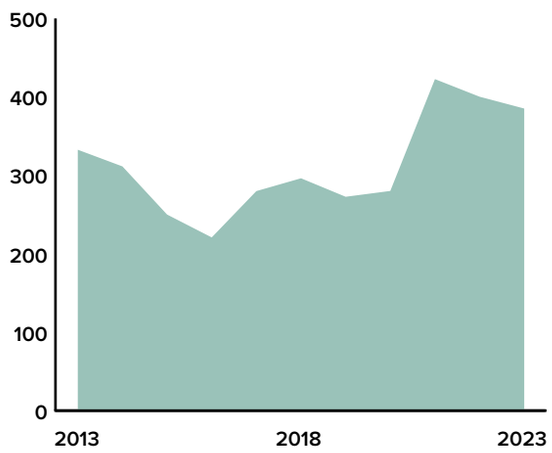
Uranium prices saw large increases in 2023. There is no open market for uranium. Instead, contracts are negotiated privately between buyers and sellers. Increases in prices in 2023 are thought to be the result of planned increases in nuclear capacity over the long term.[35]

Nickel and zinc prices both saw high prices in 2022 due to a lack of supply. However, in 2023 there was shift to oversupply that combined with decreases in construction in Europe and Asia. Indonesia raised its production of nickel from 771,000 tonnes in 2020 to 2.03 million tonnes in 2023, alone responsible for an almost 50% expansion in the global supply of nickel over only three years and a significant decline in nickel prices.

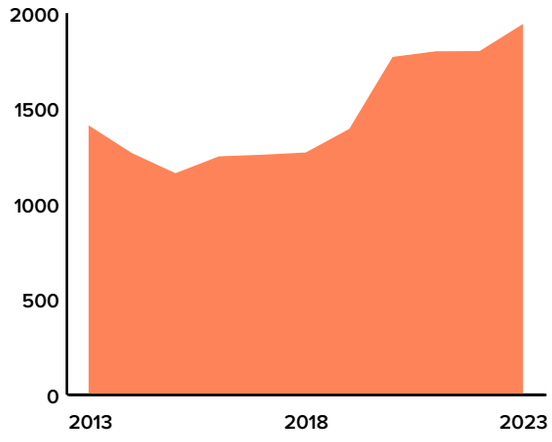
Aluminum (in US cents per pound)



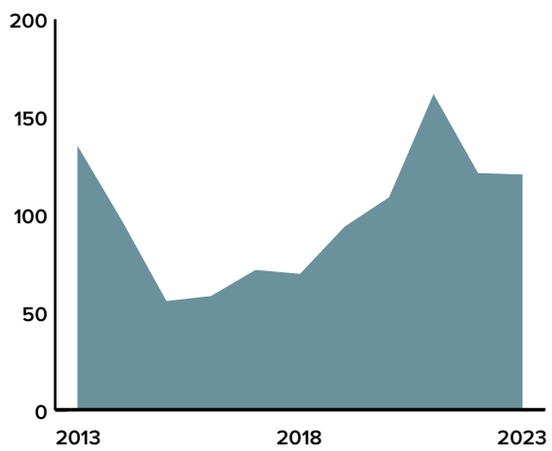
Copper (in US cents per pound)



Gold (in USD per troy ounce)



Iron Ore (in USD per dry metric tonne)



35 See, for example, the World Nuclear Association's Nuclear Fuel Report with requirements doubling for the reference scenario by 2040, and even the lower scenario requiring an increase of 33%. https://world-nuclear.org/our-association/publications/global-trends-reports/nuclear-fuel-report

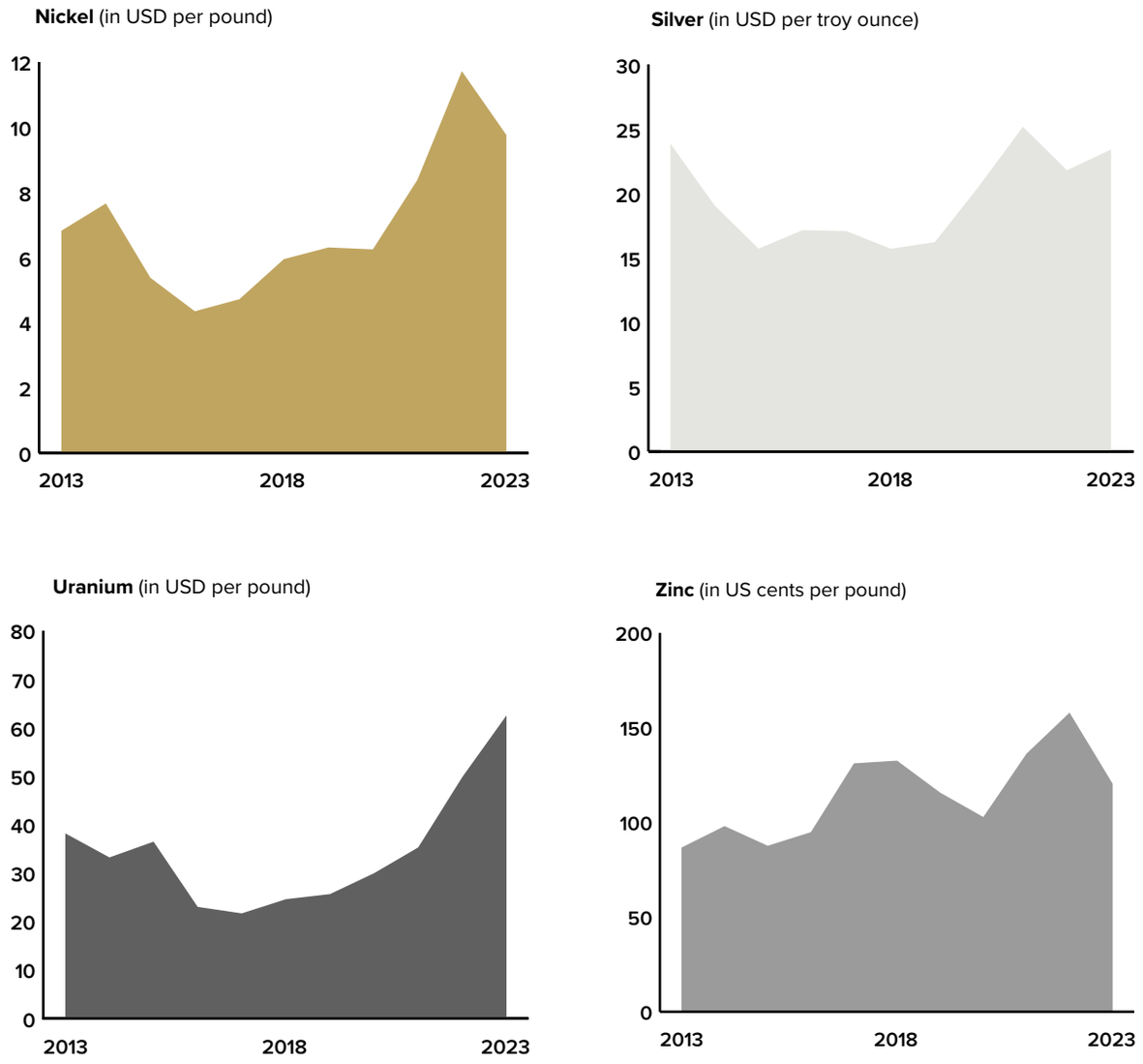


Figure 22: Prices of Selected Metals Since 2013[36]

Over the longer term, metals prices have generally decreased slightly from their highs in 2022. Figure 22 illustrates the downward pressure on many minerals and metals during the mid-2010s. Recent years have shown a robust increase in these metals relative to the baseline, with varying corrections in 2023.

Demand for mineral and metal products is likely to increase over the medium to long-term at an accelerating rate. The transition to a lower carbon future will result in increasing demand for battery minerals and metals, including copper, nickel, lithium and cobalt. Increasing geopolitical tensions and their implications for supply-chains mean that there is increasing desire to keep inputs to critical manufacturing capabilities close to home.

36 Price data from Cameco (uranium) and Market Insider (all other metals).

FINANCING

Canada is the leading global centre for mining finance. The Toronto Stock Exchange (TSX) and TSX Venture Exchange (TSX-V) list about 40% of the world's publicly traded mining companies. Combined, the two exchanges accounted for more mining equity capital raised ($45 billion, or 36% of the total raised worldwide) than any other exchange.[37]

At the end of 2023, 1,119 of the firms listed on the TSX and TSX-V were mining companies. Together, they had a combined market value of $517 billion and raised $7.6 billion in equity. TSX-listed mining companies mainly deal in gold, copper, uranium, silver, diamonds, zinc, nickel, lithium, iron ore, zinc and molybdenum. The number of listings of mining companies on both exchanges have been relatively steady in the past five years, but are down 25% over the past decade, as shown in Figure 23.

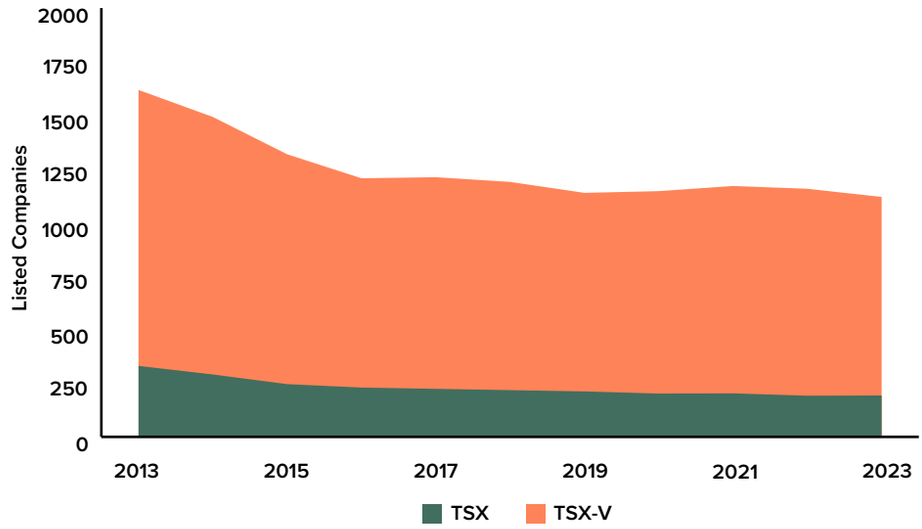


Figure 23: TSX and TSX-V Mining Listings by Year[38]

The two markets have a global audience: more than 250 analysts cover mining companies listed on the exchanges, and approximately 40% of all trading originates outside of Canada.[39]

Because of their global audience, access to investors, and liquidity, Canadian exchanges have traditionally been the most desirable location for initial public offerings for mining companies. In recent years, however, the Australian Securities Exchange has increased its share of initial public offerings (IPOs), as shown in Figure 24.

37 TMX. 2024 Guide to Listing: Toronto Stock Exchange / TSX Venture Exchange. https://www.tsx.com/ebooks/en/2024-guide-to-listing/

38 From Market Intelligence Group reports by TSX and TSX-Venture Exchanges. Using December monthly reporting for years 2013-2023.

39 Also from the TMX 2024 Guide to Listing.

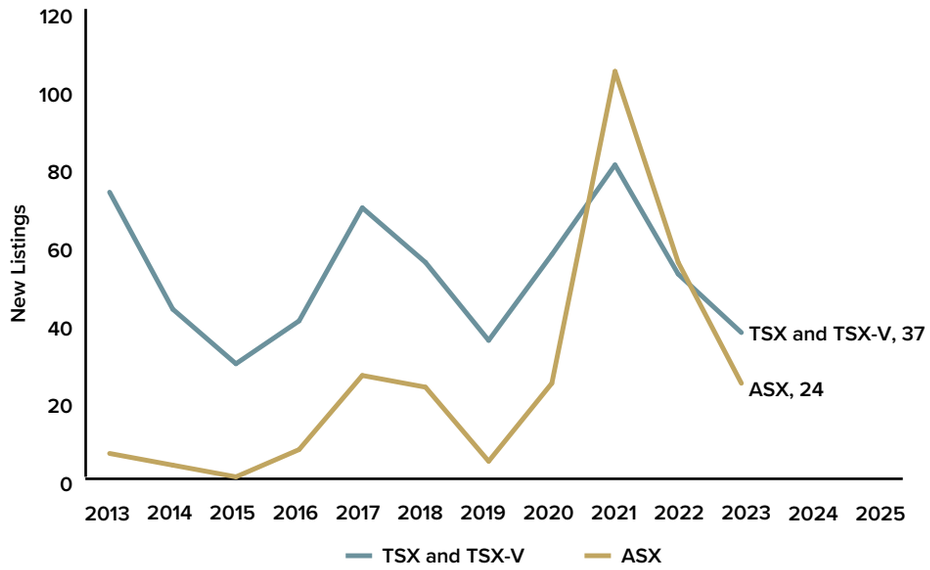


Figure 24: New Listings by Year, Canada and Australia[40]

Canada's pre-eminence in the world of mining finance should not be taken for granted. While there were 26 new listings on the TSX-V and 11 on the TSX in 2023, all were categorized as qualifying transactions, reverse takeovers, or "other." None were IPOs.

The Canadian exchanges give mining companies access to capital while offering investors a regulated market for venture investments. The ecosystem of businesses that support mining finance in Canada form a beneficial cluster that creates benefits for the sector and the whole economy.

Financing for the Junior Mining Sector

The mining sector has traditionally been divided into two types of company: junior and senior. Junior companies are nimble, flexible, and raise money on the equity markets to support their exploration activities. Senior mining companies are more experienced, larger, and generate cashflow from their operations and production instead of raising it on the market. When a junior company finds a mineral resource that could become a mine, they typically partner with a senior company to bring the mine into production.

Junior mining companies face persistent challenges raising the capital that they need to operate. In Figure 25, the variation in exploration and deposit appraisal expenditures by junior companies is visible: junior miners were able to spend under $600 million in 2015, but almost $2.5 billion in 2022 and $2 billion in 2023. Because juniors don't generate cashflow from their activities, they require access to capital for all aspects of their operation: for salaries, for drilling equipment, for modelling geology and for conducting feasibility studies. Without sufficient access to capital, the years of work required to move a project forward may be substantially delayed.

40 Using Initial Public Offerings (IPOs) on the Australian Securities Exchange for mining and materials companies from S&P Global Market Intelligence and IPOs, qualifying transactions, reverse takeovers and "other" transactions from the TMX Market Intelligence Group reports for each year for TSX and TSX-V.

When exploration spending is high, expenditures by junior companies tend to be slightly larger than senior companies. When spending is low, senior company spending predominates. At their recent low point in 2015 and 2016, junior companies were responsible for less than 40% of the exploration and deposit appraisal spending. Preliminary figures for 2023 indicate that junior companies spent about 50.9% of the $3.9 billion total. Spending is expected to rise slightly in 2024, with a very similar junior/ senior split.

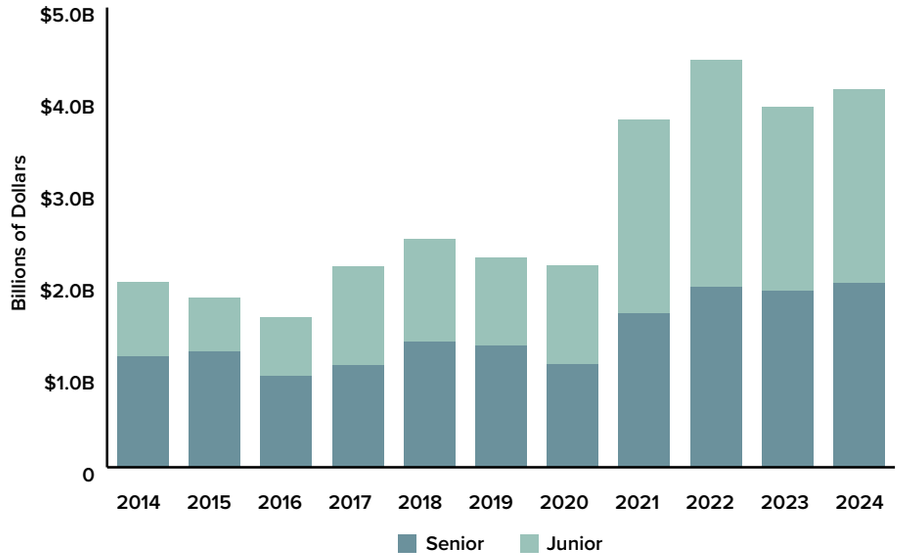


Figure 25: Mineral Exploration and Deposit Appraisal Expenditures, By Company Type, 2014 - 2024[41]

41 Natural Resources Canada, based on the Federal-Provincial-Territorial Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures. Data for 2023 are preliminary, for 2024 intended.

Mining Industry Capital Investment

In 2023, capital spending by the mining industry made up almost 7% of Canada's total capital expenditures on non-residential tangible assets.[42] The value of capital spending in mining and quarrying alone was $16.9 billion in 2023. This is up from a recent low of $9.5 billion in 2020, as shown in Figure 26. Planned capital expenditures for 2024 are $23.6 billion for all stages of the sector.

Capital investment in all sub-sectors was up in 2023 from 2022, except non-metallic mineral product manufacturing, which was steady. Forecasts for 2024 see a slight increase in investment from 2023 in all sub-sectors except mining and quarrying and support activities.

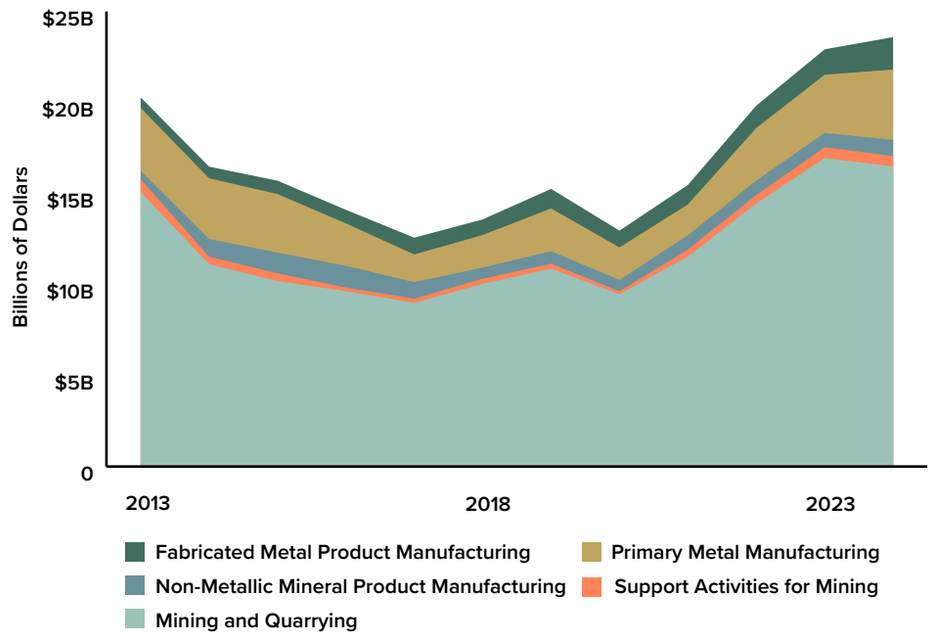


Figure 26: Capital Expenditures by the Mining Industry[43]

Although capital spending covers all stages of the industry, 90% is typically invested in extraction and smelting/refining. Within Stage 1 (mining and quarrying), approximately two thirds of capital spending goes towards construction and one-third towards machinery and equipment. In Stage 2, primary metal manufacturing, the ratio is reversed, with about one-fifth of spending directed to construction and the rest to machinery and equipment.

42 From Statistics Canada. Table 34-10-0035-01 Capital and repair expenditures, non-residential tangible assets, by industry and geography (x 1,000,000). Using NAICS codes 212, 327, 331, and 332. NAICs code 213 is modified using the assumed ratio of mining activities.

43 Statistics Canada. Table 34-10-0035-01 Capital and repair expenditures, non-residential tangible assets, by industry and geography (x 1,000,000). Data for 2023 is preliminary, for 2024 is intended. NAICS codes the same as previous chart.

Metal ore extraction ($11.7B) saw the bulk of the investment in Stage 1 in 2023. Investment in non-metals extraction ($4.5B) and coal mining ($783M) made up the balance, as shown in Figure 27.

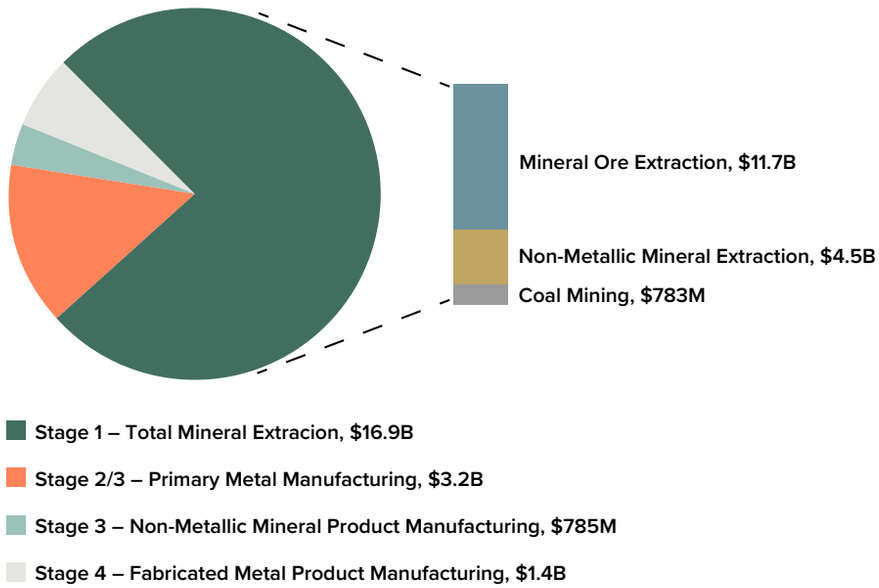


Figure 27: Capital Investment by the Mining Industry, 2023[44]

LOOKING FORWARD

Federal, provincial and allied international governments have recognized that Canada has the raw materials and value-added mineral and metal manufacturing expertise to help meet their growing demand while diversifying supply sources. In short, countries diversify their supply chains with improved security and sustainability when they source materials from Canada.

Over the last 15 years, several Canadian senior mining companies have been acquired by multinationals, resulting in fewer head offices in Canada. Canada's share of global production for critical minerals and metals has been decreasing, with other jurisdictions capturing greater market share of growing global demand. Capital investment continues to be substantially below its level a decade ago.

Canada needs to do more to encourage the development of the new Canadian mines and processing facilities that the world needs. Increasing investment in the mining sector should be a top priority for federal, provincial and territorial governments. Natural Resources Canada estimates that, for Canada's new battery factories alone, an additional $8.1 billion is needed for new mines and $16.1 billion for midstream processing.

44 Statistics Canada. Table 34-10-0035-01 Capital and repair expenditures, non-residential tangible assets, by industry and geography (x 1,000,000). Data for 2023 is preliminary.

Increasing Critical Mineral Production

To meet the rapidly growing demand, particularly from electric vehicle production, Canada must expand its mineral production and processing capacity. In the short term, this means extending the life of existing mines. In the long term, Canada needs to develop new mining, refining, and processing capabilities. This will require enhanced incentives, tax credits, and expedited policy measures, and effective implementation of the Critical Minerals Strategy and other existing commitments.

The Clean Technology Manufacturing Investment Tax Credit (CTM-ITC) aims to accelerate Canadian critical mineral production, processing, and recycling. Increasing critical minerals growth in Canada is important, as the United States is encouraging its own domestic activities in the area through the Inflation Reduction Act. The attractiveness of the American incentives could redirect investments and capital towards the U.S. As a result, Canada must increase its competitiveness through targeted measures such as the CTM-ITC and the inclusion of mine development costs under this tax credit. Expanding the eligibility of the CTM-ITC to include intangible mine development-related costs—such as shaft sinking, ventilation, underground vertical and lateral development, and infrastructure—during the 2024-2034 period would help grow critical mineral production and facilitate the life extension of existing mines.

Fixing the Tax Code to Encourage Production and Exploration

Copper, one of the six priority critical minerals, is essential to the energy transition. It plays a key role in renewable energy technologies, electric vehicles, and efficient power grids. Its high conductivity and durability are critical for the reliability and performance of clean energy systems.

In Canada, copper is often found with other valuable metals in polymetallic deposits. The CTM-ITC was introduced to enhance copper production, but it required that 90% or more of the value of production be one of the six priority minerals. Copper is seldom found in concentrations high enough, on its own, to meet this threshold. Of all existing copper mines and all known advanced projects, only one met this 90% threshold.

The Fall Economic Statement, 2024, included a mining-focused amendment to correct this eligibility threshold to 50%, retroactive to January 2024. This change will ensure that copper projects benefit from the CTM-ITC as intended.

The Fall Economic Statement also included a proposed amendment to the Alternative Minimum Tax that will largely restore the value of the Mineral Exploration Tax Credit.

Mineral exploration relies heavily on flow-through shares, which provide tax advantages to mitigate the high risks of exploration. Previous changes to the inclusion rate for capital gains and the Alternative Minimum Tax reduced incentives to invest in flow-through shares. The amendment proposed in the Fall Economic Statement will ensure investment dollars continue to support mineral exploration in Canada.

The Mining Association of Canada encourages Parliamentarians to work together to support Canada's domestic mining industry and ensure that these key legislative fixes are advanced quickly into law. It is unclear that the above amendments will be enacted in the current Parliament; the industry hopes the next government and Parliament acts quickly to reintroduce and pass them should this be the case.

Targeted Incentives and Security Review for Critical Minerals

Canada offers a competitive income tax framework for research and development, but there are limitations to the program with respect to critical minerals. Comparatively, Australia's critical minerals plan establishes a richer income tax benefit for research and development that encourages corporations in the critical minerals sector. While there has been reluctance by Canada to develop tax policy favoring one industry over another, there appears to be broad consensus that critical minerals cut across the fabric of our society and may fall into an exception from this policy norm.

Canada's interest in critical minerals is based, in part, on a desire to increase its security through cooperation with like-minded allies. Production of some critical minerals is concentrated in countries that use non-market practices to manage extraction and distribution. As a result, Canada and its allies cannot be confident in a steady supply in the future due to geopolitical uncertainty, trade wars, and other sources of uncertainty.

Environmental, social and governance standards are also a concern in some critical minerals producing countries. Consumers increasingly demand that minerals and metals are obtained in a sustainable, low-carbon manner.

As the government plays an increasingly active role in assessing the national security risks associated with mergers and acquisitions of Canadian mining companies, it must also weigh the risks of removing access to existing investment channels. The government should be mindful of the appeal of Canadian head offices re-domiciling abroad to maintain access to investment streams that are ensnared in a lengthy and difficult review process.

Investing in Critical Minerals Supply Chain Resilience

The Canadian government needs to be more involved in supporting the critical minerals value chain. Other governments, particularly the United States, are making significant financial commitments to advance their strategic priorities in the area. Canada cannot rely solely on the private sector to make the critical minerals investments that will be needed.

A key challenge is the insufficient access to financing for mine production, especially for smaller companies. While exploration may identify promising mineral deposits, securing funding for subsequent stages of mine development poses a critical obstacle. Addressing this challenge requires the introduction of venture capital and tailored financial instruments.

Venture capital can play a crucial role in supporting smaller mining companies, especially in financing pre-feasibility and feasibility studies. These comprehensive studies enhance companies' ability to attract capital but require substantial financial resources to conduct. Venture capital can help companies determine project profitability and feasibility as they move toward production.

The Government of Canada should direct Export Development Canada and the Business Development Bank of Canada to expand their mandates and collaborate with existing stakeholders in the critical minerals sector. Enabling the Strategic Innovation Fund to invest in critical minerals projects will enhance this partnership, fostering innovation, research, and development, and establishing Canada as a global leader in the area.

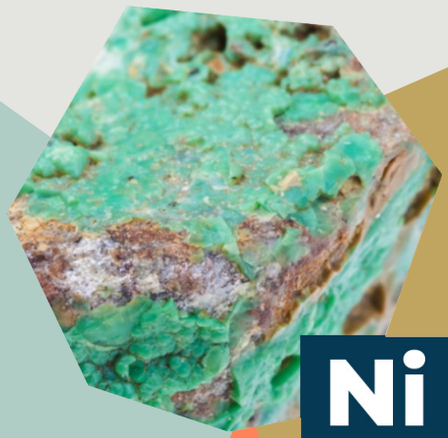
Photo courtesy of Agnico Eagle

Expanding funding to support early-stage venture capital investments is also vital for securing new mines, particularly in remote locations. Strategic collaborations among Canadian government bodies, industry stakeholders, and private investors will be crucial for financing and supporting the growth of the critical minerals sector.

A joint industry-interdepartmental task force should be established to provide regular and ongoing input in support of Canada as a secure and reliable source of critical minerals. This task force should be mandated to define what policy success realistically looks like in Canada in strategic value chains, set targets for measuring progress, and refine the policies needed to attain them. To support a strong North American supply chain, the task force should collaboratively explore complementary measures to those of our allies (e.g., price floors, government stockpiling, and government off-take agreements).

SECTION 4

The People: Safety, Employment and Costs



Ni
NICKEL

If we had a **nickel** for all its uses, in things like:

- Healthcare
- Electric car batteries
- Food processing
- Aerospace
- Electronics
- Home appliances

Canada's mining workforce is growing. The demand for metals and minerals, sustainably sourced raw materials and high standards of environmental stewardship and community engagement mean that a diverse, skilled and knowledgeable mining workforce is increasingly important.

The strength of the mining industry is its people, and one of its biggest challenges is to diversify its workforce to make sure it has enough workers to support and expand its operations. The industry will require at least 135,000 new employees over the next decade; increasing the proportion of women and visible minorities will be key to meeting that challenge.

Canada's miners can be proud of their record of accomplishment in Indigenous employment. The industry is, proportionally, the largest private sector employer of Indigenous peoples in Canada. Total Indigenous employment in mining and quarrying alone increased to over 12,000 people in 2024. Given the proximity of many mining operations to Indigenous communities, even higher participation rates should be achievable.

SAFETY

Safety comes first in mining. Canadian mining companies work hard to create a positive safety culture with employees, contractors and communities. The results of this dedication to safety can be seen in the decline in rates of injury across the industry over the past decade.

Between 2012 and 2022, the most recent year for which data is available, the rate of fatal injuries per 10,000 employees fell from 3.51 to 2.16, a decline of 38%. Lost time injury rates fell over the same period from 315 to 270 per 10,000 employees (down 14%), as shown in Figure 28.

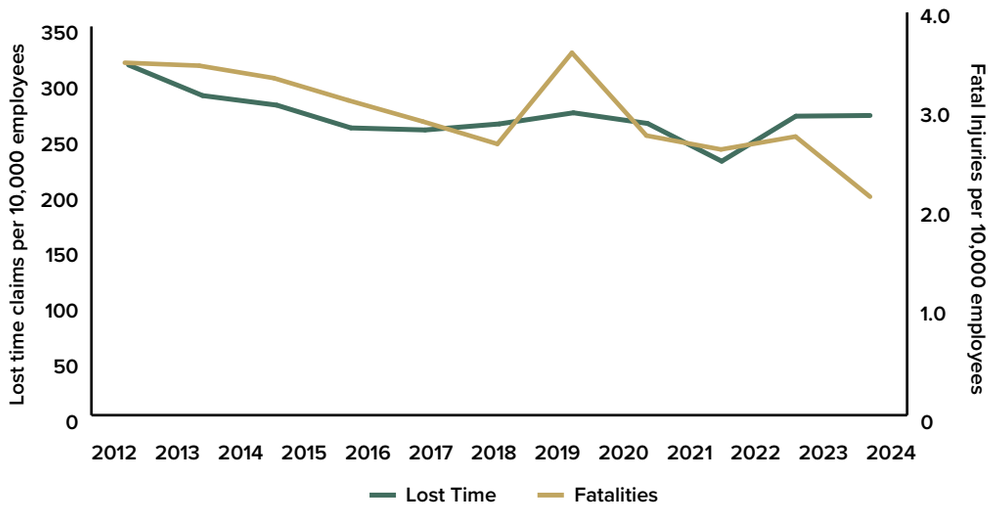


Figure 28: Compensated Injury Rates in the Minerals Sector[45]

45 From industry-specific data from the National Work Injury/Disease Statistics Program (NWISP) of the Association of Workers' Compensation Boards of Canada and Statistics Canada's Employment by Industry, Annual, Table 14-10-0202-0. Using sector definition that includes NAICS 212, 327, 331, and 332. NAICS 213 (support activities for mining, and oil and gas extraction) was adjusted based on the ratio of 211 to 212.

EMPLOYMENT

The mining industry directly employed 430,000 people in 2023. Since the Canadian labour force was about 20.2 million, direct employment in mining accounted for 2.1% of all jobs, or one in 48. Indirect employment added 281,000 jobs, for a total of 711,000 jobs in total, or one in 28 jobs in Canada.

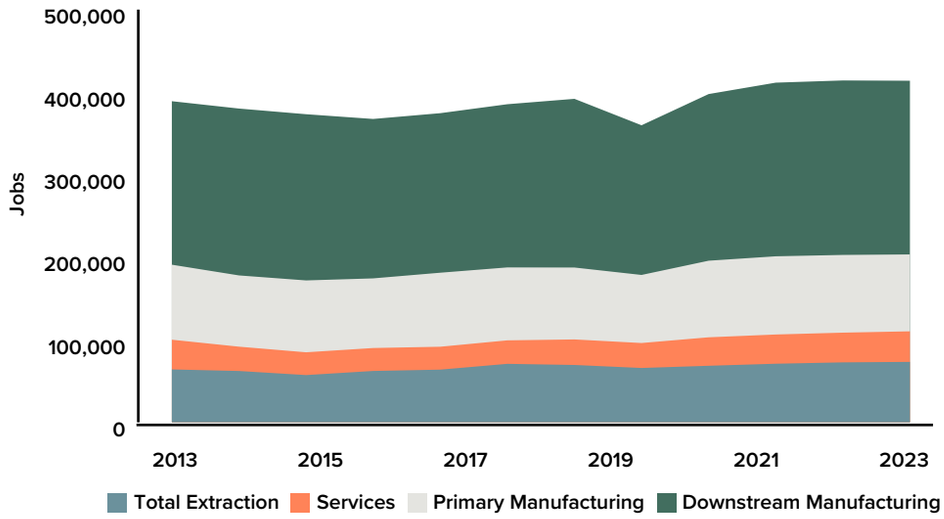


Figure 29: Employment in Mining, 2012-2023[46]

Employment by subsector and product group is shown in Figure 29. About 44% of all employment in the sector is in downstream manufacturing: metal products like steel pipe, cutlery, cable, and more. Primary manufacturing makes up 28% of employment in the sector, and extraction makes up 21%. Services is the smallest subsector, at 7% of the sector's overall employment.

The unemployment rate for the mining sector is lower than the national average. In November 2024, the unemployment rate for mining and quarrying was 4.0% compared to a 6.0% for all industries.

The post-pandemic labour market has been challenging for employers of all types, but there are signs that conditions are improving. Business leaders across all industries in Canada have reported falling rates of labour shortages: in April 2024, only 15% of businesses reported labour shortages. This was the first time since 2020 that the percentage had dropped below the historical average, as shown in Figure 30.

46 Statistics Canada. Table 38-10-0285-01 Natural Resources Satellite Account, Indicators (x 1,000,000)

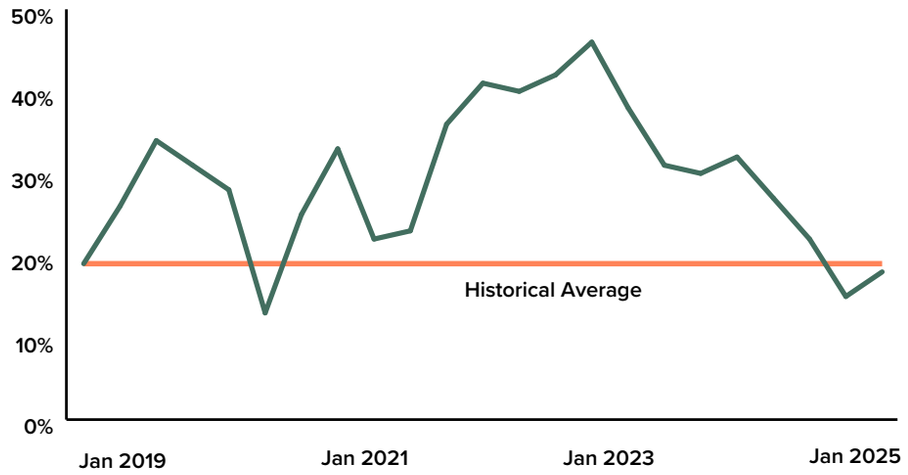


Figure 30: Share of Businesses Reporting Labour Shortages[47]

This trend is also visible in the mining and oil and gas sector, specifically. The survey on Canadian Business Conditions tracks perceived obstacles to business over the next quarter. After a high point in the third quarter of 2023, reports of shortages in the labour force declined substantially as an obstacle for businesses in the sector, as shown in Figure 31.

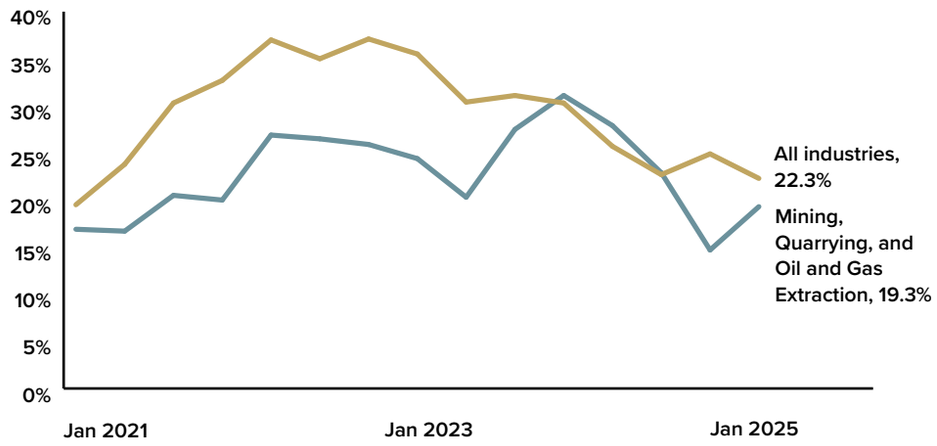


Figure 31: Shortages of Labour Force as an Obstacle to Business, Percent of Businesses Reporting[48]

A tight labour market is a challenge for mining employers because it drives up recruitment costs and wages. A return to a more balanced market is beneficial and will provide stability as the sector recruits and trains the next generation of employees.

47 Bank of Canada, Business Outlook Survey. Results of the Third Quarter 2024 Survey, Chart 4. "Does your organization face shortages of labour that restrict your ability to meet demand?"

48 Statistics Canada. Table 33-10-0860-01. Business or Organization Obstacles Over the Next Three Months, Third Quarter Of 2024. Also using previous quarterly tables to 2021. Statistics Canada does not aggregate or compare this data over time.

New Workers

Labour market changes since the pandemic have been an impediment at a time when the mining industry needs new workers. The Mining Industry Human Resources Council's (MiHR) *Canadian Mining Outlook 2024* estimates that the industry will need to hire a minimum of 135,000 people over the next decade. These new hires are required to replace retirees and fill new positions to meet baseline production targets.

MiHR looked at three scenarios to predict the number of workers that will be required between 2024 and 2034, as shown in Figure 32.[49] The "baseline scenario" uses employment trends in each subsector and predictive variables like commodity prices to estimate future employment. The "expansionary scenario" is the upper bound 20% prediction interval of the baseline scenario, and the "contractionary scenario" is the lower 20% prediction interval. The expansionary scenario might be caused by a new, high-price regime for commodities, while the contractionary scenario could be the result of sustained lower commodity prices.

Figure 32: MiHR Scenarios, Cumulative Net Change in Employment 2024-2034[50]

49 MiHR uses a different definition of the mining sector from NRCan and from this report. In brief, it excludes some primary and all downstream manufacturing and includes non-conventional oil extraction. Further details are provided in Appendix A of MiHR's Canadian Mining Outlook 2024. MiHR's definition of the sector is smaller than the NRCan definition of the sector.

50 From Table 4 of MiHR's Canadian Mining Outlook 2024.

The baseline scenario anticipates 5,677 net new jobs in the sector by 2034. The contractionary scenario sees a net decrease of 29,782, and the expansionary scenario sees an increase of almost 50,000 jobs.

In all cases, however, retirements and other labour force exits will require substantial hiring. Even the contractionary scenario forecasts 136,636 new hires. The baseline scenario forecasts new hiring of almost 200,000 people, and the expansionary scenario forecasts more than 250,000 as shown in Figure 33.

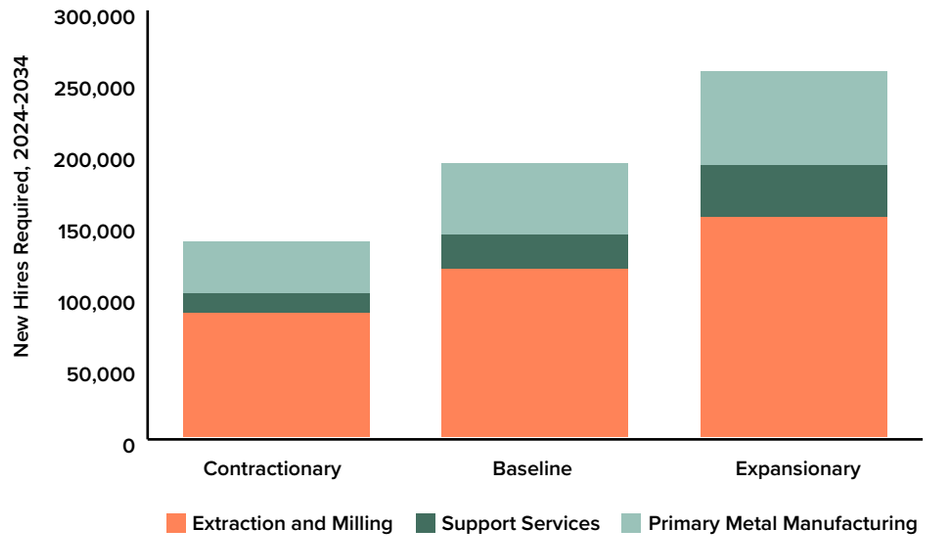


Figure 33: MiHR Forecast Hiring Requirements by Sector 2024-2034[51]

Employees are projected to be required in a variety of jobs across the sector – from trades to production occupations to human resources.

Notwithstanding short-term movements of the labour market, the industry's challenge is to manage generational turnover and changing workforce characteristics.

51 Table 7 of MiHR's Canadian Mining Outlook 2024.

Mining Education

The share of mining employees with post-secondary education has been trending upward: MiHR reports that employees with a university degree or certificate increased by five percentage points between 2012 and 2023, and employees with other post-secondary education (e.g., trades certificate, diploma, community college) rose by a similar amount.[52] In November 2024, 47% of workers in mining and quarrying had some type of post-secondary certificate, compared to a 34% average across all industries.[53]

On the other hand, university degrees in technical subjects related to mining have seen substantial recent declines. From 2017 to 2022, enrollment and undergraduate degrees awarded declined in all three types of engineering most closely associated with mining. Degrees awarded in geological engineering declined 17% from 2017 to 2022, materials/metallurgical engineering declined 31% to 155 and mining/mineral engineering declined 50% to 171, as shown in Figure 34.

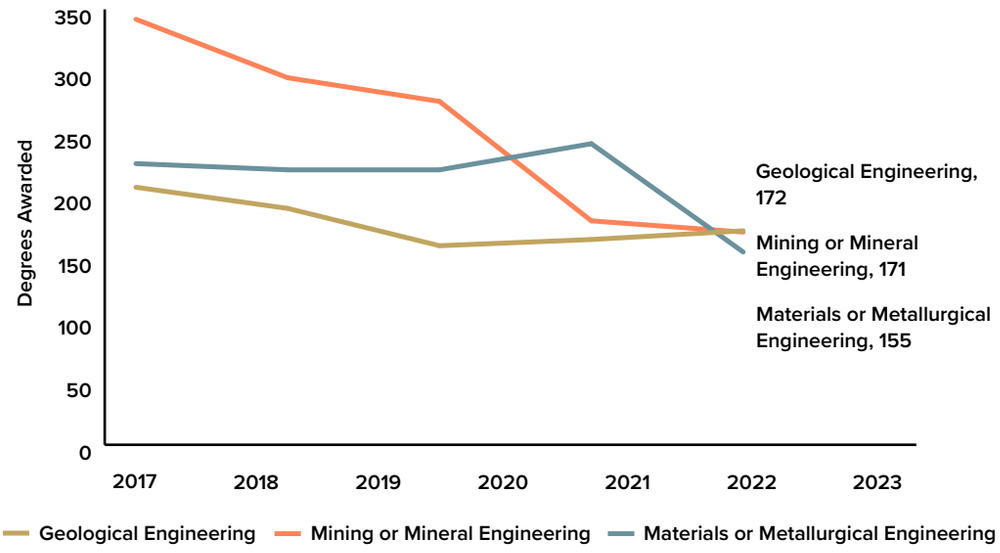


Figure 34: Mining-Related Engineering Undergraduate Degrees Awarded, 2017-2022[54]

52 Figure 11 of MiHR's Canadian Mining Workplace Profile 2024.

53 MiHR's Monthly Labour Market Dashboard for November 2024.

54 From *Canadian Engineers for Tomorrow: Trends in Engineering Enrolment and Degrees Awarded 2022* by Engineers Canada. Link. Appendix A, Table UD.1.

Trends in graduate degrees are steadier, with Masters and PhD awards increasing in two of the three types of mining-related engineering, as shown in Figure 35.

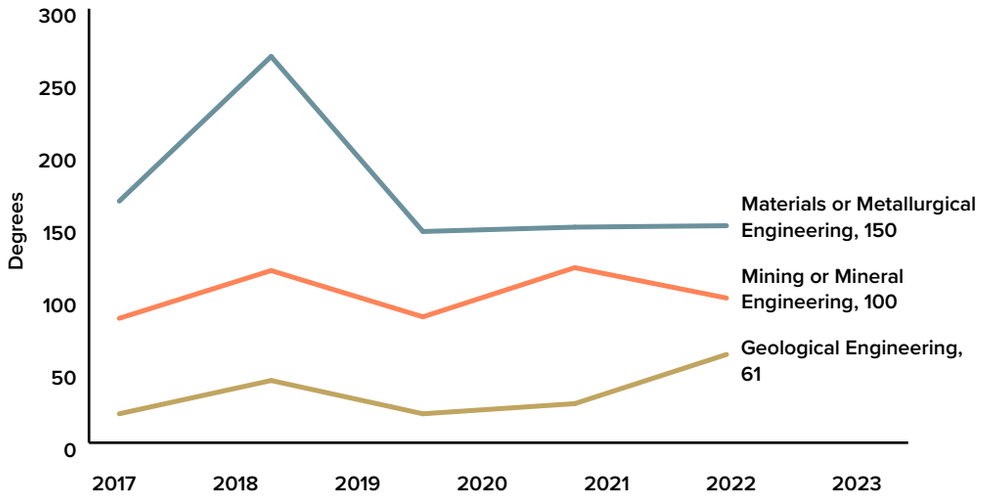


Figure 35: Mining-Related Engineering Graduate Degrees Awarded, 2017-2022[55]

This decline in graduates from engineering schools is a concern: there may not be enough new graduates to replace retiring skilled and experienced older employees. This places additional onus on industry to work collaboratively with government and educational institutions to ensure that new entrants to the industry have the skills required for high-demand jobs within mining.

55 From *Canadian Engineers for Tomorrow: Trends in Engineering Enrolment and Degrees Awarded 2022* by Engineers Canada. Link. Appendix A, Table UD.1.

Women in Mining

The mining industry has historically been a male-dominated sector. Mining companies across the country increasingly have women occupying senior leadership roles and working at the site level, but there is still significant work to be done to achieve levels of female participation in the industry that more closely resemble those of the overall Canadian workforce.

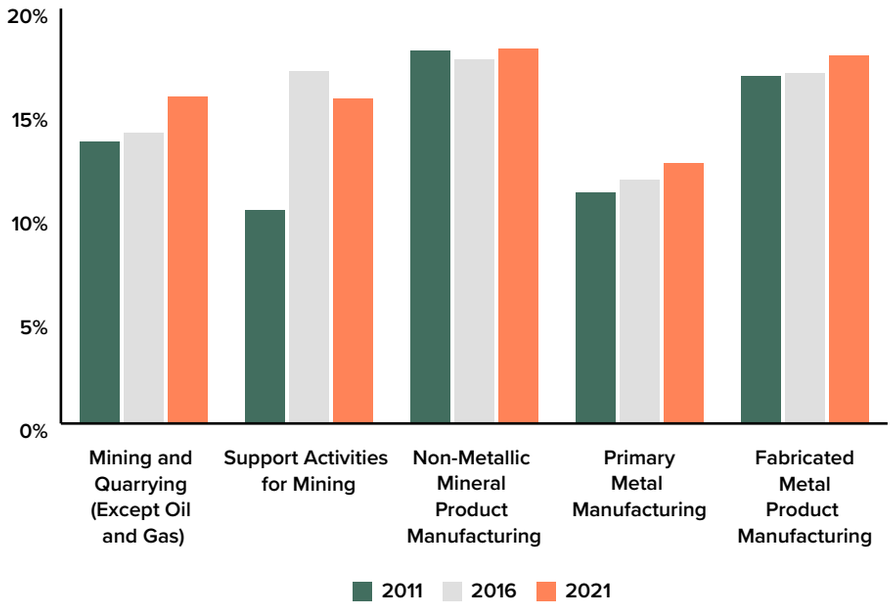


Figure 36: Women's Employment in Mining Subsectors, 2011-2021[56]

According to Canada's most recent census data, women's representation has increased in mining-related employment. From 2011 through 2021, the proportion of women in all stages of the mining process has increased, as shown in Figure 36.

More recent data from the Statistics Canada's Labour Force Survey has shown women's share of employment in mining and quarrying with a very wide range over time: a high of 20.3% was measured in January 2023, and a low of 12.5% observed in March 2024.

The Canada Business Corporations Act and annual reporting for listed firms on the TSX both require the production of data on women on corporate boards and in executive roles. Osler, Hoskin & Harcourt LLP reviews and summarizes these disclosures every year to produce a report on diversity in Canadian business. The percentage of women directors and board members have both increased since 2020, to 27% for directors and to 18% for executives as shown in Figure 37.

56 From National Household Survey (2011) Table 99-012-X2011034, Census 2016 Table 98-400-X2016364, and Census 2021 Table 98-10-0448-01.

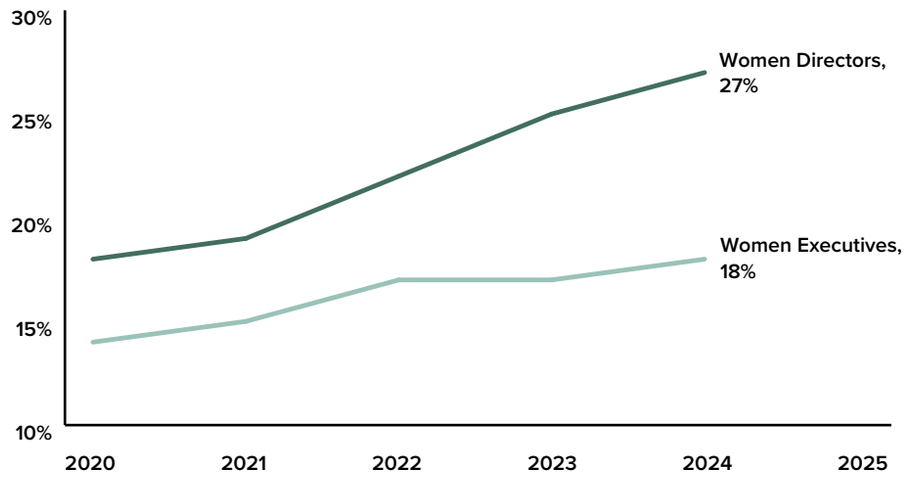


Figure 37: Women in Executive and Director Roles in the Mining Industry[57]

These figures agree with the results obtained from the Labour Force Survey for the larger mining, quarrying and oil and gas extraction sector, which found 17.4% of senior managers, 28.1% of other managers, and 25% of all other employees in the sector were women.[58]

The industry is making continuing efforts to increase the proportion of women in mining, but success will require efforts at both recruitment and retention.

Visible Minorities

Racialized groups make up more than a quarter of Canada's labour force. Statistics Canada expects that immigration will remain the main driver of Canada's population growth over the coming decades, continuing a trend that began in the early 1990s. By 2041, a quarter of Canadians will be part of a visible minority group, and one in four will have been born in Asia or Africa.[59] It will be critical for the mining industry to recruit new Canadians and visible minorities to fill the expected hiring requirements of the next decade.

In 2016, just over 20% of the Canadian workforce were visible minorities. In 2021, that percentage had increased by more than five percentage points to almost 26%. The share of the mining workforce made up of visible minorities has also increased but is still substantially below the labour force percentage, as shown in Figure 38.

57 Andrew MacDougall, John M. Valley, Jessie Armour, Aliza Zigler. Report: 2023 Diversity Disclosure Practices – Diversity and leadership at Canadian public companies. Previous year data sourced from the 2022 report and 2021 report.

58 Statistics Canada. Table 33-10-0791-01. Average Percentage of Women and Men in Management Positions, First Quarter of 2024.

59 Statistics Canada Daily Bulletin*: Canada in 2041: A larger, more diverse population with greater differences between regions*.

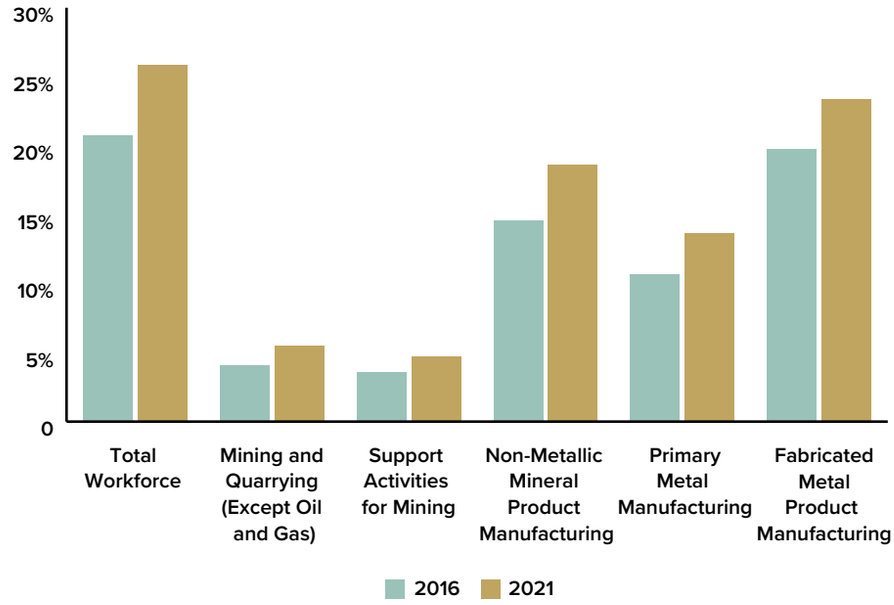


Figure 38: Representation of Visible Minorities in the Mining Workforce, 2016-2021[60]

MiHR reports data on the immigrant workforce using Statistics Canada's monthly Labour Force Survey, and has observed increases since 2020: in November 2024, immigrants made up 12% of the workforce in mining and quarrying, compared to an average of 34% in all industries.[61]

Wages

The Canadian mining industry has some of the highest wages and salaries of all sectors in Canada (see Annexes 6 and 7 for details). The average total compensation per job in the mining industry in 2023 was $147,144, which surpassed the average for workers in forestry, manufacturing, finance and construction. The average total compensation per worker in mining, smelting and refining was more than 90% higher than the average for all jobs in Canada. This gap has been consistent for more than a decade, as shown in Figure 39.

60 Statistics Canada (2016 Census Table 98-400-X2016360, 2021 Census Table 98-10-0599-01).

61 MiHR Monthly Labour Market Dashboard for November 2024.

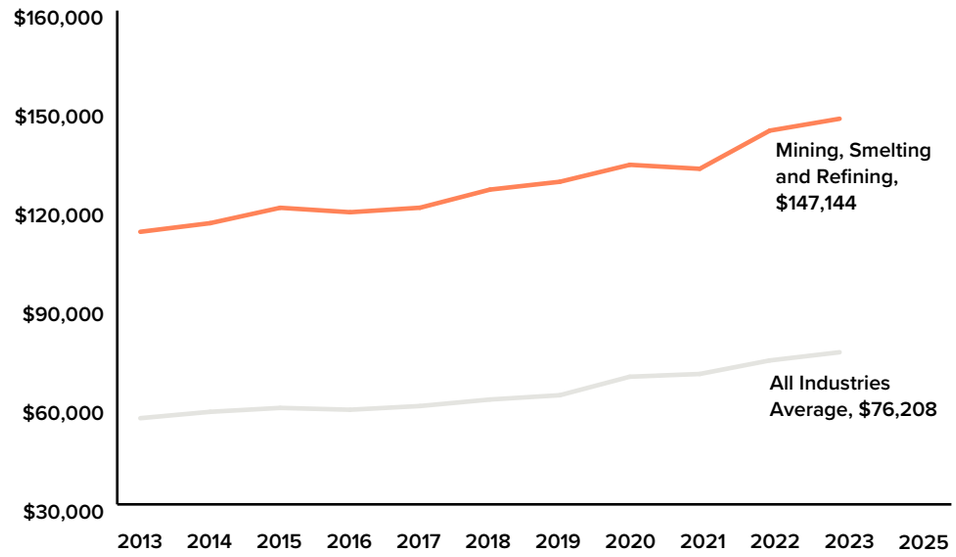


Figure 39: Mining Industry Wages, 2013-2023[62]

In remote regions or in situations where workers rotate, higher wages help to attract and retain them. High wages can also help to retain skilled employees over the long term.

INDIGENOUS PEOPLES

Proportionally, the mining industry is the largest private sector employer of Indigenous peoples in Canada. The most recent information on Indigenous employment in mining and quarrying indicates that more than 12,000 Indigenous peoples are employed in the sector.[63] In 2023, Indigenous workers' average representation was about 12.8% of the *Mining and Quarrying (NAICS 212)* workforce, comparatively higher than 3.9% across all industries.

The mining industry has proven an effective vehicle not just for Indigenous employment, but also for skills training and upward mobility. For example, Indigenous peoples in the mining workforce are increasingly pursuing formal education credentials. According to 2019 MiHR research,[64] from 2006 to 2016, the share of Indigenous peoples in the mining workforce with a college, CEGEP or other non-university certificate or diploma rose by three percentage points, as did the rate for those with a university certificate, diploma or degree at bachelor level or above. The most recent 2021 census shows these numbers to be stable at the 2016 levels.[65]

Potential for increased Indigenous employment remains strong. More than 200 producing mines and thousands of exploration properties are located within 200 km of Indigenous communities. Many mines and projects are located on traditional lands.

62 Statistics Canada Table 36-10-0489-01. Natural Resources Canada.

63 MiHR Monthly Labour Market Dashboard for November 2024.

64 MiHR. 2019 Canadian Mining Outlook. Figure 21.

65 MiHR Equity Deserving Groups in Canada's Mining Industry 2024. Figure 38a.

Between 2000 and 2022, mining companies and Indigenous communities or groups signed more than 500 agreements.[66] These agreements cover activities from exploration to mine development and establish the way that companies and communities collaborate. The circumstances of each agreement are different, so the agreements are unique, covering topics like community benefits, employment targets and compensation for adverse impacts. The number of agreements by province and territory is shown on Figure 40.

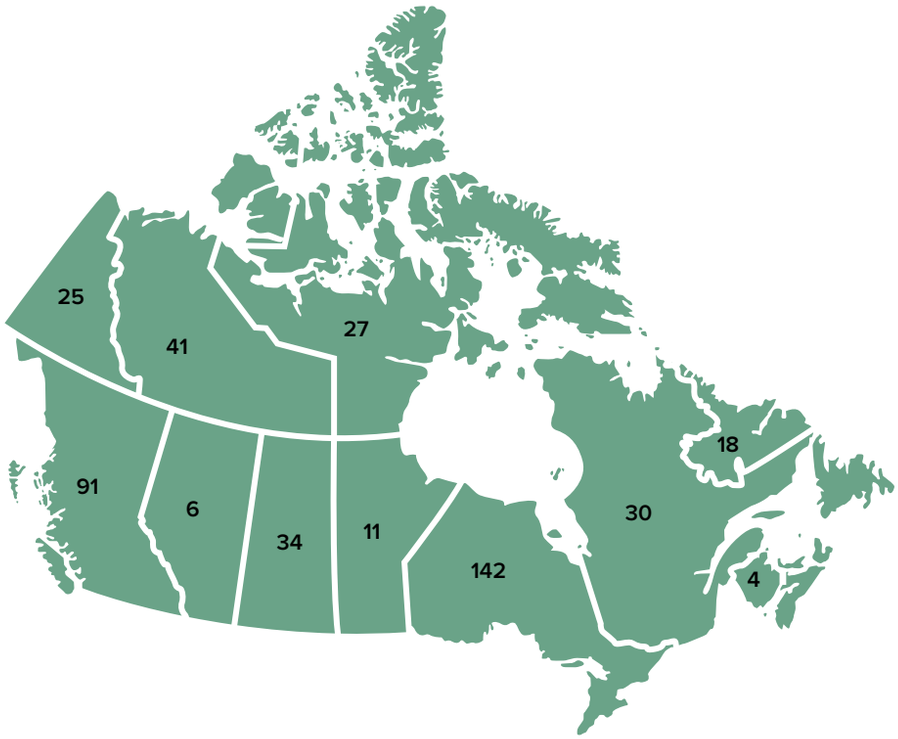


Figure 40: Active Indigenous Mining Agreements by Province and Territory[67]

LOOKING FORWARD

Whatever the short-term trends in employment, long-term social and demographic challenges undermine the mining sector labour supply and its ability to respond to industry growth. Canada's mining industry is facing a people crisis.

The Mining Industry Human Resources Council (MiHR)

MiHR is an independent, non-profit organization that delivers the needed solutions by driving collaboration among sector stakeholders to identify opportunities and address the human resource and labour market challenges facing the Canadian minerals and metals sector. Members of the Mining Association of Canada, along with the government, provide financial support to MiHR.

66 Natural Resources Canada. The Canadian Critical Minerals Strategy.

67 The Atlas of Canada. Lands and Minerals Sector - Indigenous Mining Agreements.

MiHR produces valued, actionable and responsive labour market information that supports the decision making and strategic objectives of mining stakeholders, including governments, employers, communities and many others.

MiHR recently launched the *Canadian Mining Workforce Analytics*, an online data visualization tool that offers mining stakeholders a comprehensive look into select occupations so they can improve their response to evolving workforce needs. In 2024, MiHR also released reports on labour market conditions, workplace characteristics, the mining supply sector, and occupational spotlights on key occupations.

Employment and Social Development Canada (ESDC) has traditionally provided annual support to MiHR through its Sectoral Initiatives Program (SIP). Ongoing, reliable and multi-year funding through the SIP program will allow MiHR to continue providing public labour market information for the minerals and metals sector. This information is invaluable to employers and informs all mining stakeholders about labour market trends to help them make informed decisions – including Indigenous organizations, colleges and universities, organized labour, industry associations and various levels of government.

ESDC can also assist the mission of MiHR by:

- Supporting National Occupational Standards, training and certification through SIP.
- Extending the Student Work Placement Program to support work-integrated learning. MiHR's work-integrated learning program has supported more than 2,250 student placements to date.
- Including the minerals sector in ESDC's Sustainable Jobs Training Fund, given the importance of the mining sector to a green economy.

MiHR's efforts to increase youth engagement with the mining sector has also been supported by Natural Resources Canada's Science, Technology & Innovation Program. The program allowed for placement opportunities through wage subsidies. The government can continue to support youth in employment through sustained, long-term commitment to the program.

Increasing Youth Awareness

MiHR's *Mining Needs You* career awareness campaign aims to help youth in Canada see mining as an innovative, challenging and rewarding career choice.

In partnership with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), MiHR launched the *Mining Needs You* Career Ambassador Program to connect knowledgeable and passionate industry representatives with classrooms and youth groups to increase awareness of the breadth of career opportunities mining offers and the sector's role in environmental sustainability, social responsibility and technological innovation.

MiHR also partnered with the Prospectors & Developers Association of Canada and CIM to co-host *Mining Needs You* virtual career fairs and provide resources on its campaign web site.

NRCan has provided recent support for the program, allowing MiHR to produce an interactive careers map to assist students and jobs seekers navigate mining career opportunities.

To expand *Mining Needs You*, MiHR has established a pan-Canadian coalition of industry stakeholders to commit to funding a sustained mining career awareness campaign that takes a sectoral approach to solve the minerals and metals sector's people crisis. The Government of Canada should support this coalition to help the sector attract and recruit youth.

The mining industry supports a successful, safe, high-paid, technically adept workforce. Through continued efforts, it will be possible to enhance the industry's track record of success at hiring, training and retaining these skilled workers through the next generation.

Commitment to Reconciliation

In 2019, the Mining Association of Canada launched the updated *Towards Sustainable Mining* (TSM) *Indigenous and Community Relationships Protocol*, which reflects all three aspects of the Truth and Reconciliation Commission's Call to Action 92. The protocol is designed to facilitate strong relationship building through collaborative engagement and decision-making processes. It establishes practices that align with the principle of free, prior and informed consent (FPIC). The protocol builds on the mining sector's successes with Indigenous employment, business partnerships and support for education and skills-training initiatives and includes specific criteria focused on company-community collaboration, including ensuring Indigenous peoples have equitable access to opportunities.

The protocol also seeks to ensure that management and staff are provided with education and awareness training on the history, traditions and rights of Indigenous peoples. Members of the Mining Association of Canada must evaluate, publicly report and independently verify their performance against these criteria at each of their Canadian mine sites. Outside of Canada, this protocol is being applied voluntarily by several association members as well as companies associated with other national mining associations that have adopted TSM.

National Benefits Sharing Framework

The Government of Canada has committed to developing a National Benefits Sharing Framework (NBSF) to ensure Indigenous communities benefit from major resource projects. If well implemented and appropriately focused on the sharing of federal benefits and resources, the NBSF could help remove barriers to the participation of Indigenous peoples in Canadian natural resource development.

The Indigenous Loan Guarantee Program (ILGP) was formally launched in December 2024. The ILGP forms a key element of the NBSF, and it will be important to ensure that it applies to a broad range of mining investment opportunities, including ancillary infrastructure.

The NBSF is an opportunity to focus federal programs and funding towards commercial partnerships between Indigenous communities and resource companies and skills training. The government should also use the opportunity to use federal procurement to facilitate economic development in Indigenous communities.

United Nations Declaration on the Rights of Indigenous Peoples Act

The Mining Association of Canada remains supportive of an incremental and thoughtful approach to implementation in the *United Nations Declaration on the Rights of Indigenous Peoples Act*.

The 2023-2028 Action Plan for implementing the Act covers a range of issues that intersect with various federal laws, regulations, policies, and programs. Implementation of each action plan measure represents a significant undertaking that will require meaningful engagement with Indigenous peoples as well as affected parties. The mining sector is well positioned to engage on measures that either directly or indirectly relate to natural resource development.

Of particular interest to the mining industry are the action plan measures that relate to consultation and FPIC. In advancing this aspect of the Action Plan, there is an opportunity to improve Crown consultation processes to resolve inconsistencies between federal and provincial approaches to consultation and that processes are designed to support meaningful consultation without unnecessary duplication.

Photo courtesy of
Copper Mountain

SECTION 5

Clean Technologies, Climate Change and Innovation

We use **copper** to make it last, in things like:

- Plumbing
- Circuit board
- Elecrtical wiring
- Housewares
- Instruments
- Hospital surfaces

WATER, AIR AND EARTH

The Canadian mining and quarrying industry spent $1.15 billion on environmental protection activities in 2021, the most recent year for which data is available. This represents more than 10% of all capital and operating expenditures on the environment across all industries.

From 2019 to 2021, capital expenditures on the environment in the mining and quarrying industry doubled from $307 million to $642 million. Operating expenses fell slightly from $575 million to $506 million, likely the result of the global pandemic.

Capital expenditures from 2019 through 2021 are presented in Figure 41.

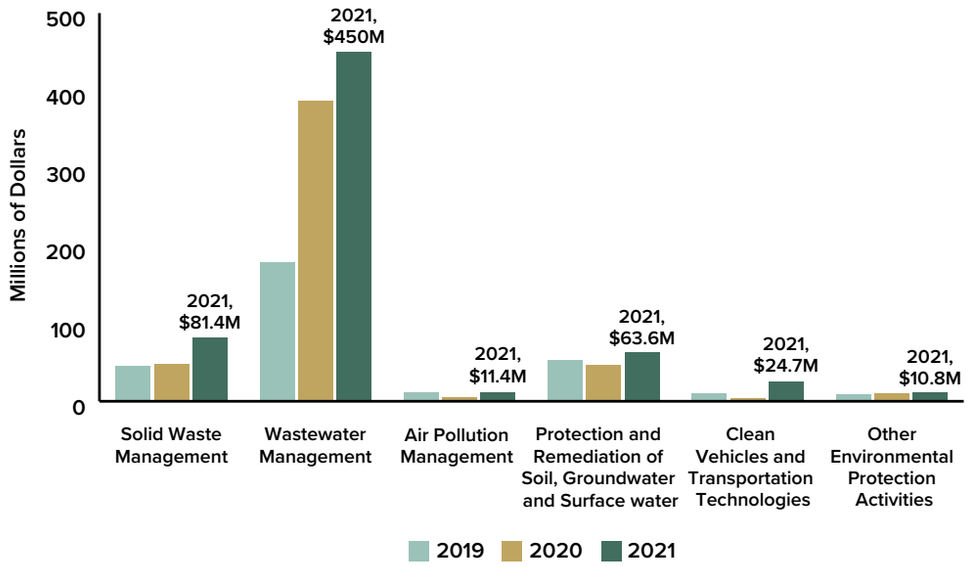


Figure 41: Capital Expenditures on the Environment by the Mining and Quarrying Industry, 2019-2021[68]

Between 2019 and 2021, capital spending on the environment increased in every category. Spending on wastewater and clean vehicles increased by more than 150%.

CLEAN TECHNOLOGIES AND CLIMATE CHANGE

Climate change is a global crisis. To address greenhouse gases (GHGs) in the atmosphere, Canada and 192 other states signed the Paris Agreement in 2015. The agreement aims to limit global temperature increases to 2 degrees Celsius in this century and 1.5 degrees over the long term.

Minerals and metals will help the world transition to a low-carbon future. Electricity networks, electric vehicles, wind energy, photovoltaic solar cells, and battery storage all require mined materials.

68 Statistics Canada, Capital and operating expenditures on environmental activities by industry Table 38-10-0130-01. "Other environmental protection activities" includes the categories Protection of Biodiversity and Habitat, Noise and Vibration Abatement, Protection Against Radiation and Environmental Charges.

The clean energy system of the future will be different from the current system, using more renewable resources to create energy. While operating clean energy systems produces fewer emissions than the hydrocarbon-based system we have now, the equipment required for clean energy is more mineral-intensive than equipment used for fossil fuels. Since 2010, the average amount of minerals needed for a new unit of power generation capacity has increased by 50%, primarily due to renewable projects.[69]

The International Energy Agency (IEA) has studied climate change in detail, as energy is responsible for the majority of GHG generation. Using economic and scientific models, the IEA makes projections about how the world will make the change to a lower-carbon future. These studies have included an investigation of the role that minerals and metals will play.

According to the IEA, putting emissions on a trajectory consistent with the Paris Agreement in one scenario requires the annual installation of solar photovoltaic cells, wind turbines and electricity networks to triple by 2040, and sales of electric vehicles to grow 25-fold over the same period.

The IEA's work in *The Role of Critical Minerals in Clean Energy Transitions* indicates that there was a 53% increase in critical mineral demand for clean energy technologies from 2010 to 2020, from 4.64 Mt to 7.1, Mt. From 2020 to 2030, the IEA expects growth of 71% in critical mineral demand for clean energy technologies under stated policies, while a sustainable development scenario will require 168% growth.[70]

Demand for critical minerals increased from 2021 to 2023, primarily due to clean energy demand. Clean energy made up a larger portion of the demand for copper (22% in 2021 vs 24% in 2023), nickel (9% in 2021 vs 15% in 2023), graphite (14% in 2021 vs 28% in 2023) and cobalt (20% in 2021 vs 30% in 2023) as shown in Figure 42.

69 IEA (2021), *The Role of Critical Minerals in Clean Energy Transitions*, IEA, Paris https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions.

70 The IEA bases its estimates on multiple policy scenarios. The *Stated Policy Scenario* uses sector-by-sector analysis of national policies to produce a model for future climate change and input requirements. According to the IEA, this scenario "explores where the energy system might go without a major additional steer from policy makers." The *Sustainable Development Scenario* assumes a pathway that enables the world to meet climate, energy access and air quality goals. This scenario would require rapid and widespread changes across the energy system. See details at IEA https://www.iea.org/reports/global-energy-and-climate-model.

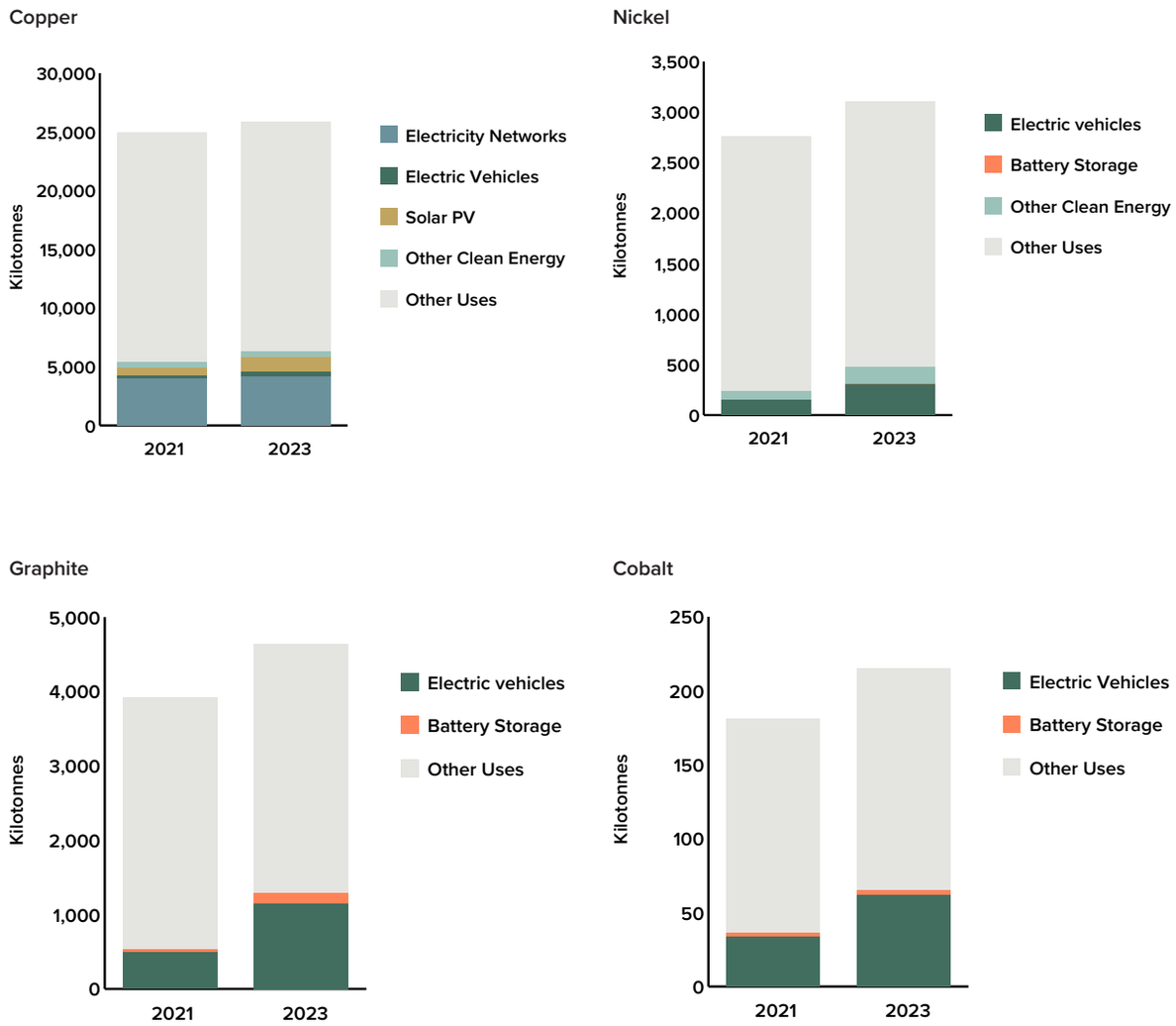


Figure 42: Demand for Selected Critical Minerals, 2021 - 2023[71]

One specific example of the transition to a clean economy is in the electric vehicle market. Electric vehicle[72] registrations in Canada reached almost 325,000 in 2023, an increase from 43,817 in 2017. As a proportion of the total registrations, electric vehicles have increased from 1.81% in the first quarter of 2017 to more than 20% of registrations in the fourth quarter of 2023. Between 2017 and 2023, gasoline and diesel engines declined from 97.9% of all registrations to 81.1% of registrations. Annual results are shown in Figure 43.

71 International Energy Agency. Global Critical Minerals Outlook 2024. Copper demand is based on refined copper and excludes direct use of scrap. Electric vehicles demand includes both EV batteries and EV motors demand. Graphite demand is raw natural flake graphite and synthetic graphite.

72 Including battery electric, plug-in hybrid electric, and hybrid electric.

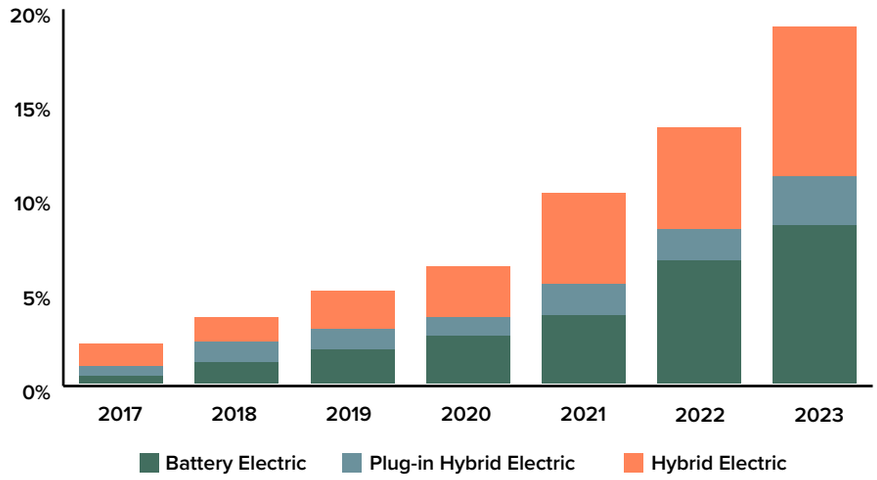


Figure 43: EVs as a Proportion of New Motor Vehicle Registrations, 2017-2023[73]

The increasing trend in registration of electric vehicles is expected to continue. The Government of Canada has committed to achieving 100% zero-emission sales for light duty vehicles by 2035. Canada's Electric Vehicle Availability Standard includes mandatory interim targets of 20% zero-emission sales by 2026 and 60% by 2030. Because electric vehicles require six times the critical mineral inputs of conventional cars (over 200kg compared to about 40kg), increasing their numbers will require more critical minerals.[74]

Trends in electricity generation are similar. Wind and solar increased from 5.1% of total Canadian electricity generation in 2017 to 7.2% in 2023 as shown in Figure 44. The shift towards greener energy requires more minerals. For example, onshore wind plants require nine times more critical mineral resources than a gas power plant of the same capacity.[75]

73 New motor vehicle registrations, quarterly. Statistics Canada table 20-10-0024-01. Release date: 2024-12-12.

74 IEA (2021), *The Role of Critical Minerals in Clean Energy Transitions*, IEA, Paris.

75 IEA (2021), *The Role of Critical Minerals in Clean Energy Transitions*, IEA, Paris.

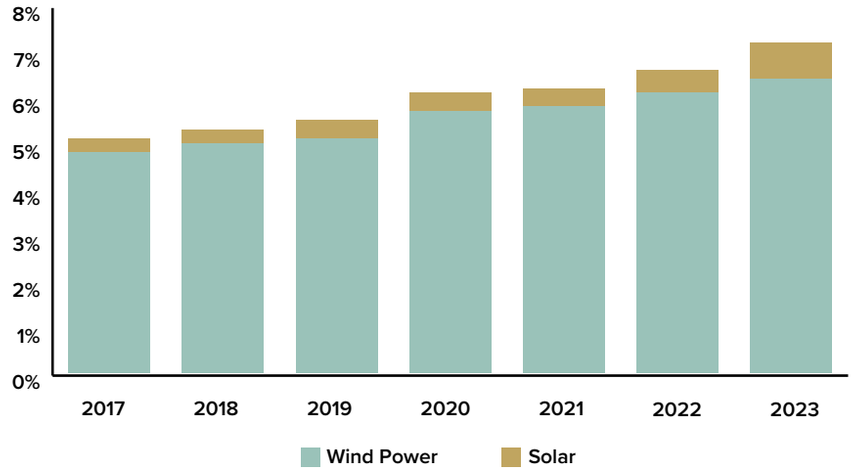


Figure 44: Wind and Solar as Percentage of Total Generation in Canada[76]

Despite the growth in demand, prices for most critical minerals declined in 2023. The price drop was the result of increases in supply. The IEA's energy transition minerals price index, a basket price of copper, lithium, nickel, cobalt, graphite, manganese and neodymium, declined throughout 2023 from its peak in 2022 as shown in Figure 45.

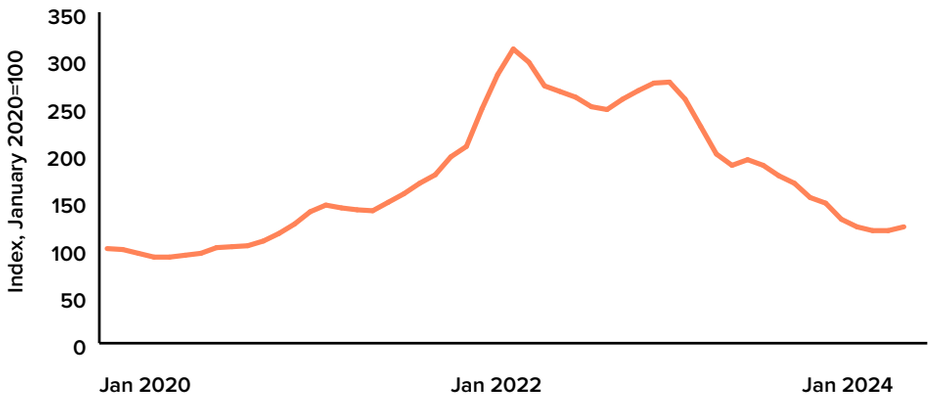


Figure 45: Energy Transition Minerals Price Index[77]

CRITICAL MINERALS SUPPLY

Given the increase in demand expected over the next decades for clean energy, governments are attempting to secure reliable sources of the required minerals. As part of this process, they have been assessing the vulnerability of their economies to external supply shocks.

76 Statistics Canada. Table 25-10-0015-01. Electric power generation, monthly generation by type of electricity.

77 International Energy Agency. 2024. IEA energy transition mineral price index, January 2020-April 2024, IEA, Paris.

Governments have been taking an increasing aggressive approach to trade in critical minerals. China recently banned exports of gallium, germanium and antimony to the United States and placed restrictions on the export of graphite.[78] The United Kingdom and United States have restricted metals imports from Russia as a consequence of the war in Ukraine. These restrictions and their downstream effects have highlighted the extent of the world's reliance on a small number of countries for key critical minerals.

This concentration of mining for key minerals is shown in Figure 46. For lithium, cobalt, graphite and rare earth elements, the top three producing nations control over four fifths of the mine production annually.

While production is generally increasing for these critical minerals, the concentration of production in a few countries may also be increasing. For example, cobalt production increased from 197,000 tonnes in 2022 to 230,000 tonnes in 2023, but the top three producers (Congo (Kinshasa), Indonesia and Russia) increased their collective share of the market from 82.6% to 85.1%.

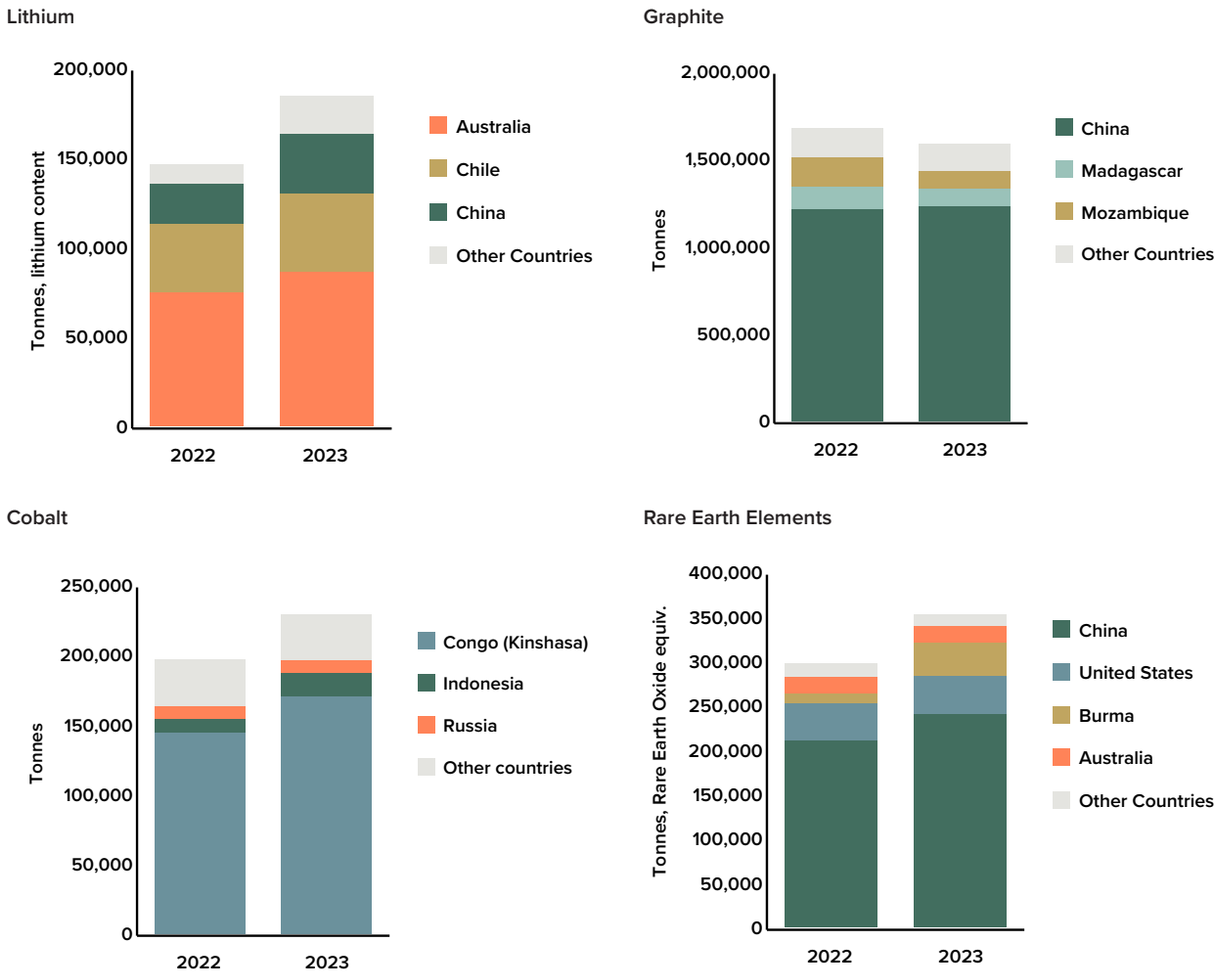


Figure 46: Global Production, Selected Minerals[79]

78 Amy Lv and Tony Munroe. China bans export of critical minerals to US as trade tensions escalate. Reuters, December 3, 2024.

79 Based on the USGS's National Minerals Information Center Mineral Commodity Summaries for each mineral, using 2022 data and estimates for 2023 production. https://www.usgs.gov/centers/national-minerals-information-center/commodity-statistics-and-information.

Canada's efforts to reduce global reliance on a few countries for certain critical minerals have had mixed results. Production of some critical minerals actually saw a decline from 2022 to 2023. For example, graphite production declined from 13,000 tonnes to 3,500 tonnes. Cobalt also saw a decline, from 3,060 tonnes to 2,100 tonnes.

Known reserves of rare earth elements in Canada are 830,000 tonnes of rare earth oxide equivalent, but mine production was zero in both 2022 and 2023.[80] Production of lithium increased from 520 tonnes (lithium content) in 2022 to 3,400 tonnes in 2023, a relatively small fraction of Canada's lithium reserves of 930,000 tonnes.[81]

In December 2022, Canada released *The Canadian Critical Minerals Strategy*[82] outlining Canada's approach to critical minerals. According to the Strategy, "there is no green energy transition without critical minerals, which is why their supply chain resilience is an increasing priority for advanced economies. Every stage of the critical mineral value chain presents an opportunity for Canada, from exploration to recycling and everything in between."

Canada also joined with the United States, the European Union and 11 other countries to create the Minerals Security Partnership (MSP). This partnership "aims to accelerate the development of diverse and sustainable critical energy minerals supply chains through working with host governments and industry to facilitate targeted financial and diplomatic support for strategic projects along the value chain."[83]

LOOKING FORWARD

The economy of the future needs minerals and metals from Canada. To provide the resources that are required, Canada must create an investment and regulatory environment that works. Given the increasing demand for critical minerals for global carbon reduction, it will be critical to bring new mines into production in the years ahead. Based on an analysis of 35 mining projects that came online between 2010 and 2019, the IEA estimates that the average time between discovery and production is almost 17 years.[84] To achieve climate goals for 2040 and beyond, it is important to bring production online faster.

The World Bank estimates that the annual demand for the production of some minerals from the energy sector alone will increase by nearly 500% by 2050.[85] For Canada to increase its production of critical minerals just to retain its current market share, new mines will need to be discovered, permitted, and built. New smelters and refineries will also need to be permitted and constructed. Greater efficiency at moving mines through the permitting process to production will be needed to supply global demand for minerals and metals for the green economy of 2050.

80 U.S. Geological Survey, Mineral Commodity Summaries, January 2023. Rare Earths. https://pubs.usgs.gov/periodicals/mcs2023/mcs2023-rare-earths.pdf.

81 Natural Resources Canada. Lithium Facts. https://natural-resources.canada.ca/our-natural-resources/minerals-mining/mining-data-statistics-and-analysis/minerals-metals-facts/lithium-facts/24009

82 Natural Resources Canada, The Canadian Critical Minerals Strategy, HM The King in Right of Canada, Ottawa https://www.canada.ca/content/dam/nrcan-rncan/site/critical-minerals/Critical-minerals-strategyDec09.pdf.

83 Minerals Security Partnership. https://www.state.gov/minerals-security-partnership/

84 IEA, *Global average lead times from discovery to production*, 2010-2019, IEA, Paris. https://www.iea.org/data-and-statistics/charts/global-average-lead-times-from-discovery-to-production-2010-2019, IEA.

85 Kirsten Hund, Daniele La Porta, Thao P. Fabregas, Tim Laing, John Drexhage. Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition. International Bank for Reconstruction and Development/The World Bank. 2020. Required 2050 production for energy technologies as a percentage of 2018 total production is 460% for cobalt, 494% for graphite and 488% for lithium.

Investment

The development of new mines will require investments from the private and public sector. Recent volatility in the prices of critical minerals may have delayed private sector investments that are urgently required for new mines in Canada. Strong, consistent support from government investment can increase certainty and build for long-term success in critical minerals.

Critical Minerals Infrastructure Fund

The Mining Association of Canada supports efforts by the Government of Canada to develop infrastructure for critical minerals. The government plans to use the Critical Minerals Infrastructure Fund to provide up to $1.5 billion in funding for clean energy and transportation infrastructure projects.

Recently announced conditional funding[86] from the fund includes:

- An investment of up to $5.5 million to upgrade 112 kilometres of existing roads and replace three bridges near Armstrong, Ontario. This project, in cooperation with the Whitesand First Nation, will link the future Seymour Lithium Project to existing road infrastructure, and allow heavy traffic to bypass residential areas.
- An investment of up to $1.4 million to upgrade and extend a 10-kilometre access road and bridge north of Nipigon, Ontario. The project will enable the transportation of lithium from Georgia Lake, an open pit and underground mine in advanced exploration.
- Two investments with a total value of up to $6.1 million for planning and engagement on a 56-kilometre, two-lane access road and electrical infrastructure that would link the Pakeagama Lithium Project to the Ontario grid.
- Up to $4.4 million to conduct studies in support of the Crawford Nickel Sulphide Project's electrification plan. The studies are expected to lead to mining production that will reduce GHG emissions by more than 60% compared to diesel-powered operations.
- An investment of up to $20 million to construct a new electrical station and relocate 4.2 kilometres of transmission line to the Rose Lithium-Tantalum Mining Project in Eeyou Istchee James Bay, Quebec. The clean power made available by this project will support a significant increase in Canada's supply of lithium.
- Engineering studies for transmission lines and roads to mines in northern Quebec. The CMIF will provide funding to study transmission lines and/or roads to the Dumont project, the Moblan project, several projects in Eeyou Istchee James Bay, the Corner Bay and Devlin deposits, and the Ashram Rare Earth project. Funding for these studies will be up to $19.8 million.

86 Pending final due diligence.

Defence Production Act Investments

The United States's National Defence Industrial Strategy (NDIS) aims to build a modernized defense industrial ecosystem. It calls for collaboration between the U.S. government, private industry, and American allies.[87]

Critical minerals from Canada fulfill three of the strategic priorities are identified in the NDIS: institutionalizing supply chain resilience, maximizing flexibility in acquisition, and bolstering economic deterrence. Authorities under the U.S. Defense Production Act consider Canada a domestic source, allowing for direct support from the Department of Defense for critical minerals required by the U.S. Military.

Examples of this support include:

- Fortune Minerals Limited was awarded $8.7 million to advance its vertically integrated NICO cobalt-gold-bismuth-copper project in the Northwest Territories and hydrometallurgical refinery in Alberta. The mine and refinery are planned to become a supplier of cobalt sulphate for the battery industry with gold, bismuth, and copper co-products.
- Lomiko Metals Inc. was awarded $11.4 million from the Department of Defense and $4.9 million from the Critical Mineral Research, Development and Demonstration program at Natural Resources Canada. The funds will support the development of the La Loutre natural flake graphite deposit in Quebec.
- Electra Battery Materials Corporation was awarded more than $25 million to support the construction and commissioning of North America's only cobalt sulfate refinery. The project, in Temiskaming Shores Ontario, is expected to cost more than $350 million and will be capable of producing battery grade materials for lithium-ion batteries. Today, more than 80% of battery grade cobalt is produced in China.
- Fireweed Metals Corp. will receive up to $12.9 million to lead planning for road and power infrastructure supporting Fireweed's critical mineral assets at Macmillan Pass, Yukon Territory.

Canada Growth Fund

The Canada Growth Fund Inc. is a $15 billion independent public fund, designed to help Canada accelerate deployment of technologies to reduce emissions, transform the economy and support the long-term prosperity of Canadians.

The Fund's mandate enables it to invest in projects and companies that advance the development of new or existing supply chains of critical minerals, including through direct equity and debt investments, co-investments and primary fund commitments in mining activities and related infrastructure, including processing, manufacturing, and recycling.

The Fund recently made a $36.5 million investment in Nouveau Monde Graphite (NMG), an integrated graphite mining and processing company. NMG is developing an integrated value chain to transform natural graphite into active anode material, a critical component of lithium-ion batteries.

NMG has multi-year offtake agreements with Panasonic and General Motors that represent approximately 85% of NMG's planned Phase 2 integrated production. Both companies have also made investments in NMG.

87 Department of Defense. 2023. National Defense Industrial Strategy.

Strategic Innovation Fund

The Strategic Innovation Fund (SIF) is managed by Innovation, Science and Economic Development Canada (ISED). The goal of the Fund is to invest in all sectors of the economy and "help Canada prosper in a global, knowledge-based economy."

The SIF recently provided $41 million for innovative clean technologies at Foran Mining Corporation's McIlvenna Bay mine in Saskatchewan. Foran's project includes purchasing a battery-electric vehicle fleet, installing a ventilation-on-demand and heat recovery system, developing a water recycling system, and integrating a pyrite removal system. When complete, Foran hopes to have the first carbon-neutral copper project in Canada.

Previous support from the Critical Minerals Infrastructure Fund is enabling the construction of an electrical infrastructure to connect the site to clean hydroelectricity and put in place electrical vehicle charging infrastructure.

Critical Minerals Research, Development and Demonstration Program

The Critical Minerals Research, Development and Demonstration program aims to advance the commercial readiness of processing and other technologies that will support critical minerals value chains.

The program recently provided $3.7 million in funding to COALIA (with LiOH Corp. and St-Georges Eco-Mining) to conduct a pilot project for the extraction and purification of lithium from a spodumene concentrate. Based on previous results from laboratory scale work, the process will recover 90 percent of the available lithium and produce high-purity aluminum concentrate and nitrogen fertilizer as byproducts.

Mine Permitting

Mines in Canada must navigate numerous complex processes before receiving approval to proceed. This excessive complexity means some projects will not be built in time to address our shared climate change, energy and supply chain security goals. Canada must do better.

Mining projects are subject to comprehensive provincial regulatory frameworks, federal impact assessment regulations, and specific federal approvals under *Fisheries Act* habitat provisions, requirements of the *Canadian Navigable Waters Act*, and the *Metal and Diamond Mining Effluent Regulations*. All mines must also comply with general federal legislation such as the *Explosives Act*, the *Species at Risk Act*, the *Migratory Birds Convention Act* and the *Canadian Environmental Protection Act*.

Recognizing the need to accelerate project permitting, the federal government has launched several initiatives to advance the critical minerals sector and to improve regulatory efficiency. These initiatives have included ambitious timelines for federally designated projects and federal permits outside of the impact assessment process: five years for federally designated projects, three years for nuclear projects, and two years for federal permits for non-designated projects.

The Mining Association of Canada supports the ambition, however, material progress has yet to occur.

At a minimum, action is needed in the following areas:

- **Improved coordination with provinces.** Provincial assessment and permitting processes already assess the biophysical environment, socio-economic and health factors, Indigenous rights and land use and mitigation measures. The provinces also have regulatory regimes that limit the magnitude and extent of potential environmental effects. Given that mining is a well-regulated industry, reduced duplication is possible without diminishing oversight and management of potential environmental and social impacts.
- **Coordination within the federal government.** Integrating information gathering and Indigenous consultation required by various Acts and regulations mean that post-assessment approval timelines can be reduced to less than a year.
- **Process improvements for meaningful Indigenous consultation.** The mining industry is committed to high-quality consultation. Serial consultations by different departments asking for community input on the same project on the same water body, however, is not conducive to this – rather, it creates burden for both Indigenous communities and mining companies.

Impact Assessment

The mining sector is the industry most impacted by application of the Act, out of proportion to the sector's potential effects in federal jurisdiction.

The application of the federal *Impact Assessment Act* (IAA) to mining projects overlaps comprehensive provincial regulatory frameworks, and the longtime promise of "one project one assessment" remains elusive. Coordination of federal impact assessment with provincial processes, and integration in the assessment of other federal information gathering and Indigenous consultation requirements, offers the greatest opportunity for improving efficiency and timeliness, and reducing burdens on Indigenous communities and the proponent.

In response to the Supreme Court of Canada opinion on the constitutionality of the IAA, which found the IAA and its regulations to be unconstitutional in part, the IAA was amended in June 2024. While the amended IAA has the potential to improve the federal assessment process for mining projects, the Mining Association of Canada is skeptical that these amendments will materialize into real change for project proponents, including the goal of achieving "one project one assessment".

Amendments alone are insufficient to increase the predictability and timeliness of the process. However, there are opportunities for further improvements. Specifically, as part of the review of the *Physical Activities Regulations* (the Project List) that is currently underway, the federal government should endeavour to address the imbalance in the Act's application to undertakings in provincial jurisdiction. The Mining Association of Canada specifically recommends re-examination of whether the Project List should include expansions, fully electric underground mines, brownfield redevelopments and relatively low production mines/mills.

An amended Project List must also be complemented by material implementation improvements that ensure that federal assessments are appropriately tailored to focus on the unique potential impacts of new projects. Further, recognition of standard mitigation measures for effects in federal jurisdiction that are common for mining projects can help reduce costly, time-consuming, unnecessary studies and data collection.

Fisheries Act

The Fisheries Act impacts new mining projects and existing mines and mills in most parts of Canada. Amendments to the Act in 2019 expanded the authority of Fisheries and Oceans Canada (DFO) to create compliance tools for routine projects with no or little impact. The intent was to provide more consistent protection of fish habitat while reducing the administrative burden on proponents and the department.

Five years after the amendments, one Standard and twelve Codes of Practice have been published, and the development of Prescribed Works and Waters Regulations continues to be delayed, with no clear timeline for draft regulations. In the absence of a comprehensive set of compliance tools, DFO and proponents must rely on site-specific reviews for common activities such as culvert replacement. The result is frustration for proponents as reviews are backlogged and officials overwhelmed with paperwork, potentially disincentivizing habitat restoration and improvement and/or impacting the ability to meet targets on clean growth.

During the five-year review of the Act by the House of Commons Standing Committee on Fisheries and Oceans (FOPO) over Fall 2024/Winter 2025, several witnesses described the consequences of poor implementation of the Act since 2019 and called for meaningful culture change within the department. Specifically, DFO must take a more pragmatic approach and accelerate the development of compliance tools, particularly Codes of Practice and Prescribed Works and Waters Regulations, for numerous routine projects with known low impacts and mitigation measures.

Canadian Navigable Waters Act

Since coming into force in 2019, Transport Canada moved quickly to put in place an efficient review and approval system for works on navigable waters, and to disseminate guidance and answer questions. However, the *Canadian Navigable Waters Act* has created some roadblocks for mining proponents. These have primarily arisen when the department is assessing whether there is a reasonable likelihood of transport or travel by Indigenous peoples to exercise their rights – that is, whether a water body is navigable water as defined in the Act – and whether Indigenous rights may be impacted by a work.

Recognizing the importance of respect for Indigenous rights and the complex nuances of the definition of “navigable”, navigability assessments take time and can lead to project delays. It is critical that a reasonable, pragmatic, and timely path forward be put in place that does not impose an unwarranted burden on proponents and Indigenous communities.

To support efficient implementation of the Act, the Mining Association of Canada recommends enhanced guidance and tools to support navigability assessments as well as an amendment to the Act that would change the process for exemption to the depositing and dewatering provisions, which would involve requiring a Ministerial Order rather than a Governor in Council Order, a more efficient approach that would not compromise due diligence or oversight.

Biodiversity

Responsible mining development includes biodiversity conservation. Members of the Mining Association of Canada have a strong track record of investments in robust wildlife monitoring, habitat restoration and contributions to science.

Photo courtesy of Agnico Eagle

In response to the Kunming-Montreal Global Biodiversity Framework (KMGBF) that was adopted at the 15th meeting of the Conference of Parties to the Convention on Biological Diversity (COP15), the Government of Canada has developed a renewed National Biodiversity Strategy. The Canadian Wildlife Service has engaged broadly on the development of the strategy, including bilateral meetings with the Mining Association of Canada.

As the National Biodiversity Strategy is implemented, it is important to keep in mind that Canada has several other strategic priorities that will intersect with the National Biodiversity Strategy. Climate change action, reconciliation with Indigenous peoples, the acceleration of Canada's critical minerals sector are urgent priorities for our country. Therefore, the National Biodiversity Strategy cannot be implemented in a silo. It should consider the interconnectedness of these strategic priorities and be based on a sound understanding of the strategic socio-economic and environmental trade-offs associated with nature-related programming and protected areas decisions.

Species at Risk Act

The implementation challenges of the *Species at Risk Act* (SARA) have become evident for wide-ranging terrestrial species such as boreal woodland caribou, highlighting shortcomings in federal-provincial

cooperation, the limitations of a species-by-species approach and the inflexibility with respect to local circumstances. However, there have been encouraging signs that underlying problems are being recognized, and solutions are being explored, such as the uptake of conservation agreements under section 11 of SARA.

In 2024, Environment and Climate Change Canada launched a consultation for an emergency order under section 80 of SARA that would apply to the Val-d'Or, Charlevoix, and Pipmuacan caribou ranges in Quebec.

The area contains five mines and twelve advanced projects, as well as several other exploration efforts. The proposed approach for the Order attempts to limit the impact of the Order on mining activity in these regions, with proposed mining-related exclusions. While this is encouraging, these exclusions may not go far enough to mitigate unintended economic consequences for the mining sector and communities in the region. This will be particularly true if the necessary infrastructure cannot be developed. The unintended result could be a reduction in investor confidence in Canadian mining. Despite the significant mining presence in the Val-d'Or range, the Imminent Threat Assessment published by Environment and Climate Change Canada did not determine that mining is a primary threat to caribou. Mining in Val-d'Or and the surrounding areas are responsible for approximately 2% of disturbance in the range. In Charlevoix and Pipmuacan, mining represents less than 1% of disturbance.

As is the case across Canada, mining is heavily regulated in Quebec, with significant government oversight. Mining projects are subject to provincial environmental assessment and permitting. Additionally, many projects are also subject to federal impact assessment. Unlike some other sectors, if mining activities have an impact on caribou habitat, the legal framework requires mining companies to compensate for their impacts by reforestation of already disturbed areas to help create habitat and zones of connectivity.

Updates to the Canadian Environmental Protection Act

In 2023, the *Canadian Environmental Protection Act*, 1999 (CEPA) was updated for the first time in over 20 years. CEPA is Canada's cornerstone environmental legislation, focused on risk assessment and management of existing and new substances, pollution prevention, waste management, and environmental emergencies. The update focused on recognizing the Right to a Healthy Environment (RTHE) and strengthening Canada's chemicals management regime.

The update was warranted and timely, but there remain some industry concerns regarding implementation.

As the government considers a new set of chemicals management priorities to drive the future of the program, it should be recognized that metals and metal compounds require a different approach than organic substances due to their inherent properties. The United States Environmental Protection Agency, for example, has a specific framework for risk assessment of metals. The essentiality of metals must be at the centre of the discussion and reflected appropriately in the overall hazard identification and risk assessment approach, including discussions related to the criteria for "toxic substances of highest risk".

With respect to the RTHE, peer-reviewed and reproducible science must remain a key underpinning of the Act and this right. While the government's scientific investment dollars are finite, high-quality data and research are essential to well-formulated policy. At the same time, the government should be cautious in collecting additional data beyond what is valuable and necessary. CEPA Section 71 surveys take substantial resources from companies, and, paired with other initiatives like the new Federal Plastics Registry and increasing requirements under the National Pollutant Release Inventory, create significant administrative burden.

Overall, the Chemicals Management Plan is already doing significant work in support of the RTHE. While stakeholders are aware of these successes, the government should undertake more public communication, education, and promotion of CEPA and the Chemicals Management Plan.

Climate Change Regulation

Some federal policies risk jeopardizing segments of Canada's mining and metal manufacturing supply chain, weakening one of Canada's strengths in the global transition to a green economy. Competing jurisdictions are quickly implementing their critical minerals plans, and Canada must expedite programs and fund projects to avoid falling behind. The implementation of programs like the *Clean Technology Manufacturing Tax Credit* will accelerate mining projects into production and strengthen Canada's place in the new global economy.

The government published the final **Clean Electricity Regulations** in December 2024. The Regulations set limits on carbon emissions from electricity generated by fossil fuels. The regulations are designed to allow flexibility for provinces, territories and municipalities as the country moves towards a net zero electrical grid by 2050.

The Mining Association of Canada supports the government's efforts to limit GHG emissions, and recommends continued concentration on the following aspects of regulating the electricity sector:

- **Electricity Affordability:** energy costs are the third largest cost for mining operations in Canada, and a major determinant of Canada's investment attractiveness for mining foreign direct investment. Ensuring the availability of cost-competitive and clean electricity is key to attracting the long-term private sector capital required to drive Canada's attainment of climate targets.
- **Technological Viability:** the government's level of ambition toward technological advancement must match its ambition in the climate mitigation space. Shifting away from fossil fuels will require new generation capacity from non-emitting sources like small modular reactors and hydrogen as well as carbon capture, utilization and storage; and energy storage.
- **Self-Consumption Exemption:** the exemption for generators that do not supply electricity to the grid is a positive development.
- **Reliability:** ensure, at all costs, the safe and reliable delivery of electricity.
- **Off-Grid Realities:** remote and northern locations should be exempt due to the exceptionally limited abatement opportunities available to off-grid industrial operations.

Border Carbon Adjustments

As countries move to meet their international climate commitments, there will be differences in approach, both in methods and speed of implementation. A key emerging challenge is how to address these disparities in a coordinated way, lowering GHG emissions while mitigating pressures on international trade without undermining Canada's global competitiveness. Border Carbon Adjustments are a potential solution to this challenge.

The 2024 Fall Economic Statement notes that Canadian industry is committed to the fight against climate change but that "many of their overseas competitors are not, and continue to pollute without any concern for the environmental harms they are causing. In many cases, this disregard means that foreign competitors are able to produce goods at lower costs than their competitors in high standard

jurisdictions… Border Carbon Adjustments level the playing field for responsible Canadian companies by ensuring foreign businesses that export into Canada also pay for their emissions."[88]

The European Union has implemented a Carbon Border Adjustment Mechanism on high-carbon imports, and the United States Congress has been making efforts in the same direction.

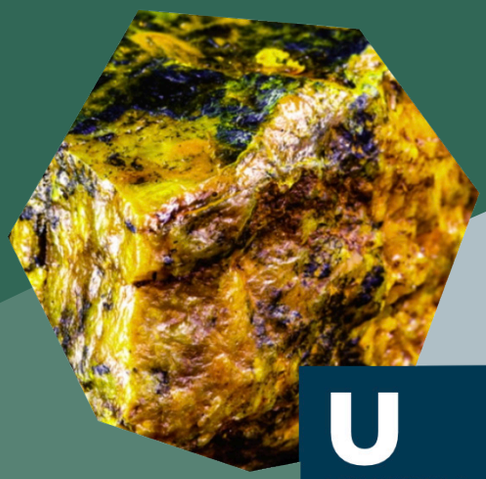
Because Canada's mining industry is integrated with both the US market and (to a lesser extent) the European market, developing border carbon adjustment policies is complex and entails substantial risk, particularly the risk of discrimination against Canadian mineral exports in foreign markets.

Key considerations are the limitations of current technology in tracing life-cycle carbon intensity, the potential marginalization of Canada's renewable energy advantage under scope 1 emissions frameworks, and the reliance on uncertain World Trade Organization processes for trade dispute resolution in the absence of free-trade agreements. Importantly, the emissions-intensive and trade-exposed protections for the mining sector must be retained and not displaced by border carbon adjustment regimes.

88 Department of Finance Canada. 2024. 2024 Fall Economic Statement.

SECTION 6

The World: International Market Activities and Developments



U
URANIUM

We use **uranium** for modern tech in things like this:

- Clean energy
- Food disinfection
- Medical isotopes
- Medical equipment sterilization
- Cancer treatments
- Aerospace

Canada's mining sector is a global leader. Its presence in more than 100 countries raises living standards and reduces poverty. Canada boasts the industry's most active exploration firms and a capital market that is home to more than half of the world's publicly traded mining companies.

Canada's international mining leadership, powered by innovative and progressive approaches, boosts Canada's strong reputation for sustainable mining and responsible business conduct.

MAC's Towards Sustainable Mining (TSM) is the Canadian mining sector's most significant contribution to global sustainable mining and responsible business conduct around the world and is being implemented by over 200 companies in 13 countries. In early 2023, TSM was formally adopted by national mining associations in Mexico and Panama, and by Mongolia in 2024

The strength of Canada's mining industry is evident in our relationships with other countries, where minerals and metals form the backbone of many of our trade flows.

EXPORTS

Canada's mining sector produces valuable goods that are used both in Canada and globally. Mineral exports make up a substantial portion of the merchandise that we export: 21% of the total value in 2023.

The total value of Canada's domestic mineral and metal exports in 2023 was $150.7 billion, a slight decrease from 2022, due to falling prices. The breakdown of exports is shown in Figure 47.

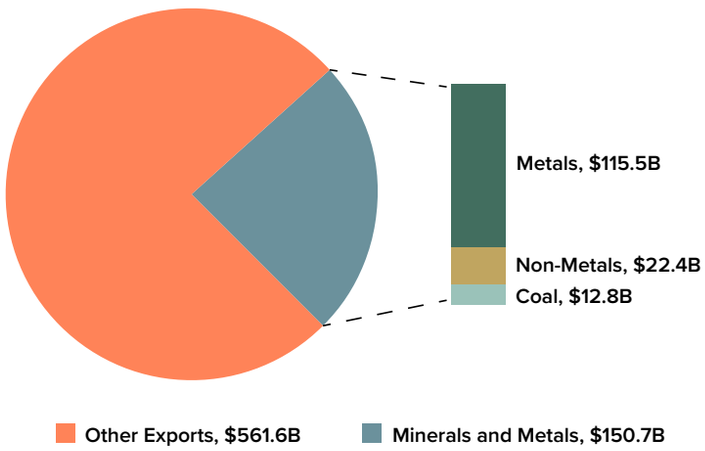


Figure 47: Canada's Exports, 2023[89]

89 Natural Resources Canada, Mineral Trade Information Bulletin, December 2024.

Canada's top mineral exports to the world in 2023 were gold ($30.2 billion), iron and steel ($21.9 billion), aluminum ($16.9 billion) and potash/potassium compounds ($11.6 billion).

Gold has become increasingly important: it was responsible for 4.6% of all Canadian merchandise exports in 2023. Unwrought gold, silver, and platinum group metals and their alloys were responsible for about the same dollar value of exports as pulp and paper, wheat, and aircraft combined.[90]
Where exports of other metals and minerals decreased in value due to declining prices, gold continued to increase. Central banks continued to purchase gold to diversify their reserves, to hedge against inflation and to reduce their exposure to geopolitical risks. The value of domestic exports of select metals are shown in Figure 48.

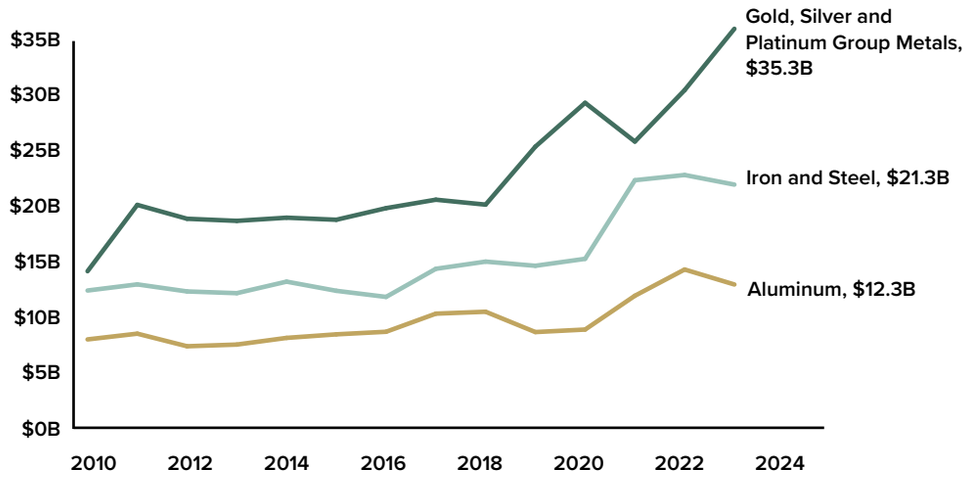


Figure 48: Exports of Selected Metals, 2010-2023[91]

In 2023, oil and gas made up a quarter of all of Canada's exports, at $177 billion. In 2022, Canada was the third largest exporter of crude oil, responsible for 9% of global exports.[92]

Crude oil production in Canada grew from 1.3 billion barrels in 2016 to 1.7 billion barrels in 2024. The majority of Canadian crude oil is exported, and the fraction is growing: from 86% of production in 2016 to 90% of production in 2024. Because of our strong infrastructure and business links, the United States is the primary export destination for Canadian crude oil, receiving more than 95% of our exports.[93]

Excluding fuels (i.e., coal and coke), the value of Canada's domestic exports of mineral and metal products increased in the five years from 2019 through 2022 from $98.5 billion to $138.8 billion as shown in Figure 49. In 2023, the value of domestic exports declined slightly, to $138.0 billion. The dramatic increases in export value from 2020 to 2022 were due to high commodity prices, which generally declined (with the notable exception of gold) in 2023.

90 Statistics Canada. Table 12-10-0163-01 International merchandise trade by commodity, monthly (x 1,000,000).

91 Statistics Canada. Table 12-10-0163-01 International merchandise trade by commodity, monthly (x 1,000,000). Iron and steel include iron ores and concentrates [151]; unwrought iron, steel and ferro-alloys [311], and basic and semi-finished iron or steel products [312]. Aluminum includes unwrought aluminum and aluminum alloys [321] and basic and semi-finished products of aluminum and aluminum alloys [327].

92 Natural Resources Canada. Energy Fact Book 2024-25. Section 6: Oil, Natural Gas and Coal.

93 Statistics Canada. Table 25-10-0063-01. Supply and disposition of crude oil and equivalent.

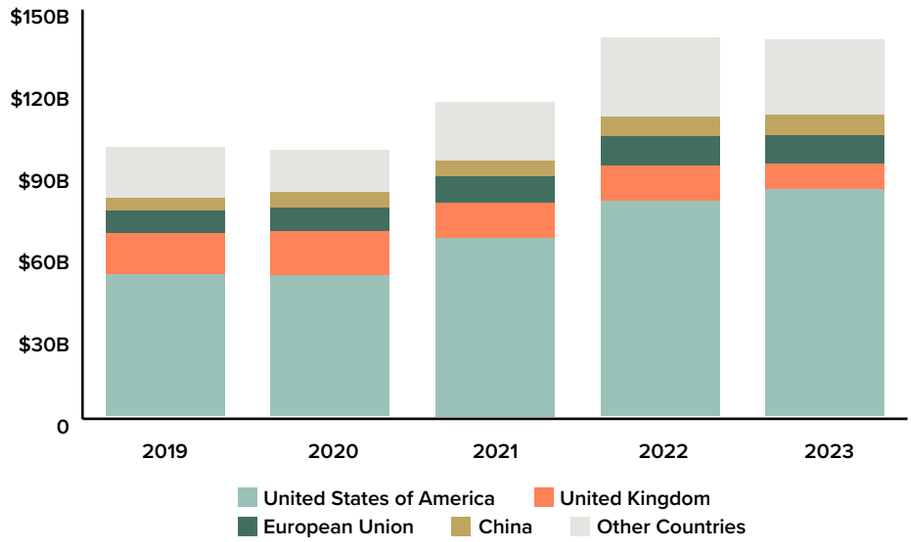


Figure 49: Domestic Exports of Mineral and Metal Products, Excluding Fuels, By Destination[94]

The bulk of Canada's mineral exports, $83 billion in 2023, are to the United States. These exports are about evenly divided between upstream (Stage 1 and 2) products and downstream (Stage 3 and 4 products). The largest value exports to the United States are iron and steel ($20 billion), aluminum ($15.2 billion) and gold ($12.5 billion).

Canada's second-largest export market is the European Union, with a value of $10.5 billion in domestic exports in 2023. Canada exported $3.3 billion in iron ore to the EU, more than a third of Canada's iron ore exports. The European market for iron is well served by Canada's St. Lawrence ports, which makes the EU an obvious destination for iron ore. Canada also exported $1.6 billion in diamonds, and $1.1 billion in uranium to the EU in 2023.

The third largest export destination by value is the United Kingdom. Almost 90% ($8.5 billion) of Canada's exports to the UK are gold. London is a global financial hub for the gold trade, and substantial amounts of gold are imported there to be traded by international investors. Uranium ($449 million) and iron ore ($237 million) made up most of the rest of the value of Canada's exports to the UK.

Mineral and metal exports account for a fifth of Canadian exports and are the economic foundation of several regions of the country. For example, mineral exports made up a very large majority of the territories' exports: they were responsible for basically all of the value of the domestic exports[95] of Nunavut and the Northwest Territories and more than 90% of Yukon's domestic exports. Mineral exports were responsible for more than 30% of domestic export values in four provinces: British Columbia, Saskatchewan, Newfoundland and Labrador, and Quebec. In Ontario, more than a quarter of domestic exports were minerals. Domestic exports as a percentage of total exports by province and

94 Natural Resources Canada, *Canada: Value of imports and exports for mineral and metal products, excluding fuels, for select countries and regions.*

95 "Domestic exports are defined as goods grown, extracted, produced, or manufactured in Canada and subsequently sold abroad to differentiate them from re-exports, i.e., goods from other countries that are imported to Canada and then re-exported without substantial transformation. Definition from Statistics Canada's International Trade portal.

territory are shown in Figure 50. The value of domestic exports of these and other minerals and mineral products in 2022 are presented in Annex 8.

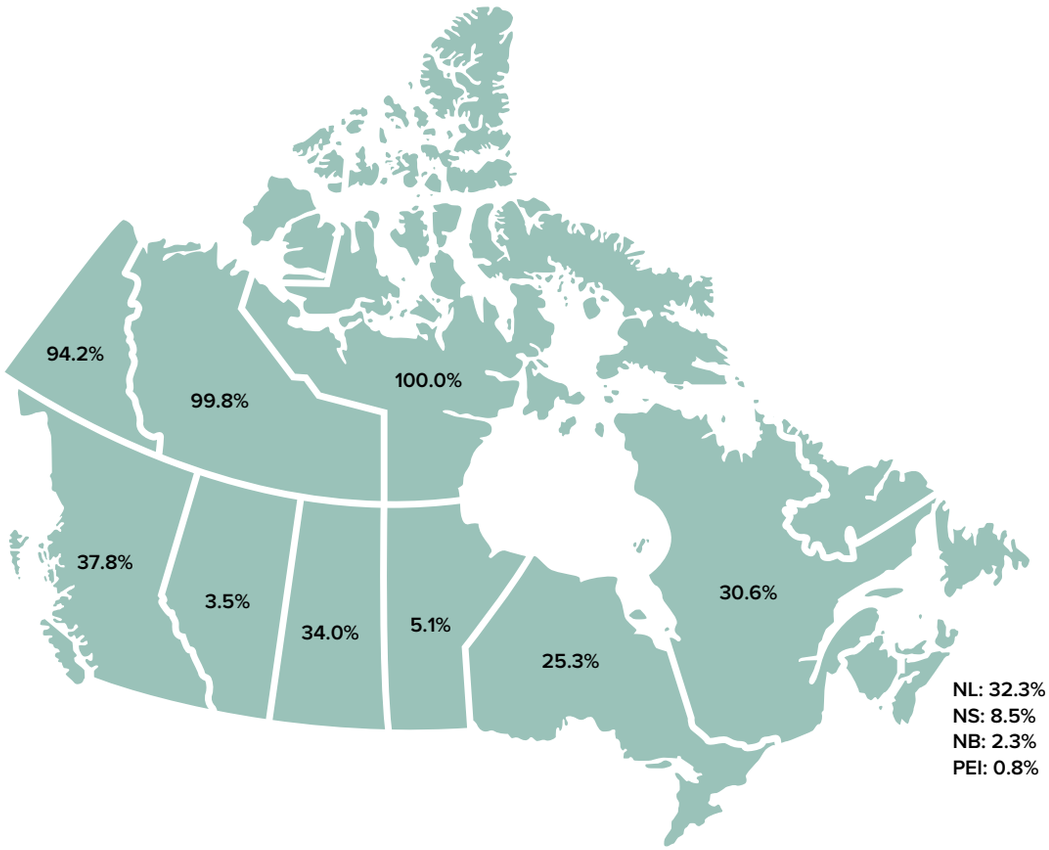


Figure 50: Mineral Domestic Exports as a Percent of Total Domestic Exports, 2023[96]

IMPORTS

Canada imported $122.0 billion of minerals and metals, excluding coal, in 2023. This is a slight decrease from 2022, but an increase of $34.1 billion from 2019 as shown in Figure 51. As with exports, the value of imports increased in 2021 and 2022 as a result of high commodity prices and decreased slightly due to declines in prices in 2023.

96 Natural Resources Canada, *Canada: Value of imports and exports for mineral and metal products, excluding fuels, for select countries and regions*.

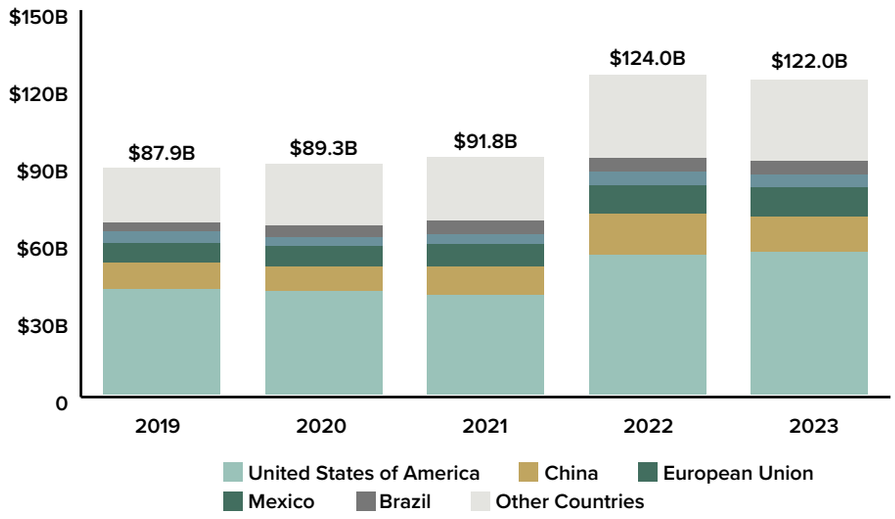


Figure 51: Imports of Mineral and Metal Products, Excluding Coal, By Source[97]

In 2023, Canada's top mineral imports were iron and steel ($34.0 billion), gold ($17.7 billion), aluminum ($9.5 billion) and copper ($5.8 billion). The value of imports of these and other minerals and mineral products in 2023 are presented in Annex 9.

The largest source of Canada's imports ($55.1 billion, or 45% of the total value) was the United States. Iron and steel ($16.9 billion), gold ($5.6 billion), aluminum ($4.1 billion) were the highest value imports.

China was the second-largest source of mineral imports to Canada, at $13.7 billion (11% of the total). Canada's largest imports from China were iron and steel ($4.7 billion), aluminum ($1.4 billion) and glass and glassware products ($770 million).

Canada's third largest source of imports was the European Union, which sent metals and non-metals worth $11.1 to Canada in 2023. Iron and steel ($3.7 billion), copper ($878 million), and silver ($730 million) were Canada's largest value imports from the EU.

97 From Natural Resources Canada, *Canada: Value of imports and exports for mineral and metal products, excluding fuels, for select countries and regions*.

BALANCE OF TRADE

The balance of trade is Canada's total exports minus its imports. Canada had a surplus (i.e., exports greater than imports) of $32.8 billion in 2023. Extraction (Stage 1) and primary manufacturing (Stage 2) both had surpluses, while Stage 3 and Stage 4 manufacturing showed trade deficits as shown in Figure 52.

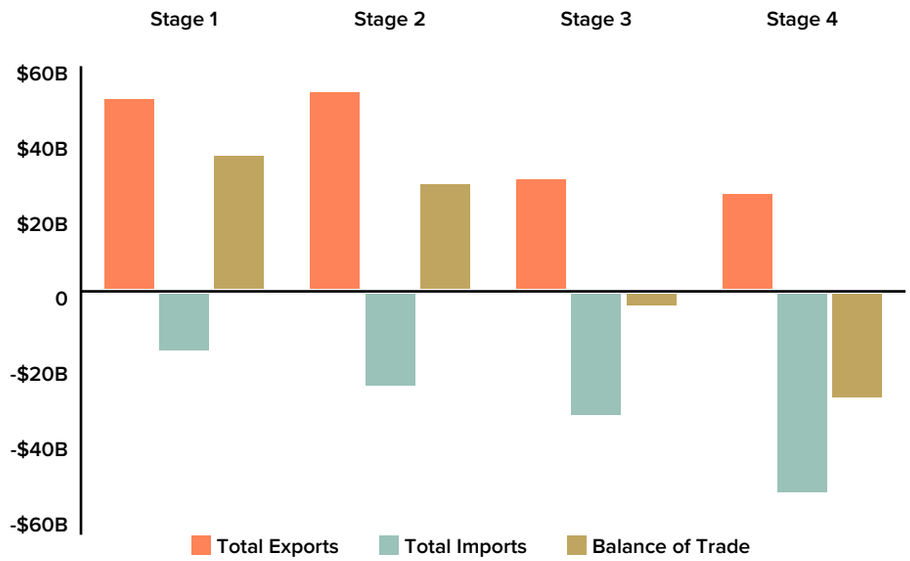


Figure 52: Balance of Trade by Stage, 2023[98]

Canada's top trading partners in minerals make up a large proportion of total trade. The top four export destinations are the United States, the United Kingdom, the European Union and China. These four make up 75% of total exports of minerals and metals. Canada's top three sources of imports are the United States, China, and the EU. These three make up 66% of all of Canada's imports.

Canada maintained a trade surplus of $31.5 billion with the United States in minerals and metals in 2023. Canada had a slight surplus ($974 million) with the European Union and a deficit of $3.3 billion with China. Canada's balance of trade in minerals and metals is shown in Figure 53.

98 From Natural Resources Canada; Statistics Canada.

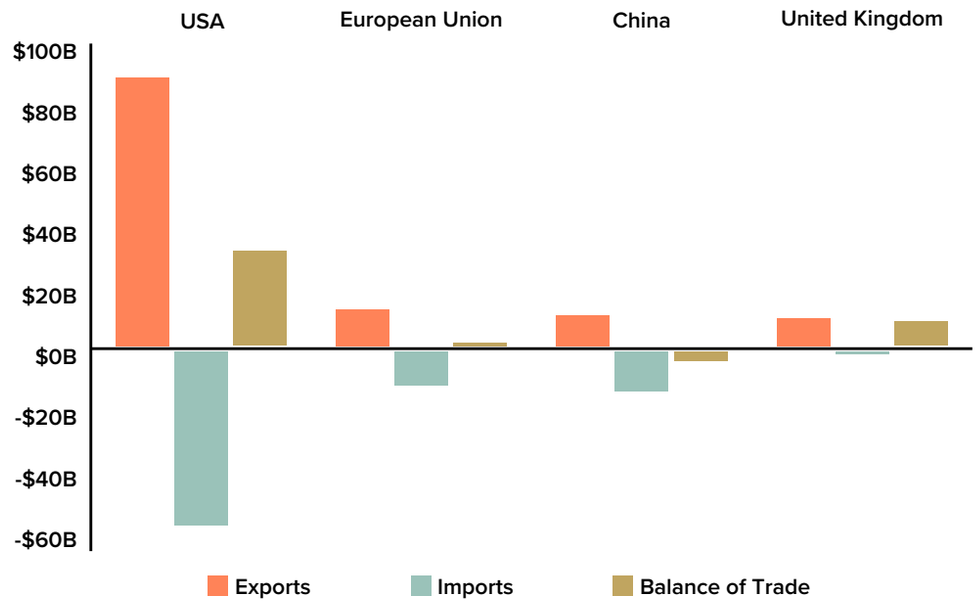


Figure 53: Balance of Trade, Minerals and Metals, Canada and Selected Countries, 2023[99]

CRITICAL MINERALS

In December 2022, the Government of Canada released *The Canadian Critical Minerals Strategy*,[100] which outlines Canada's approach to minerals that have strategic importance. Canada's list of critical minerals was developed to guide investment and prioritize decision-making. In general, critical minerals were placed on Canada's list where they:

- Have few or no substitutes.
- Are strategic and limited commodities.
- Are increasingly concentrated in terms of extraction and, even more, in terms of processing location.

The original list of 31 minerals was recently updated to add three new entries: high purity iron, phosphorus and silicon metal. The six minerals initially prioritized by the strategy were lithium, graphite, nickel, cobalt, copper, and rare earth elements.

Canada's trade balance in these six priority minerals is shown in Figure 54.

Critical Mineral	Domestic Exports	Total Exports	Total Imports	Balance of Trade
Lithium	3.3	6.5	38.7	-32.2
Graphite	58.8	66.6	227.8	-161.2
Nickel	5,770.1	5,804.9	1,667.6	4,137.3
Cobalt	562.7	567.5	60.7	506.8
Copper	9,155.5	9,222.3	4,575.1	4,647.1
Rare earth elements	0.3	1.8	7.5	-5.7

Figure 54: Balance of Trade, Priority Critical Minerals, 2023[101]

99 Natural Resources Canada, Mineral Trade Information Bulletin, December 2024.

100 The Canadian Critical Minerals Strategy, 2022.

101 Natural Resources Canada, Mineral Trade Information Bulletin, December 2024.

The export value of all 34 critical minerals declined 13% to $50.3 billion in 2023. This was primarily due to falling prices rather than declines in volume.

CANADIAN MINING AROUND THE WORLD

In addition to assets in Canada, Canadian mining and exploration companies hold assets abroad. In 2022, 770 companies had mining assets outside of the country, with a total value of $215 billion. This is more than double the value of Canadian mining assets in Canada, which were $105.5 billion. Canadian mining assets abroad were held in 98 countries in 2023 as shown in Figure 55.

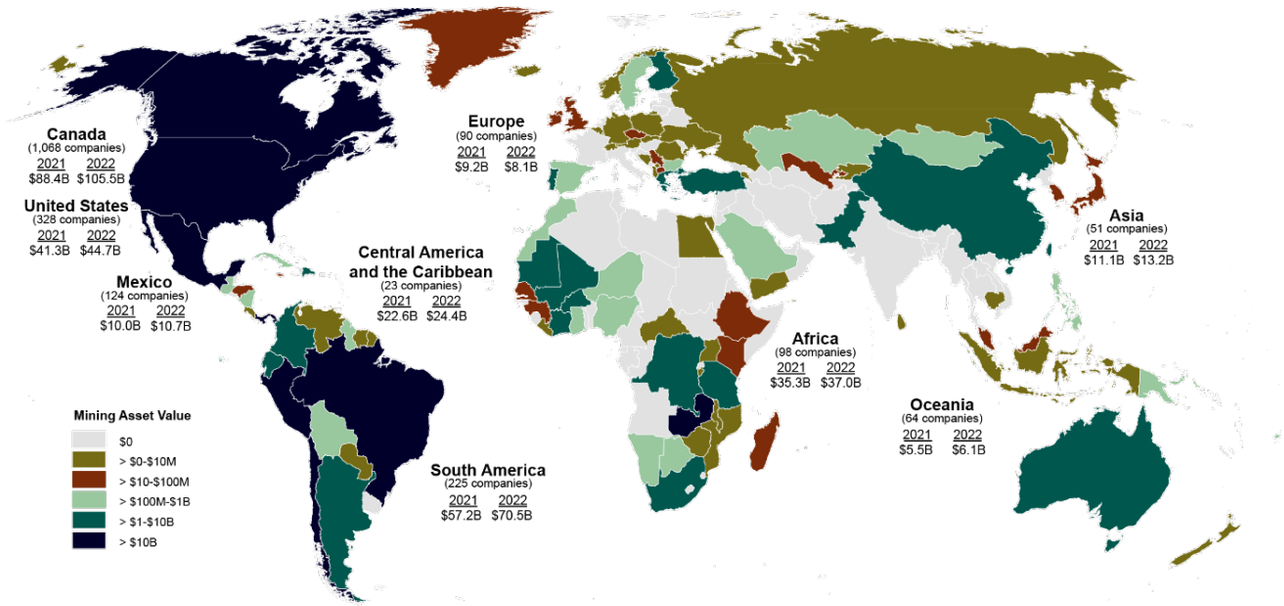


Figure 55: Geographic Distribution of Canadian Mining Assets[102]

Junior companies account for most of the companies with assets abroad (88.3%) but a low share of the total value (5.9%) because of the high value of the mines owned by senior companies.

Canadian Direct Investment Abroad (CDIA) in mining is another indicator of the industry's international presence. A large majority of the book value of CDIA is represented by Stage 1, Extraction as shown in Figure 56. The total value of CDIA has increased in recent years: from $93 billion in 2018 to $127 billion in 2023, as shown in Figure 57.

102 From Natural Resources Canada's *Canadian Mining Assets Information Bulletin*, January 2024. https://natural-resources.canada.ca/maps-tools-and-publications/publications/minerals-mining-publications/canadian-mining-assets/19323. Note that this data describes "Canadian Mining Assets Abroad" which is slightly different from Canadian Direct Investment Abroad (CDIA) in the mining sector. CDIA is based on the international definition of foreign direct investment from national systems of accounts. Canadian Mining Assets Abroad are developed by Natural Resources Canada from financial accounting standards applied by Canadian public companies and auditors.

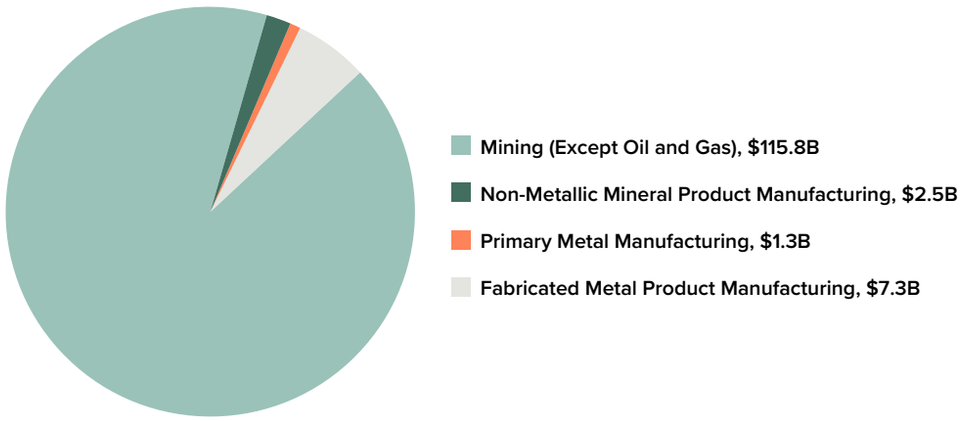


Figure 56: Canadian Mineral Industry Direct Investment Abroad, Mining and Related Subsectors, 2023[103]

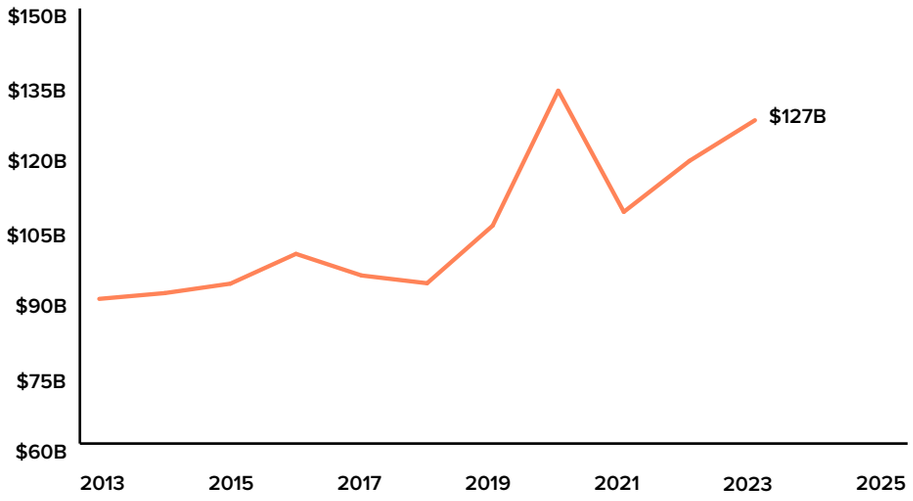


Figure 57: Canadian Direct Investment Abroad, Mining Sector 2013-2023[104]

While outward flows of investment are essential to any open economy, the sheer scale of the increase in outward investment demonstrates the increasing global strength and reach of Canada's mining sector.

103 Statistics Canada Table International investment position, Canadian direct investment abroad and foreign direct investment in Canada, by North American Industry Classification System (NAICS) and region, annual (x 1,000,000) (Table 36-10-0009-01). Data for 2023 is preliminary.

104 From the same Statistics Canada table.

FOREIGN DIRECT INVESTMENT IN CANADA

As an open economy, Canada relies on foreign direct investment (FDI) in most sectors. The converse of CDIA, FDI is when other countries make investments in Canada. In 2022, FDI for the mining sector was $79.8 billion, which made up 5.87% of Canada's total FDI. The subsector breakdown of FDI in Canada is presented in Figure 58.

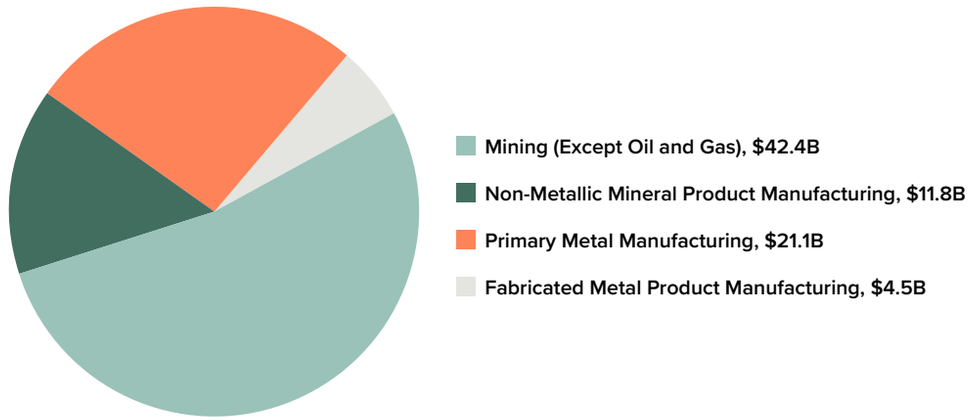


Figure 58: Foreign Direct Investment in Canada, Mining and Related Subsectors, 2023[105]

105 Statistics Canada. Table 36-10-0009-01 International investment position, Canadian direct investment abroad and foreign direct investment in Canada, by North American Industry Classification System (NAICS) and region, annual (x 1,000,000).

FDI in Canada is up from recent lows observed during the 2020 pandemic year; however, it is still below the levels observed in the first half of the previous decade, as shown in Figure 59.

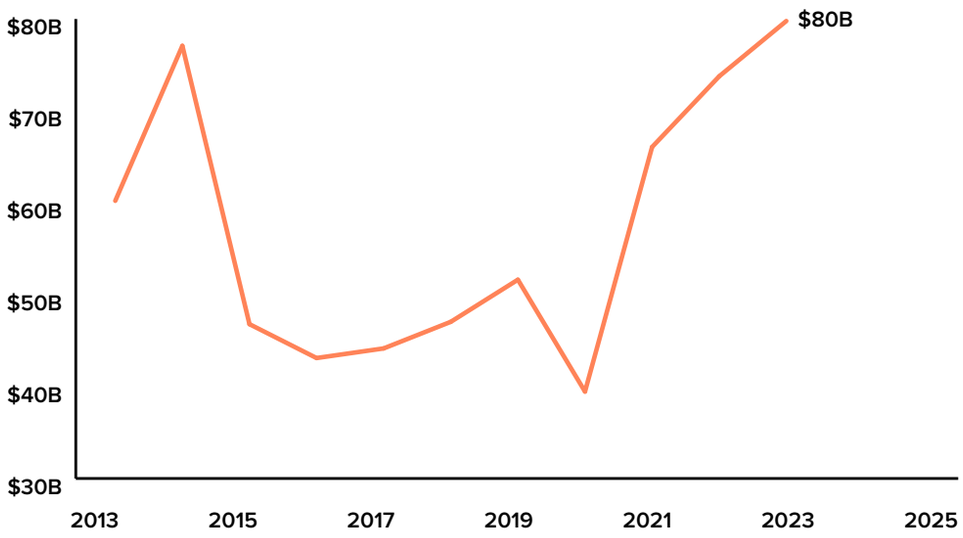


Figure 59: Foreign Direct Investment in the Mining Sector, 2013-2023[106]

LOOKING FORWARD

The Mining Association of Canada is unique in terms of its engagement in international human rights and environment, sustainability and governance issues. Towards Sustainable Mining has been adopted by mining associations in Mexico, Guatemala, Columbia, Panama, Brazil, Argentina, Botswana, Australia, Philippines, Norway, Finland, and Mongolia. The Association contributes to multi-lateral initiatives and institutions including the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development and the Organization for Economic Cooperation and Development, among others.

Recent years have seen major changes in geopolitics and trade. More countries have become concerned about the sources of goods and services that are critical to their national security and economic success. Wars and sanctions have limited the movement of goods to and from some areas.

Because mining is a global industry, these changes are often felt more intensely, and as such, the opportunity for Canada to supply the world with responsibly mined minerals and metals has never been at greater. The Mining Association of Canada, its members, and Canadian governments must work together to ensure that minerals and metals remain a driver of Canada's success in international trade.

106 From Statistics Canada Table International investment position, Canadian direct investment abroad and foreign direct investment in Canada, by North American Industry Classification System (NAICS) and region, annual (x 1,000,000) (Table 36-10-0009-01).

CHINESE CRITICAL MINERALS DOMINANCE AND FREE TRADE

As Canada and its allies work together to reduce their dependence on China for critical minerals, it is important to consider the risks and opportunities of these efforts.

The Canadian government's Critical Minerals Strategy aims to build strong supply chains in Canada and attract investment from the US government. The desire to re-shore critical minerals production has been accompanied by regulators and governments looking at investment more closely. Mining companies in Canada and abroad have seen an increase in the use of national security reviews of proposed mergers and acquisitions. These reviews can reduce the appeal of being domiciled in any country where they are required, including Canada.

Recent years have seen increased interest in tariffs in developed countries. Many members of the Mining Association of Canada operate mines worldwide and are part of complex global supply chains. As a result, the mining sector has historically opposed tariffs on minerals and metals as they distort trade. Nevertheless, the changing geopolitical landscape and the risks posed by China's dominant position in critical minerals mean that the industry could support careful, targeted protections for some high-risk commodities.

INVESTOR-STATE DISPUTE SETTLEMENT

Investor protections or safeguards are critically important to the Canadian mining industry due to unique factors that define mineral investments. Mining companies must go where commercially developable mineral and metal deposits are located.

These operations are more vulnerable than those in other sectors due to substantial upfront capital costs associated with mineral development. The initial capital expenditure for an average Canadian mine often exceeds $1 billion before any minerals are produced or processed. In the event of an interruption in mineral production beyond the miner's control, that investment becomes immobile, as it is deeply rooted in the host country. Additionally, countries may determine that they need their own resources and choose to nationalize certain minerals or directly expropriate operations.

Investor-State Dispute Settlement (ISDS) provisions provide a strong enforcement tool that allow Canadian investors, businesses, and their workers to be treated fairly overseas. ISDS has historically been included in Canada's free trade agreements with other countries, and in Canada's Foreign Investment Promotion and Protection Agreement (FIPA) model.

Mining should be included among the sectors listed to receive full investor protections or safeguards in new and revised trade agreements. While all negotiations involve both gains and losses, investor protections or safeguards for the mining sector are a concession too costly to consider. The absence of strong ISDS provisions in trade agreements increases the risk of harm to Canadian mining companies operating around the world.

CANADIAN OVERSIGHT OF MINING COMPANIES ABROAD

One effort to encourage the development of critical minerals is the Minerals Security Partnership (MSP). The Partnership, a plurilateral collaboration, aims to "accelerate the development of diverse and sustainable critical energy minerals supply chains through working with host governments and industry to facilitate targeted financial and diplomatic support for strategic projects along the value chain."[107]

A key priority of the MSP is a shared commitment to responsible business conduct, which it sees as a competitive advantage in mineral-rich regions of the world. Many countries have experience with Chinese state-owned enterprises and Russian interests, which have shown little support for responsible business practices or human rights.

Canada has one of the strongest and most comprehensive approaches to corporate responsibility outside its borders. Legislative requirements such as the *Corruption of Foreign Public Officials Act*, the *Extractive Sector Transparency Measures Act*, and the recently implemented *Fighting Against Forced Labour and Child Labour in Supply Chains Act*, place clear legislative requirements on Canadian businesses operating abroad. Beyond these requirements, Global Affairs Canada's Responsible Business Conduct Strategy articulates clear expectations for Canadian companies. The Mining Association of Canada and its members have supported these initiatives.

Recent Canadian governments have established mechanisms such as the Extractive Sector Corporate Social Responsibility (CSR) Counsellor, and most recently, the Canadian Ombudsperson for Responsible Enterprise (CORE) as a mechanism to address allegations related to the conduct of Canadian companies. Uniquely in the world, Canada penalizes companies operating abroad if they do not participate in dispute resolution mechanisms in good faith when complaints are brought forward. Penalties include the loss of diplomatic and trade commissioner support and removal of Export Development Canada financing.

The Mining Association of Canada supports a federal government mechanism that can effectively engage on credible allegations using proven dispute resolution through collaborative processes, complementing judicial remedy mechanisms. As part of Global Affairs Canada's current review, MAC is recommending that the CORE be combined with the National Contact Point (NCP) that unlike the CORE mandate, applies to all Canadian companies operating abroad. Respecting human rights abroad is the responsibility of companies in all sectors.

107 Minerals Security Partnership at the United States Department of State.

Annexes

ANNEX 1: PRODUCING MINES IN CANADA, 2023

COMPANY	MINE SITE	ACTIVITY TYPE	LOCATION	COMMODITY
Newfoundland & Labrador				
China Minmetals Rare Earth Group Co. Ltd.	Beaver Brook	(U., C.)	Glenwood	OM
FireFly Metals Ltd.	Nugget Pond	(C.)	Snook's Arm	BM
FireFly Metals Ltd.	Ming	(U.)	Baie Verte	BM
Maritime Resources Corp.	Point Rousse	(P., C.)	Baie Verte	PM
Vale Newfoundland and Labrador Limited	Voisey's Bay	(P., U., C.)	Voisey's Bay	BM
Tacora Resources Inc.	Scully	(P., C.)	Wabush	Iron ore
Iron Ore Company of Canada Inc.	Carol Lake	(P., C.)	Labrador City	Iron ore
Tata Steel Minerals Canada Limited	DSO (3 and 4)	(P.)	Menihek	Iron ore
Trinity Performance Minerals	Conception Bay South	(P.)	Conception Bay South	IM
Nova Scotia				
St Barbara Limited	Moose River Consolidated	(P., C.)	Upper Musquodoboit	PM
Nova Scotia Power Inc.	Glen Morrison	(P.)	Cape Breton	IM
Antigonish Limestone Ltd.	Southside Antigonish Harbour	(P.)	Southside Antigonish Harbour	IM
Nova Construction Ltd.	Brierly Brook	(P.)	Antigonish	IM
Mosher Limestone Company Limited	Dean Settlement	(P.)	Dean Settlement	IM
Mosher Limestone Company Limited	Upper Musquodoboit	(P.)	Upper Musquodoboit	IM
Lafarge Canada Inc.	Brookfield	(P., Plant)	Brookfield	IM
National Gypsum (Canada) Ltd.	East Milford	(P.)	Milford	IM
K+S Windsor Salt Ltd.	Pugwash	(U.)	Pugwash	IM
Compass Minerals Canada Corporation	Amherst (Nappan)	(Solution mining)	Amherst	IM
Kameron Collieries ULC	Donkin	(U.)	Cape Breton	Coal
Pioneer Coal Ltd.	Stellarton	(P.)	Stellarton	Coal
New Brunswick				
Graymont Inc.	Havelock	(P., Plant)	Havelock	IM
Graymont Inc.	Springhill	(P.)	Havelock	IM
Nutrien Ltd.	Picadilly	(U.)	Sussex	IM
Hammond River Holdings Ltd.	Upham East	(P.)	Upham	IM
Brookville Manufacturing Company	Brookville	(P., Plant)	Saint John	IM
Elmtree Resources Ltd.	Sormany	(P., Plant)	Sormany	IM
Quebec				
Rio Tinto Group	Lac Tio	(P.)	Havre-Saint-Pierre	OM
Champion Iron Ltd.	Bloom Lake	(P.)	Fermont	Iron ore
ArcelorMittal	Mont-Wright	(P., C.)	Fermont	Iron ore
Tata Steel Minerals Canada Limited	DSO (Goodwood)	(P.)	Schefferville	Iron ore
ArcelorMittal	Fire Lake	(P.)	Fermont	Iron ore
Magris Performance Materials Inc.	Niobec	(U., C.)	Saint-Honoré-de-Chicoutimi	OM
Glencore Canada Corporation	Raglan	(U., C.)	Katinniq	BM
Canadian Royalties Inc.	Nunavik Nickel	(P., U., C.)	Kangiqsujuaq	BM
Newmont Corporation	Éléonore	(U., C.)	Opinaca Reservoir	PM

COMPANY	MINE SITE	ACTIVITY TYPE	LOCATION	COMMODITY
Eldorado Gold	Lamaque	(U., C.)	Val-d'Or	PM
Sayona Québec Inc.	North American Lithium	(P., U.)	La Corne	OM
Agnico Eagle Mines Limited	Goldex	(U., C.)	Val-d'Or	PM
Wesdome Gold Mines Ltd.	Kiena	(P., C.)	Val-d'Or	PM
Abcourt Mines Inc.	Sleeping Giant	(C.)	north of Amos	PM
Agnico Eagle Mines Limited	Canadian Malartic	(P., C.)	Malartic	PM
Agnico Eagle Mines Limited	LaRonde	(U., C.)	Preissac	PM
IAMGOLD Corporation	Westwood-Doyon	(U., C.)	Cadillac	PM
Hecla Mining Company	Casa Berardi	(P., U., C.)	north of La Sarre, Casa Berardi Twp.	PM
Stone Canyon Industries Holding	Seleine	(U.)	Îles-de-la-Madeleine	IM
St Marys Cement	McInnis	(P., Plant)	Port-Daniel–Gascons	IM
Le Groupe Berger Ltée	Saint-Modeste	(P.)	Saint-Modeste	IM
Ciment Québec inc.	Quebec	(P., Plant)	city of Québec	IM
Graymont Inc.	Marbleton	(P., Plant)	Marbleton	IM
Ciment Québec inc.	Saint-Basile	(P., Plant)	Saint-Basile	IM
Graymont Inc.	Les Carrières Calco	(P., Plant)	St-Marc-des-Carrières	IM
Stornoway Diamonds Corporation	Renard	(P., U., C.)	Mistissini	DIAM
Carrière d'Acton Vale Ltée	Acton Vale	(P., Plant)	Acton Vale	IM
Graymont Inc.	Bedford	(P., Plant)	Bedford	IM
OMYA (Canada) Inc.	Saint-Armand	(P., Plant)	Saint-Armand	IM
CRH Canada Group Inc.	Joliette	(P., Plant)	Joliette	IM
Lafarge Canada Inc.	St-Constant	(P., Plant)	St-Constant	IM
Demix Agrégats	Laval	(P., Plant)	Laval	IM
Ciment Québec inc.	Laval	(P., Plant)	Laval	IM
Northern Graphite Corporation	Lac-des-Îles	(P., Plant)	Saint-Aimé-du-Lac-des-Îles	IM
Ontario				
Agnico Eagle Mines Limited	Detour Lake	(P., C.)	Northeast of Cochrane	PM
Agnico Eagle Mines Limited	Macassa	(U., C.)	Kirkland Lake area	PM
McEwen Mining Inc.	Fox Complex	(P., U., C.)	Matheson	PM
Alamos Gold Inc.	Young-Davidson	(U., C.)	Matachewan	PM
Glencore Canada Corporation	Nickel Rim South	(U.)	Sudbury	BM
Vale Canada Limited	Garson	(U.)	Sudbury	BM
Vale Canada Limited	Clarabelle	(C.)	Sudbury	BM
Vale Canada Limited	Copper Cliff Complex	(U.)	Sudbury	BM
Newmont Corporation	Hoyle Pond	(U.)	south of Porcupine	PM
Pan American Silver Corp.	Bell Creek	(U., C.)	Timmins	PM
Vale Canada Limited	Creighton	(U.)	Sudbury	BM
Newmont Corporation	Porcupine	(C.)	Timmins	PM
Newmont Corporation	Hollinger	(P.)	Timmins	PM
Vale Canada Limited	Coleman	(U.)	Sudbury	BM
Glencore Canada Corporation	Fraser	(U.)	Sudbury	BM
Glencore Canada Corporation	Strathcona	(C.)	Sudbury	BM
Glencore Canada Corporation	Kidd Creek	(U., C.)	Timmins	BM
KGHM Polska Miedź S.A.	McCreedy West	(U.)	Sudbury	BM, PM

COMPANY	MINE SITE	ACTIVITY TYPE	LOCATION	COMMODITY
Vale Canada Limited	Totten	(U.)	Worthington	BM
Pan American Silver Corp.	Timmins West	(U.)	Timmins	PM
Newmont Corporation	Borden	(P., U.)	Chapleau	PM
Alamos Gold Inc.	Island	(U., C.)	Dubreuilville	PM
Argonaut Gold Inc.	Magino	(P., C.)	Timmins	PM
Silver Lake Resources Ltd.	Sugar Zone	(U., C.)	White River	PM
Wesdome Gold Mines Ltd.	Mishi	(P.)	Wawa	PM
Wesdome Gold Mines Ltd.	Eagle River	(U., C.)	Wawa	PM
Barrick Gold Corporation	Hemlo (Williams)	(P., U., C.)	Marathon	PM
Impala Canada Ltd.	Lac des Iles	(P., U., C.)	Thunder Bay	PM
Newmont Corporation	Musselwhite	(U., C.)	north of Pickle Lake	PM
Evolution Mining Ltd.	Red Lake	(U., C.)	Balmertown	PM
New Gold Inc.	Rainy River	(P., U., C.)	Fort Frances	PM
Canadian Wollastonite	St. Lawrence	(P.)	Kingston	IM
OMYA (Canada) Inc.	Tatlock	(P.)	Tatlock	IM
Lafarge Canada Inc.	Bath	(P.)	Bath	IM
Lehigh Hanson	Picton	(P.)	Picton	IM
CRH Canada Group Inc.	Ogden Point	(P.)	Ogden Point	IM
Covia Canada Ltd.	Blue Mountain	(P., Plant)	Blue Mountain	IM
St Marys CBM (Canada) Inc.	Bowmanville	(P.)	Bowmanville	IM
Miller Minerals (Miller Paving Co.)	Bucke	(P., Plant)	New Liskeard	IM
Carmeuse Lime (Canada) Limited	Dundas	(P.)	Dundas	IM
Lafarge Canada Inc.	Dundas	(P.)	Dundas	IM
CGC Inc.	Hagersville	(U., Plant)	Hagersville	IM
Carmeuse Lime (Canada) Limited	Beachville	(P., Plant)	Ingersoll	IM
E.C. King Contracting Ltd. (Miller Paving Co.)	Sydenham	(P.)	Owen Sound	IM
Owen Sound Ledgerock Ltd.	Owen Sound	(P.)	Owen Sound	IM
St Marys CBM (Canada) Inc.	St Marys	(P.)	St. Marys	IM
Boreal Agrominerals Inc.	Spanish River Carbonite	(P.)	northwest of Sudbury	IM
Compass Minerals Canada Corporation	Goderich	(U., Plant)	Goderich	IM
Compass Minerals Canada Corporation	Goderich	(Solution mining)	Goderich	IM
Magris Talc Canada Inc.	Penhorwood	(P.)	Penhorwood	IM
Carmeuse Lime (Canada) Limited	Blind River	(P.)	Blind River	IM
K+S Windsor Salt Ltd.	Windsor	(Solution mining)	Windsor	IM
K+S Windsor Salt Ltd.	Ojibway	(U.)	Windsor	IM
Lafarge Canada Inc.	Meldrum Bay	(P., Plant)	Manitoulin Island	IM
Manitoba				
Sinomine Resource Grp Co. Ltd.	Tanco	(U., C., Plant)	Lac-du-Bonnet	BM
Vale Canada Limited	Thompson (T-1 and T-3)	(P., U., C.)	Thompson	BM
Hudbay Minerals Inc.	Stall Lake	(C.)	Snow Lake	BM, PM
Hudbay Minerals Inc.	New Britannia	(C.)	Snow Lake	BM, PM
Hudbay Minerals Inc.	Lalor Lake	(U.)	Snow Lake	BM, PM
Graymont Inc.	Faulkner	(P., Plant)	Faulkner	IM
ERCO Worldwide	Hargrave	(U., Plant)	Virden	IM

COMPANY	MINE SITE	ACTIVITY TYPE	LOCATION	COMMODITY
Saskatchewan				
SSR Mining Inc.	Santoy	(U.)	Santoy Lake	PM
SSR Mining Inc.	Seabee	(C.)	Laonil Lake	PM
Orano Canada Inc.	McClean Lake	(C.)	McClean Lake	Uranium
Cameco Corporation	Cigar Lake	(U.)	Waterbury Lake	Uranium
Cameco Corporation	McArthur River	(U.)	north of Key Lake	Uranium
Cameco Corporation	Key Lake	(C.)	north of Highrock Lake	Uranium
Nutrien Ltd.	Rocanville	(U., Plant)	Rocanville	IM
The Mosaic Company	Esterhazy (K-3)	(U., Plant)	Esterhazy	IM
Compass Minerals Canada Corporation	Wynyard (Big Quill)	(Plant)	Wynyard	IM
The Mosaic Company	Belle Plaine	(Solution mining, Plant)	Belle Plaine	IM
Nutrien Ltd.	Lanigan	(U.)	Lanigan	IM
K+S Potash Canada	Bethune	(Solution mining, Plant)	Bethune	IM
Nutrien Ltd.	Allan	(U., Plant)	Allan	IM
Nutrien Ltd.	Patience Lake	(U., Plant)	Blucher	IM
ERCO Worldwide	Saskatoon facility	(Solution mining, Plant)	Saskatoon	IM
Saskatchewan Mining and Minerals Inc.	Chaplin Lake	(P., Plant)	Chaplin	IM
Nutrien Ltd.	Cory	(U., Plant)	Cory	IM
Nutrien Ltd.	Vanscoy	(U., Plant)	Vanscoy	IM
Compass Minerals Canada Corporation	Unity	(Solution mining)	Unity	IM
Westmoreland Coal Company	Estevan	(P.)	Bienfait	Coal
Westmoreland Coal Company	Poplar River	(P.)	Coronach	Coal
Alberta				
Hammerstone Infrastructure Materials Ltd.	Hammerstone Quarry	(P.)	north of Fort McMurray	IM
Jarodon Resources Ltd.	Sunnynook	(Solution mining)	Cessford	IM
Suncor Energy Inc.	Fort McMurray West	(P.)	Fort McMurray	IM
Ward Chemical	Calling Lake	(Solution mining)	Calling Lake	IM
Tiger Calcium Services Inc.	Mitsue	(Solution mining)	Slave Lake	IM
Graymont Inc.	Exshaw (Gap)	(P., Plant)	Exshaw	IM
Lafarge Canada Inc.	Exshaw	(P., Plant)	Exshaw	IM
Burnco Rock Products Ltd.	Clearwater	(P., Plant)	Clearwater River	IM
Lehigh Hanson	Mcleod	(P.)	Cadomin	IM
Westmoreland Coal Company	Genesee	(P.)	Genesee	Coal
Westmoreland Coal Company	Coal Valley	(P.)	Edson	Coal
Bighorn Mining Ltd.	Vista	(P.)	Hinton	Coal
CST Canada Coal Limited	Grande Cache	(P., U.)	Grande Cache	Coal
Imperial Oil Ltd.	Kearl	(P.)	Fort McMurray	Oil
Suncor Energy Inc.	Millennium and Steep-bank	(P.)	Fort McMurray	Oil
Canadian Natural Resources Limited	Jackpine	(P.)	Fort MacKay	Oil
Syncrude Canada Ltd.	Aurora North and South	(P.)	Fort MacKay	Oil
Syncrude Canada Ltd.	Mildred Lake	(P.)	Fort MacKay	Oil
Canadian Natural Resources Limited	Muskeg River	(P.)	Fort MacKay	Oil

COMPANY	MINE SITE	ACTIVITY TYPE	LOCATION	COMMODITY
Suncor Energy Inc.	Fort Hills	(P.)	Fort MacKay	Oil
Canadian Natural Resources Limited	Horizon	(P.)	Fort MacKay	Oil
British Columbia				
Gold Mountain Mining Corp.	Elk	(P.)	Peachland	PM
New Gold Inc.	New Afton	(U., C.)	Kamloops	BM, PM
Hudbay Minerals Inc.	Copper Mountain	(P., C.)	Princeton	BM
Teck Resources Limited	Highland Valley	(P., C.)	Logan Lake	BM
Imperial Metals Corporation	Mount Polley	(P., C.)	northeast of Williams Lake	BM
Taseko Mines Limited	Gibraltar	(P., C.)	north of Williams Lake	BM
Centerra Gold Inc.	Mount Milligan	(P., C.)	Fort St. James	BM, PM
Trafigura Mining Group	Myra Falls	(U.)	Strathcona	BM, PM
Newmont Corporation	Red Chris	(P., C.)	Kinaskan Lake	BM
Newmont Corporation	Brucejack	(U., C.)	Stewart	PM
Baymag Inc.	Mount Brussilof	(P.)	Mount Brussilof	IM
CertainTeed Gypsum Canada, Inc.	Kootenay West	(P.)	Canal Flats	IM
Lafarge Canada Inc.	Falkland	(P., Plant)	Falkland	IM
Progressive Planet Solutions Inc.	Bud	(P.)	Princeton	IM
Progressive Planet Solutions Inc.	Red Lake	(P.)	Kamloops	IM
Imperial Limestone Co. Ltd.	Van Anda	(P.)	Texada Island	IM
Texada Quarrying Ltd. (Lafarge Canada Inc.)	Texada	(P.)	Texada Island	IM
Fireside Minerals Ltd.	Fireside	(P.)	Fireside	IM
Teck Resources Limited	Line Creek	(P.)	Sparwood	Coal
Teck Resources Limited	Elkview	(P.)	Sparwood	Coal
Teck Resources Limited	Fording River	(P.)	Elkford	Coal
Teck Resources Limited	Greenhills	(P.)	Sparwood	Coal
Conuma Coal Resources Ltd.	Wolverine	(P., Plant)	Tumbler Ridge	Coal
Conuma Coal Resources Ltd.	Brule	(P.)	Tumbler Ridge	Coal
Conuma Coal Resources Ltd.	Willow Creek	(P.)	Chetwynd	Coal
Yukon				
Hecla Mining Company	Keno Hill Silver District	(U., C.)	Mayo	PM, BM
Victoria Gold Corporation	Eagle (Dublin Gulch)	(P., C.)	Mayo	PM
Minto Metals Corporation	Minto	(P., U., C.)	Pelly Crossing	BM
Northwest Territories				
De Beers Canada Inc.	Gahcho Kué	(P., Plant)	Lac de Gras	DIAM
Rio Tinto Group	Diavik	(U., Plant)	Lac de Gras	DIAM
Burgundy Diamond Mines	Ekati	(U., Plant)	Lac de Gras	DIAM
Nunavut				
Baffinland Iron Mines Corporation	Mary River	(P.)	Pond Inlet	Iron ore
Agnico Eagle Mines Limited	Meliadine	(P., U., C.)	Rankin Inlet	PM
Agnico Eagle Mines Limited	Meadowbank	(C.)	Baker Lake	PM
Agnico Eagle Mines Limited	Amaruq	(P., U.)	Baker Lake	PM

Source: Natural Resources Canada. (P.) Open-Pit, (U.) Underground, (C.) Concentrator
Notes: Excluded operations are clay products, peat, and most construction materials (most stone, sand and gravel). Included are operations that produced during 2023.

ANNEX 2: CANADIAN PRODUCTION OF LEADING MINERALS BY PROVINCE AND TERRITORY, 2023 (p)

	GOLD		COAL		IRON ORE (2)	
	kilograms	$000	kilotonnes	$000	kilotonnes	$000
Newfoundland	x	x			x	x
Prince Edward Island						
Nova Scotia	1,257	x	x	x		
New Brunswick						
Quebec	50,808	4,112,214			x	x
Ontario	88,557	6,495,628				
Manitoba	4,085	308,262				
Saskatchewan	3,297	x	x	x		
Alberta	x	x	x	x		
British Columbia	18,476	1,525,896	x	x		
Yukon	6,698	x				
Northwest Territories						
Nunavut	25,199	1,928,389			x	x
Canada	198,567	15,143,920	48,067	12,214,349	48,043	6,053,875

	POTASH (MOP)		COPPER		NICKEL	
	kilotonnes	$000	tonnes	$000	tonnes	$000
Newfoundland			x	x	25,711	597,528
Prince Edward Island						
Nova Scotia						
New Brunswick						
Quebec			17,876	130,404	42,391	717,492
Ontario			221,803	2,226,060	62,501	2,547,076
Manitoba			10,186	x	10,779	463,669
Saskatchewan	22,282	12,926,785				
Alberta						
British Columbia			266,540	2,509,187		
Yukon			x	x		
Northwest Territories						
Nunavut						
Canada	22,282	12,926,785	537,321	5,176,493	141,381	4,325,765

	SAND AND GRAVEL (1)		PLATINUM GROUP	
	kilotonnes	$000	kilograms	$000
Newfoundland	1,536	8,078	18	1,276
Prince Edward Island	x	x		
Nova Scotia	5,994	80,118	0.1	..
New Brunswick	4,351	40,733		
Quebec			4,941	287,552
Ontario	84,467	813,582	16,549	1,269,872
Manitoba	10,113	95,452	153	10,553
Saskatchewan	7,471	92,147		
Alberta	47,136	595,295		
British Columbia	43,402	544,412		
Yukon	1,645	11,972		
Northwest Territories	x	x		
Nunavut				
Canada	206,144	2,282,128	21,660	1,569,254

	DIAMONDS		URANIUM	
	000 carats	$000	kilotonnes	$000
Newfoundland				
Prince Edward Island				
Nova Scotia				
New Brunswick				
Quebec	1,968	196,909		
Ontario				
Manitoba				
Saskatchewan			9,515	1,633,456
Alberta				
British Columbia				
Yukon				
Northwest Territories	14,708	2,134,073		
Nunavut				
Canada	16,676	2,330,982	9,515	1,633,456

Sources: Natural Resources Canada; Statistics Canada.

(p) Preliminary; - Nil; x Confidential; .. Not available for specific reference period.

Notes: (1) For metals, the quantity refers to the recoverable metal in concentrates shipped.
(1) Mineral production of sand and gravel for Nunavut is included in totals for the Northwest Territories.
(2) The quantity and value reflect iron ore concentrates only because agglomerates values are suppressed by the source.

ANNEX 3: CANADA'S WORLD ROLE AS A PRODUCER OF CERTAIN IMPORTANT MINERALS, 2023 (p)

			Rank of Five Leading Countries				
		World	1	2	3	4	5
			Canada	Russia	China	Belarus	Germany
Potash (K2O equivalent)	000 t	40,000	**13,000**	6,500	6,000	3,800	2,600
(mine production)	% of world total		**33.3**	16.7	15.4	9.7	6.7
			Brazil	**Canada**	DR Congo	Russia	Rwanda
Niobium (mine production)	t	83,000	75,000	**7,000**	540	440	190
	% of world total		90.4	**8.4**	0.7	0.5	0.2
			Kazakhstan	**Canada**	Namibia	Australia	Uzbekistan
Uranium (metal content)[1]	t	48,888	21,819	**7,351**	5,613	4,087	3,300
(mine production)	% of world total		44.6	**15.0**	11.5	8.4	6.8
			Russia	Botswana	**Canada**	Angola	DR Congo
Diamonds (precious)	000 carats	111,523	37,317	25,095	**15,981**	9,754	8,347
	% of world total		33.5	22.5	**14.3**	8.7	7.5
			Russia	South Africa	**Canada**	Zimbabwe	United States
Palladium	kg	210,000	92,000	71,000	**16,000**	15,000	9,800
(metal content)	% of world total		43.8	33.8	**7.6**	7.1	4.7
			China	Republic of Korea	**Canada/Japan**		Mexico
Cadmium (metal)	t	23,000	9,000	4,000	**1,800**		1,100
	% of world total		39.1	17.4	**7.8**		4.8
			China	India	Russia	**Canada**	UAE
Aluminum (primary metal)	000 t	70,000	41,000	4,100	3,800	**3,000**	2,700
	% of world total		58.6	5.9	5.4	**4.3**	3.9
			China	Australia/ Russia		**Canada**	United States
Gold (mine production)	t	3,000	370	310		**200**	170
	% of world total		12.3	10.3		**6.7**	5.7
			China	Republic of Korea	Japan	**Canada**	Belgium
Indium	t	990	650	200	64	**37**	18
	% of world total		65.7	20.2	6.5	**3.7**	1.8
			Finland	Germany	Sweden	**Canada/Latvia**	
Peat	000 t	23,000	5,800	2,600	2,500	**2,400**	
	% of world total		25.2	11.3	10.9	**10.4**	
			South Africa	Russia	Zimbabwe	**Canada**	United States
Platinum	kg	180,000	120,000	23,000	19,000	**5,500**	2,900
(metal content)	% of world total		66.7	12.8	10.6	**3.1**	1.6

			Rank of Five Leading Countries					
		World	1	2	3	4	5	
			China	Japan/Russia		**Canada**	Sweden	
Tellurium	t	640	430	75		**27**	25	
	% of world total		67.2	11.7		**4.2**	3.9	
			China	India	Mexico	**Canada**		
Wollastonite (mine production)	t	1,100,000	900,000	100,000	80,000	**20,000**		
	% of world total		81.8	9.1	7.3	**1.8**		
			China	Mozambique	South Africa	**Canada**	Norway	
Titanium concentrate	000 t	8,600	3,100	1,600	1,000	**500**	430	
(Ilmenite)	% of world total		36.0	18.6	11.6	**5.8**	5.0	
			China	Finland	Madagascar	United States	**Canada**	
Mica (natural)	t	330,000	85,000	60,000	50,000	38,000	**15,000**	
(scrap and flake)	% of world total		25.8	18.2	15.2	11.5	**4.5**	
			Indonesia	Philippines	New Caledo-nia	Russia	**Canada**	
Nickel (mine production)	t	3,600,000	1,800,000	400,000	230,000	200,000	**180,000**	
	% of world total		50.0	11.1	6.4	5.6	**5.0**	
			United States	Qatar	Algeria	Russia	**Canada**	
Helium	M m3 of contained	170	79	66	10	8	**4**	
	% of world total		46	39	6	5	**2**	
			China	United States	India	Germany	Australia	**Canada is 6th**
Salt (mine production)	000 t	270,000	53,000	42,000	30,000	15,000	14,000	**12,000**
	% of world total		19.6	15.6	11.1	5.6	5.2	**4.4**
			China	United States	Saudi Arabia	Russia	UAE	**Canada is 6th**
Sulfur	000 t	82,000	19,000	8,600	8,000	7,000	5,400	**4,900**
	% of world total		23.2	10.5	9.8	8.5	6.6	**6.0**
			Australia	Chile	China	Argentina	Brazil	**Canada is 6th**
Lithium	t	180,000	86,000	44,000	33,000	9,600	4,900	**3,400**
	% of world total		47.8	24.4	18.3	5.3	2.7	**1.9**
			Australia	Brazil	China	India	Russia	**Canada is 7th**
Iron ore (mine production)	mt	2,500	960	440	280	270	88	**70**
(Usable ore)	% of world total		38.4	17.6	11.2	10.8	3.5	**2.8**
			Bhutan	Norway	Brazil	Poland	Russia	**Canada is 8th**
Silicon	000 t	9,000	6,600	620	390	340	130	**80**
	% of world total		73.3	6.9	4.3	3.8	1.4	**0.9**

			Rank of Five Leading Countries					
		World	1	2	3	4	5	
			China	United States/ India/Russia			Indonesia	**Canada is 10th**
Nitrogen (fixed)--ammonia	000 t	150,000	43,000	14,000			6,000	**3,400**
	% of world total		28.7	9.3			4.0	**2.3**
			DR Congo	Indonesia	Russia	Australia	Madagascar	**Canada is 11th**
Cobalt (mine production)	t	230,000	170,000	17,000	8,800	4,600	4,000	**2,100**
% of world total			73.9	7.4	3.8	2.0	1.7	**0.9**
			China	Madagascar	Mozambique	Brazil	Republic of Korea	**Canada is 11th**
Graphite	t	1,600,000	1,230,000	100,000	96,000	73,000	27,000	**3,500**
	% of world total		76.9	6.3	6.0	4.6	1.7	**0%**
			China	Chile	Peru	United States	Mexico	**Canada is 11th**
Molybdenum (Mo content)	t	260,000	110,000	46,000	37,000	34,000	15,000	**1,000**
(mine production)	% of world total		42.3	17.7	14.2	13.1	5.8	**0.4**
			Chile	Peru	DR Congo	China	United States	**Canada is 12th**
Copper (mine production)	000 t	22,000	5,000	2,600	2,500	1,700	1,100	**480**
	% of world total		22.7	11.8	11.4	7.7	5.0	**2.2**
			China	India	Indonesia	United States	Australia	**Canada is 13th**
Coal	Mt	8,978	4,658	1,017	767	524	472	**47**
	% of world total		51.9	11.3	8.5	5.8	5.3	**0.5**
			United States	China	Italy	Turkey	France	**Canada is 14th**
Sand and Gravel (Industrial)	000 t	400,000	130,000	88,000	33,000	15,000	14,000	**5,500**
(mine production)	% of world total		32.5	22.0	8.3	3.8	3.5	**1.4**
			United States	Iran	China/Oman		Spain	**Canada is 16th**
Gypsum (mine production)	000 t	160,000	22 000	16,000	12,000		11,000	**2,400**
	% of world total		13.8	10.0	7.5		6.9	**1.5**
			China	United States	India	Russia	Brazil	**Canada is 16th**
Lime	000 t	430,000	310,000	17,000	16,000	11,000	8,300	**1,700**
	% of world total		72.1	4.0	3.7	2.6	1.9	**0.4**
			China	Tajikistan	Turkey	Burma	Russia	**Canada is 16th**
Antimony	t	83,000	40,000	21,000	6,000	4,600	4,300	**2**
	% of world total		48.2	25.3	7.2	5.5	5.2	**0.0**

Sources: U.S. Geological Survey (USGS); bp Statistical Review of World Energy; World Nuclear Association; Kimberley Process; International Energy Agency

n.a. Not applicable.

[1] 2022 values, based on the publication schedule of the data source, 2023 values will not be available until 2025 (https://world-nuclear.org/information-library/nuclear-fuel-cycle/mining-of-uranium/world-uranium-mining-production)

ANNEX 4: MINERAL PRODUCTION OF CANADA, 2014-2023 (p)

		2014		2015		2016		2017		2018	
	Unit	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)
METALLIC MINERALS											
Antimony	t	4	45	1	5	0	3	1	11	5	54
Bismuth	t	4	97	2	29	2	31	4	59	5	58
Cadmium	t	129	276	68	102	60	113	158	381	148	595
Cesium	t	x	x	x	x	x	x	x	x	x	x
Cobalt	t	3,907	137,844	4,339	156,720	4,216	149,145	3,704	290,783	3,279	310,086
Copper	t	654,468	4,983,772	697,322	4,905,661	679,524	4,379,532	580,097	4,639,616	527,510	4,422,120
Gold	kg	151,472	6,817,154	160,751	7,667,339	161,497	8,590,179	172,877	9,069,125	191,882	10,118,125
Ilmenite	000 t	x	x	x	x	x	x	x	x	x	x
Indium	kg	x	x	x	x	x	x	x	x	x	x
Iron ore[5]	000 t	43,173	4,173,516	46,220	2,854,585	46,731	3,165,022	50,300	4,693,042	52,755	4,949,188
Iron, remelt	000 t	x	x	x	x	x	x	x	x	x	x
Lead	t	3,579	8,288	3,699	8,485	12,020	29,785	13,494	40,589	15,605	45,131
Lithium	t	x	x	-	-	-	-	-	-	x	x
Molybdenum	t	9,358	259,876	2,505	48,846	2,783	53,105	4,765	112,054	5,048	152,725
Nickel	t	218,233	4,069,165	225,351	3,408,431	230,210	2,926,428	206,354	2,787,020	175,761	2,970,887
Niobium (Columbium)	t	5,774	x	5,385	x	6,099	x	x	x	x	x
Platinum group	kg	31,386	1,058,992	33,248	1,059,512	31,471	947,560	27,342	1,016,402	28,596	1,206,948
Selenium	t	142	8,879	156	6,575	175	3,886	72	3,204	85	4,133
Silver	t	472	320,274	371	239,656	385	282,666	368	261,688	392	254,759
Tantalum	t	-	-	-	-	-	-	-	-	-	-
Tellurium	t	8	1,066	10	990	18	870	18	885	x	x
Titanium dioxide[5]	t	-	-	-	-	-	-	-	-	-	-
Tungsten	t	2,708	84,331	2,289	62,339	-	-	-	-	-	-
Uranium	t	9,780	933,583	13,279	1,609,476	14,133	1,248,600	12,207	876,473	6,975	490,077
Zinc	t	322,605	771,026	275,410	632,892	301,210	832,545	305,314	1,146,760	287,632	1,087,538
TOTAL, METALLIC MINERALS		..	24,225,029	..	23,125,240	..	23,302,112	..	25,738,171	..	27,058,554

		2019		2020		2021		2022		2023	
	Unit	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)
METALLIC MINERALS											
Antimony	t	..	..	..	..	..	..	..	..	..	..
Bismuth	t	..	..	..	..	..	..	..	..	..	..
Cadmium	t	..	..	..	..	..	..	..	..	..	..
Cesium	t	..	..	..	..	..	..	..	..	..	..
Cobalt	t	4,365	180,029	4,328	181,730	3,964	229,966	3,573	271,031	4,219	290,395
Copper	t	551,562	4,293,553	577,228	4,215,890	507,120	5,569,829	643,355	5,546,945	537,321	5,176,493
Gold	kg	189,516	11,373,300	177,732	13,533,630	189,926	13,404,004	195,145	14,328,527	198,567	15,143,920
Ilmenite	000t	..	..	..	..	..	..	..	..	..	..
Indium	kg	..	..	..	..	..	..	..	..	..	..
Iron ore[5]	000t	54,895	6,445,411	60,914	8,752,568	55,667	11,340,891	59,659	9,995,582	48,043	6,053,875
Iron, remelt	000t	x	x	x	x	x	x	x	x	x	x
Lead	t	x	x	x	x	8,224	21,968	4,131	10,889	x	x
Lithium	t	-	-	-	-	54,756	x	115,549	x	115,474	x
Molybdenum	t	4,367	142,908	2,442	x	1,426	x	1,618	x	966	64,308
Nickel	t	172,743	3,288,404	178,222	2,961,262	159,885	3,272,094	123,209	4,023,942	141,381	4,325,765
Niobium (Columbium)	t	x	x	x	x	x	x	x	x	x	x
Platinum group	kg	32,566	1,946,378	16,473	1,409,631	20,484	1,915,297	19,621	1,547,312	21,660	1,569,254
Selenium	t	..	..	..	..	..	..	..	..	..	..
Silver	t	380	258,383	291	264,013	286	279,209	281	238,227	295	218,583
Tantalum	t	-	-	-	-	-	-	-	-	-	-
Tellurium	t	-	-	-	-	-	-	-	-	-	-
Titanium dioxide[5]	t	x	x	x	x	x	x	x	x	x	x
Tungsten	t	-	-	-	-	-	-	-	-	-	-
Uranium	t	6,997	524,781	3,704	328,206	4,768	464,910	6,929	986,438	9,515	1,633,456
Zinc	t	263,941	840,313	230,137	561,804	231,573	753,755	185,315	663,208	x	402,324
TOTAL, METALLIC MINERALS		..	29,694,819	..	32,513,321	..	37,594,761	..	38,034,488	..	38,883,994

		2014		2015		2016		2017		2018	
	Unit	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)
NONMETALLIC MINERALS											
Barite	000 t	x	x	x	x	x	x	x	x	x	x
Carbonatite	000 t	x	x	x	x	x	x	x	x	-	-
Cement[1]	000 t	12,136	1,692,131	12,334	1,689,851	11,820	1,615,674	..	..	..	..
Chrysotile	000 t	x	x	x	x	x	x	-	-	-	-
Clay	000 t	-	-	-	-	-	-	-	-	-	-
Clay products[2]	000 t	..	118,012	..	124,446	..	140,122	..	147,131	..	131,928
Diamonds	000 ct	12,012	2,236,043	11,677	2,148,583	13,315	1,888,732	23,199	2,677,723	22,789	2,704,302
Gemstones	t	6,919	5,991	8,233	7,953	154	5,852	89	4,612	87	2,349
Graphite	000 t	x	x	x	x	x	x	14	20,336	11	19,156
Gypsum [3]	000 t	1,793	25,474	1,726	19,675	1,679	17,655	3,001	33,120	3,240	40,157
Lime	000 t	1,995	344,816	1,852	335,489	1,807	330,366	1,842	336,642	1,785	335,739
Magnesite	000 t	x	x	x	x	x	x	x	x	x	x
Marl	000 t	-	-	-	-	-	-	-	-	-	-
Mica	000 t	x	x	x	x	x	x	x	x	x	x
Nepheline syenite	000 t	654	83,805	614	97,880	571	81,219	612	64,712	565	131,689
Peat	000 t	1,178	249,078	1,297	257,030	1,452	330,653	1,459	330,991	1,306	314,924
Phosphate	000 t	-	-	-	-	-	-	-	-	-	-
Potash (MOP)	000 t	-	-	-	-	-	-	-	-	-	-
Potash (K_2O)[4]	000 t	10,818	5,581,264	11,462	6,132,751	10,790	3,735,632	12,563	4,371,065	14,024	5,726,798
Potassium sulphate	000 t	x	x	x	x	x	x	x	x	x	x
Pumice	000 t	x	x	x	x	5	273	x	x	x	x
Quartz (silica)[3]	000 t	2,011	90,441	2,053	107,377	2,256	95,614	2,540	99,278	4,864	202,387
Salt	000 t	14,473	752,321	14,343	791,980	10,252	445,891	11,424	476,674	10,713	488,535
Sand and gravel	000 t	223,407	1,831,464	228,030	1,884,531	280,550	2,398,633	231,219	2,095,005	245,815	2,284,402
Soapstone, talc, pyrophyllite	000 t	90	38,985	175	50,335	199	55,513	215	51,754	279	42,635
Sodium sulphate	000 t	x	x	x	x	x	x	x	x	x	x
Stone[3]	000 t	147,739	1,541,321	158,034	1,687,916	160,016	1,664,188	169,518	1,747,125	188,974	1,987,973
Sulphur, elemental	000 t	5,252	326,335	5,187	423,452	4,746	193,877	4,803	206,740	4,828	449,441
Sulphur, in smelter gas	000 t	590	100,125	558	114,383	635	110,307	524	72,739	505	87,206
Sulphuric Acid	000 t	-	-	-	-	-	-	-	-	-	-
Titanium dioxide[5]	000 t	x	x	x	x	x	x	x	x	x	x
Wollastonite	000 t	-	-	-	-	x	x	x	x	x	x
Zeolite	000 t	-	-	-	-	x	x	1	5	1	12
TOTAL, NONMETALLIC MINERALS (including cement[1])		..	15,778,620	..	16,519,513	..	13,724,154	..	..	..	..
TOTAL, NONMETALLIC MINERALS (excluding cement[1])		..	14,086,489	..	14,829,662	..	12,108,480	..	13,304,062	..	15,530,709

		2019		2020		2021		2022		2023	
	Unit	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)
NONMETALLIC MINERALS											
Barite	000 t	x	x	x	x	x	x	x	x	x	x
Carbonatite	000 t	-	-	-	-	-	-	-	-	-	-
Cement[1]	000 t	..	..	..	..	..	..	..	..	..	..
Chrysotile	000 t	-	-	-	-	-	-	-	-	-	-
Clay	000 t	364	1,216	196	x	235	1,948	262	2,662	228	2,087
Clay products[2]	000 t	384	x	336	x	299	x	336	x	377	x
Diamonds	000 ct	18,363	2,301,989	14,293	1,332,035	17,593	1,840,664	16,046	2,186,052	16,676	2,330,982
Gemstones	t	64	1,746	80	x	50	1,458	x	x	x	x
Graphite	000 t	11	x	8	x	13	x	x	x	x	x
Gypsum [3]	000 t	2,452	38,361	3,054	50,898	2,922	50,680	3,368	66,729	3,549,648	75,310
Lime	000 t	1,976	374,340	1,559	222,477	1,854	334,426	1,681	312,829	1,345	231,195
Magnesite	000 t	x	x	x	x	x	x	x	x	x	x
Marl	000 t	-	-	-	-	-	-	-	-	-	-
Mica	000 t	x	x	15	x	15	x	14	x	x	x
Nepheline syenite	000 t	524	115,844	652	132,610	691	140,494	769	156,206	768,535	156,205
Peat	000 t	1,422	352,637	1,481	331,803	1,876	304,249	1,913	379,025	1,972	336,280
Phosphate	000 t	-	-	-	-	-	-	-	-	-	-
Potash (MOP)	000 t	20,717	6,422,081	22,682	6,350,613	22,934	7,995,825	22,681	17,634,352	22,282	12,926,786
Potash (K_2O)[4]	000 t	12,686	-	13,904	-	14,047	-	13,804	-	13,659	-
Potassium sulphate	000 t	x	x	x	x	x	x	x	x	x	x
Pumice	000 t	x	x	x	x	x	x	x	x	x	x
Quartz (silica)[3]	000 t	..	..	..	..	..	..	-	-	-	-
Salt	000 t	11,798	577,942	12,643	551,441	11,170	433,278	14,130	847,305	14,867	941,088
Sand and gravel	000 t	193,017	1,921,544	209,685	2,036,309	219,669	2,174,273	252,545	2,262,919	206,144	2,282,128
Soapstone, talc, pyrophyllite	000 t	x	x	x	x	x	51,651	x	51,050	x	52,308
Sodium sulphate	000 t	x	x	x	x	x	x	x	x	x	x
Stone[3]	000 t	152,570	1,770,069	151,551	1,408,809	173,177	1,653,114	105,647	1,180,395	101,158	1,202,611
Sulphur, elemental	000 t	..	..	..	..	..	..	..	..	..	..
Sulphur, in smelter gas	000 t	..	..	..	..	..	..	..	..	..	..
Sulphuric Acid	000 t	-	-	-	-	-	-	-	-	-	-
Titanium dioxide[5]	000 t	..	..	..	..	..	..	..	..	..	..
Wollastonite	000 t	x	x	x	x	x	x	x	x	x	x
Zeolite	000 t	x	x	-	-	1	10	510	4	0	-
TOTAL, NONMETALLIC MINERALS (including cement[1])		..	..	..	..	..	..	..	..	..	..
TOTAL, NONMETALLIC MINERALS (excluding cement[1])		..	14,143,711	..	12,681,255	..	15,192,990	..	25,250,592	..	20,823,873

		2014		2015		2016		2017		2018	
	Unit	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)
MINERAL FUELS											
Coal	000 t	69,035	3,896,746	61,985	3,126,266	61,332	4,009,353	60,750	6,280,947	54,599	6,459,413
TOTAL MINERAL FUELS		69,035	3,896,746	61,985	3,126,266	61,332	4,009,353	60,750	6,280,947	54,599	6,459,413
TOTAL MINERAL PRODUCTION (including cement[1])		..	43,900,395	..	42,771,019	..	41,035,618	..	..	..	..
TOTAL MINERAL PRODUCTION (excluding cement[1])		..	42,208,264	..	41,081,168	..	39,419,944	..	45,323,180	..	49,048,676

		2019		2020		2021		2022		2023	
	Unit	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)	(quantity)	($000)
MINERAL FUELS											
Coal	000 t	51,746	5,625,050	40,824	3,956,724	48,443	8,521,495	46,217	15,217,465	48,067	12,214,349
TOTAL MINERAL FUELS		51,746	5,625,050	40,824	3,956,724	48,443	8,521,495	46,217	15,217,465	48,067	12,214,349
TOTAL MINERAL PRODUCTION (including cement[1])		..	..	..	..	..	..	..	..	..	..
TOTAL MINERAL PRODUCTION (excluding cement[1])		..	49,463,580	..	49,151,299	..	61,309,246	..	78,502,545	..	71,922,216

Sources: Natural Resources Canada; Statistics Canada.

(p) Preliminary; x Confidential; – Nil; . . Not available.

Notes:

(1) As of reference year 2017, Statistics Canada has ceased the collection of the cement data. NRCan is no longer deducting the quantity and value of gypsum, sand and gravel, silica, and stone used in the manufacture of cement products from the totals for gypsum, sand and gravel, silica, and stone.

(2) Production values for bentonite and diatomite have been included in clay products.

(3) Shipments of gypsum, silica and stone to Canadian cement, lime and clay plants are not included in this table.

(4) Shipments of potash to Canadian potassium sulphate plants are not included in this table.

(5) As of 2022, the iron ore value reported comprises concentrates only as agglomerates value is not suppressed by the source. Numbers may not add due to rounding.

(5) As of 2019, titanium dioxide is classified as a metal by the source whereas previously it was reported with non-metal.

ANNEX 5: CANADIAN RESERVES OF SELECTED MAJOR METALS, 1978-2023 (p)

Metal Contained in Proven and Probable Mineable Ore (1) in Operating Mines (2) and Deposits Committed to Production

YEAR	COPPER	NICKEL	LEAD	ZINC	MOLYBDENUM	SILVER	GOLD (3)
	(000 t)	(000 t)	(000 t)	(000 t)	(000 t)	(t)	(t)
1978	16,184	7,843	8,930	26,721	464	30,995	505
1979	16,721	7,947	8,992	26,581	549	32,124	575
1980	16,714	8,348	9,637	27,742	551	33,804	826
1981	15,511	7,781	9,380	26,833	505	32,092	851
1982	16,889	7,546	9,139	26,216	469	31,204	833
1983	16,214	7,393	9,081	26,313	442	31,425	1,172
1984	15,530	7,191	9,180	26,000	361	30,757	1,208
1985	14,201	7,041	8,503	24,553	331	29,442	1,373
1986	12,918	6,780	7,599	22,936	312	25,914	1,507
1987	12,927	6,562	7,129	21,471	231	25,103	1,705
1988	12,485	6,286	6,811	20,710	208	26,122	1,801
1989	12,082	6,092	6,717	20,479	207	24,393	1,645
1990	11,261	5,776	5,643	17,847	198	20,102	1,542
1991	11,040	5,691	4,957	16,038	186	17,859	1,433
1992	10,755	5,605	4,328	14,584	163	15,974	1,345
1993	9,740	5,409	4,149	14,206	161	15,576	1,333
1994	9,533	5,334	3,861	14,514	148	19,146	1,513
1995	9,250	5,832	3,660	14,712	129	19,073	1,540
1996	9,667	5,623	3,450	13,660	144	18,911	1,724
1997	9,032	5,122	2,344	10,588	149	16,697	1,510
1998	8,402	5,683	1,845	10,159	121	15,738	1,415
1999	7,761	4,983	1,586	10,210	119	15,368	1,326
2000	7,419	4,782	1,315	8,876	97	13,919	1,142
2001	6,666	4,335	970	7,808	95	12,593	1,070
2002	6,774	4,920	872	6,871	82	11,230	1,023
2003	6,037	4,303	749	6,251	78	9,245	1,009
2004	5,546	3,846	667	5,299	80	6,568	787
2005	6,589	3,960	552	5,063	95	6,684	965
2006	6,923	3,940	737	6,055	101	6,873	1,032
2007	7,565	3,778	682	5,984	213	6,588	987
2008	7,456	3,605	636	5,005	222	5,665	947

YEAR	COPPER	NICKEL	LEAD	ZINC	MOLYBDENUM	SILVER	GOLD (3)
	(000 t)	(000 t)	(000 t)	(000 t)	(000 t)	(t)	(t)
2009	7,290	3,301	451	4,250	215	6,254	918
2010	10,747	3,074	400	4,133	254	6,916	1,473
2011	10,570	2,936	247	4,812	256	6,954	2,225
2012	10,364	2,617	126	4,163	256	5,598	2,148
2013	10,777	2,682	116	3,532	145	5,013	2,140
2014	10,214	2,287	88	2,972	121	5,498	2,070
2015	9,937	2,725	83	3,009	101	5,345	1,984
2016	9,101	2,604	40	2,231	98	3,626	1,910
2017	8,984	2,790	165	2,286	96	5,074	2,578
2018	8,115	2,296	118	1,913	77	4,865	2,597
2019	7,348	2,236	203	2,180	75	4,480	2,359
2020	7,001	1,977	176	1,630	69	5,223	2,659
2021	7,652	1,909	160	1,454	80	4,714	2,765
2022r	8,254	2,219	79	947	64	4,865	3,175
2023p	7,032	2,301	58	331	70	5,473	3,131

Source: Natural Resources Canada, based on company reports and the Federal-Provincial/Territorial Annual Survey of Mines and Concentrators.

(1) No allowance is made for losses in milling, smelting and refining. Excludes material classified as “resources.”

(2) Includes metal in mines where production has been suspended temporarily.

(3) Excludes metal in placer deposits because reserves data are generally unavailable.

(r) Revised; (p) Preliminary.

Note: One tonne (t) = 1.1023113 short tons = 32 150.746 troy oz.

ANNEX 6: EMPLOYMENT AND ANNUAL COMPENSATION IN THE CANADIAN MINING, SMELTING AND REFINING INDUSTRIES, 2010-2023

	NUMBER OF EMPLOYEES	COMPENSATION PER JOB [1]
Metal Mines		
2010	28,595	112,340
2011	29,995	116,093
2012	31,155	121,781
2013	39,720	118,302
2014	38,550	125,920
2015	34,415	130,754
2016	38,545	129,467
2017	39,935	126,947
2018	39,985	132,442
2019	42,410	135,808
2020	42,405	143,194
2021	44,785	141,918
2022	44,255	150,512
2023	46,900	154,482
Non-metal Mines		
2010	18,960	92,515
2011	19,010	100,544
2012	18,385	104,681
2013	21,525	101,343
2014	22,640	105,158
2015	22,480	109,106
2016	22,195	106,432
2017	23,930	106,312
2018	24,655	109,924
2019	24,795	107,316
2020	23,820	113,687
2021	25,390	114,242
2022	26,360	122,195
2023	27,270	123,363
Coal Mines		
2010	6,240	108,693
2011	7,040	112,461
2012	7,440	115,728
2013	9,730	116,706
2014	8,205	116,668
2015	6,475	124,290
2016	7,715	122,250
2017	7,455	126,306
2018	8,460	133,392
2019	8,380	137,354
2020	7,500	136,849
2021	9,375	136,808
2022	9,390	152,002
2023	10,100	156,303

	NUMBER OF EMPLOYEES	COMPENSATION PER JOB (1)
Smelting & Refining [2]		
2010	50,680	98,927
2011	53,600	103,091
2012	46,335	109,399
2013	46,400	113,267
2014	44,855	111,972
2015	45,435	113,800
2016	45,070	114,316
2017	45,470	118,578
2018	44,170	123,882
2019	42,535	127,012
2020	39,105	135,138
2021	43,550	131,465
2022	42,915	145,359
2023	42,950	149,607
Total Mining, Smelting and Refining		
2010	104,475	103,715
2011	109,645	108,429
2012	103,315	113,266
2013	117,375	112,797
2014	114,250	115,426
2015	108,805	120,095
2016	113,525	118,745
2017	116,790	120,114
2018	117,270	125,619
2019	118,120	128,000
2020	112,830	133,151
2021	123,100	131,936
2022	122,920	143,526
2023	127,220	147,144

Sources: Statistics Canada; Natural Resources Canada. Table: 36-10-0489-01 (formerly CANSIM 383-0031)

(1) Compensation for Smelting and Refining and Total based on weighted average.

(2) Comprised of NAICS 3311, NAICS 3313, and NAICS 3314.

ANNEX 7: TOTAL COMPENSATION PER JOB, BY SELECT CANADIAN INDUSTRIAL SECTOR, 2010-2023(p)

	Forestry and logging	Mining, Smelting and Refining (1)	Manufacturing	Construction	Finance & Insurance
2010	68,489	103,715	66,025	64,204	63,525
2011	71,702	108,429	67,775	66,457	65,650
2012	75,395	113,266	70,163	69,245	68,068
2013	77,841	112,797	71,934	71,672	70,301
2014	82,071	115,426	74,305	74,911	73,809
2015	85,105	120,095	75,862	75,134	78,672
2016	81,397	118,745	75,297	73,462	81,016
2017	82,434	120,114	75,973	73,081	84,636
2018	84,744	125,619	78,515	75,088	88,433
2019	83,397	128,000	79,633	76,309	90,761
2020	88,917	133,151	85,945	80,803	97,121
2021	89,997	131,936	85,209	81,964	97,592
2022	97,148	143,526	93,355	87,929	107,083
2023(p)	99,909	147,144	95,800	90,192	109,236

Sources: Statistics Canada Table 36-10-0489-01; Natural Resources Canada.

(1) Based on a weighted average of NAICS 212, 3311, 3313, and 3314 (refer to Annex 7).

ANNEX 8: VALUE ($) OF DOMESTIC EXPORTS OF MINERALS AND MINERAL PRODUCTS, BY COMMODITY AND COUNTRY OF DESTINATION, 2023

METALS	U.S.A.	United Kingdom	European Union (EU-27)	China	Japan	Other Countries	Total
Aluminum	15,235,381,040	25,467,435	526,272,331	129,048,605	15,538,897	945,159,050	16,876,867,358
Antimony	1,722,138	491,023	-	-	15,836	684,766	2,913,763
Barium	511,722	-	-	-	-	-	511,722
Beryllium	19,563	-	-	-	-	19,200	38,763
Bismuth	298,005	-	10,540	20,425	-	174,113	503,083
Cadmium	381,013	-	4,812,641	1,146,535	119,037	4,245,410	10,704,636
Calcium metals	4,593,344	-	2,100	-	-	90,514	4,685,958
Chromium	5,351,641	-	-	-	-	366,925	5,718,566
Cobalt	74,073,310	41,275,269	135,435,909	83,503,008	20,444,452	207,943,753	562,675,701
Copper	4,859,881,011	7,878,619	493,964,690	1,624,023,709	1,084,385,266	1,236,692,701	9,306,825,996
Germanium	8,762,106	-	155,393	699,517	4,128,276	2,828,168	16,573,460
Gold	12,490,227,371	8,502,629,900	39,496,871	628,444,556	96,092,012	8,415,278,073	30,172,168,783
Hafnium	3,757,199	-	-	-	-	-	3,757,199
Iron and steel	19,955,579,138	43,589,929	230,146,735	45,675,282	10,908,305	1,586,287,187	21,872,186,576
Iron ore	335,824,260	237,224,559	3,316,947,536	2,515,481,790	1,056,269,754	1,484,688,794	8,946,436,693
Lead	560,304,057	161,209	2,235,844	5,345,944	4,051,084	100,357,020	672,455,158
Lithium	166,596,452	965,171	4,786,706	1,728,955	174,076	18,779,466	193,030,826
Magnesium and magnesium compounds	129,507,897	5,029	1,211,395	941,866	-	852,711	132,518,898
Manganese	1,199,187	1	84,264	-	-	440,089	1,723,541
Mercury	220,562	70,604	84,137	1,927	404	193,522	571,156
Molybdenum	57,287,118	-	20,289,577	43,249	-	30,162,971	107,782,915
Nickel	1,970,672,270	19,347,453	938,700,906	243,740,276	324,280,072	2,379,173,864	5,875,914,841
Niobium	177,090,433	3,366	121,029,915	31,619,310	1,027,942	69,705,318	400,476,284
Platinum group metals	2,034,740,786	475,233	15,101,548	352,777,054	307,620	188,453,270	2,591,855,511
Rare earth metals	192,703	7,586	5,322	1,288	118,447	20,075	345,421
Rhenium	2,351,245	231,306	668,192	-	-	-	3,250,743
Selenium	1,072,077	-	2,112,234	1,783,462	-	4,557,149	9,524,922
Silicon	328,550,197	4	29,492,606	4,191,526	-	21,208,085	383,442,418
Silver	1,358,855,536	1,606,041	46,535,482	20,324,882	28,316,385	45,234,686	1,500,873,012
Tantalum	6,358,694	24,819	1,998,348	149,084	3,258	269,279	8,803,482
Tellurium	1,263,742	259,093	53,217,884	4,163	608,520	2,261,948	57,615,350
Tin	29,638,747	23,391	4,662,123	108,742	-	771,381	35,204,384
Titanium metal	89,540,909	3,131,118	53,069,201	18,267,748	725,325	11,323,374	176,057,675
Tungsten	45,029,939	2,073	4,344,370	34,964	95,556	2,609,614	52,116,516
Uranium and thorium	1,535,574,718	449,493,276	1,106,933,635	13,655,980	22,944,070	101,693,436	3,230,295,115
Vanadium	60,855,216	-	61	-	-	-	60,855,277
Zinc	1,814,930,010	1,223,844	17,561,783	8,299,393	1,520,185	209,661,784	2,053,196,999
Zirconium	5,185,299	355	197,694	2,037,542	-	94,727	7,515,617
Other metals	7,070,488,648	78,083,329	1,111,394,851	539,625,486	234,830,474	1,118,413,435	10,152,836,223
TOTAL METALS	**70,423,869,303**	**9,413,671,035**	**8,282,962,824**	**6,272,726,268**	**2,906,905,253**	**18,190,695,858**	**115,490,830,541**

NONMETALS	U.S.A.	United Kingdom	European Union (EU-27)	China	Japan	Other Countries	Total
Abrasives	241,358,030	1,062,358	10,264,857	5,320,467	5,501,318	34,387,379	297,894,409
Arsenic	-	-	-	-	-	83,107	83,107
Barite and witherite	12,785	-	-	-	-	-	12,785
Boron	1,958,759	3,525	1,168,892	301,034	42,400	4,734,480	8,209,090
Bromine	700,924	-	4,821	-	-	1,387	707,132
Cement	1,227,057,484	778,423	5,878,423	821,699	63,235	8,139,310	1,242,738,574
Chlorine and chlorine compounds	384,864,722	4,727	420,233	1,186	2,159	199,866	385,492,893
Chrysotile (Asbestos)	39,127,003	13,190	184,462	277,521	143,758	2,447,526	42,193,460
Clay and clay products	24,605,813	284,928	6,848,297	381,260	50,974	10,280,251	42,451,523
Diamonds	79,010,137	2,397,327	1,550,690,868	871,599	21,432	544,598,621	2,177,589,984
Dolomite	47,135,392	-	-	-	-	7,928	47,143,320
Feldspar	139,350	-	-	-	-	5,638	144,988
Fluorspar	13,287,413	-	266,269	-	870	1,390,797	14,945,349
Glass and glassware products	780,046,292	10,229,909	28,546,637	5,038,822	1,483,035	24,515,275	849,859,970
Granite	64,975,980	-	178,839	222,307	-	1,166,876	66,544,002
Graphite	57,694,415	470,296	14,132,393	8,796,713	1,571,041	6,946,859	89,611,717
Gypsum	131,560,438	61,450	374,867	85,177	44,618	1,311,389	133,437,939
Iodine	4,302,135	43,200	251,315	56,394	-	202,478	4,855,522
Lime	57,325,897	-	15	-	-	13,965	57,339,877
Limestone flux and other limestone	26,769,732	-	1,219,408	-	-	9,164	27,998,304
Marble, travertine and other calcareous stones	31,261,429	-	144,232	164,572	-	317,289	31,887,522
Mica	7,055,835	219,289	502,839	152,619	1,924,441	1,906,985	11,762,008
Mineral pigments	181,073,645	130,714	594,033	64,765	68,541	6,082,527	188,014,225
Nepheline syenite	136,842,335	25,634	780,518	1,075,824	990,022	5,360,867	145,075,200
Pearls	2,670,957	4,037	16,246	7	-	108,279	2,799,526
Peat	633,153,248	293,033	658,924	116,197	4,783,513	20,672,366	659,677,281
Phosphate and phosphate compounds	120,367,404	3,041	1,106,941	425,558	463,057	17,768,692	140,134,693
Potash and potassium compounds	4,944,300,540	8,010	415,536,164	903,825,350	286,243	5,306,405,470	11,570,361,777
Salt and sodium compounds	546,936,749	389,627	18,519,161	2,178,541	48,298,907	58,058,014	674,380,999
Sand and gravel	136,624,767	-	32	-	-	1,040,264	137,665,063
Sandstone	582,078	-	-	-	-	-	582,078
Silica and silica compounds	124,187,685	762,244	2,901,460	1,726,388	204,833	17,248,533	147,031,143

NONMETALS (continued)	U.S.A.	United Kingdom	European Union (EU-27)	China	Japan	Other Countries	Total
Slate	10,851,310	5,145,600	3,224,906	-	96,250	1,281,962	20,600,028
Sulphur and sulphur compounds	540,895,680	96	58,076	148,166,317	267	264,433,005	953,553,441
Talc, soapstone and pyrophyllite	54,323,464	-	5,670,036	502,640	16,318	1,362,877	61,875,335
Titanium oxides	459,048,758	1,690,845	15,079,895	3,281,083	16,325	13,586,656	492,703,562
Other nonmetals	1,229,821,657	4,719,267	33,114,996	10,543,764	1,323,443	66,580,873	1,346,104,000
Other structurals	290,105,451	1,258,247	6,014,520	1,997,710	143,686	35,988,689	335,508,303
TOTAL NON-METALS	**12,632,035,693**	**29,999,017**	**2,124,353,575**	**1,096,395,514**	**67,540,686**	**6,458,645,644**	**22,408,970,129**

MINERAL FUELS	U.S.A.	United Kingdom	European Union (EU-27)	China	Japan	Other Countries	Total
Coal	711,336,999	5,056,095	1,061,279,462	3,055,617,726	3,741,796,307	4,104,044,394	12,679,130,983
Coke	54,912,775	-	25,114,815	-	-	1,398,525	81,426,115
TOTAL MINERAL FUELS	**766,249,774**	**5,056,095**	**1,086,394,277**	**3,055,617,726**	**3,741,796,307**	**4,105,442,919**	**12,760,557,098**

TOTAL MINING DOMESTIC EXPORTS	**83,822,154,770**	**9,448,726,147**	**11,493,710,676**	**10,424,739,508**	**6,716,242,246**	**28,754,784,421**	**150,660,357,768**

Sources: Natural Resouces Canada; Statistics Canada.

- Nil.

Note: Stages 1 to 4 - includes ores, concentrates and semi-fabricated and fabricated metal and mineral products

ANNEX 9: VALUE ($) OF IMPORTS OF MINERAL AND METAL PRODUCTS, BY COMMODITY AND COUNTRY OF IMPORT, 2023

METALS	U.S.A.	China	European Union (EU-27)	Mexico	Other Countries	Total
Aluminum	4,124,296,277	1,380,325,262	607,019,995	90,435,750	3,289,514,774	9,491,592,058
Antimony	6,345,692	17,604,739	1,390,279	18,790	8,186,185	33,545,685
Barium	6,138,318	1,473,150	760,009	-	170,979	8,542,456
Beryllium	702,787	3,185	20,896	-	36,834	763,702
Bismuth	2,963,084	756,417	2,106	-	237,552	3,959,159
Cadmium	5,189,175	371,120	10,493,500	2,047	25,502,600	41,558,442
Calcium metals	28,807,930	11,304,540	2,660,131	3,823,225	4,025,882	50,621,708
Chromium	11,005,627	9,141,830	30,503,462	503,996	70,342,754	121,497,669
Cobalt	38,575,211	46,683	7,588,861	71,225	14,464,071	60,746,051
Copper	3,094,578,755	245,021,237	878,396,927	64,026,159	1,541,276,002	5,823,299,080
Germanium	7,754,655	707,550	297,762	-	529,917	9,289,884
Gold	5,594,818,762	1,001,798	14,586,767	309,974,039	11,787,581,789	17,707,963,155
Hafnium	630,405	4,776,787	515,397	7,342	-	5,929,931
Iron and steel	16,922,571,118	4,664,345,098	3,685,668,007	1,756,243,608	7,020,291,168	34,049,118,999
Iron ore	1,054,453,167	11,050	8,432,789	255	17,506,985	1,080,404,246
Lead	946,964,658	87,837,878	108,103,993	59,810,854	209,364,400	1,412,081,783
Lithium	503,574,567	108,264,588	28,139,210	642,635	97,810,550	738,431,550
Magnesium and magnesium compounds	36,800,438	314,532,479	16,618,881	5,345,751	22,666,284	395,963,833
Manganese	100,953,312	93,827,410	9,038,892	8,021,669	205,461,353	417,302,636
Mercury	592,839	94,266	71,113	-	638,011	1,396,229
Molybdenum	74,604,499	5,824,653	1,614,039	6,946,122	75,315,367	164,304,680
Nickel	778,489,226	26,032,539	542,716,329	3,102,045	609,243,031	1,959,583,170
Niobium	1,537,980	-	-	-	34,748,282	36,286,262
Platinum group metals	864,759,831	203,313	264,611,122	147,777	1,344,152,398	2,473,874,441
Rare earth elements (REEs)	2,978,108	3,504,328	585,003	-	432,647	7,500,086
Rhenium	17,996	-	717	-	-	18,713
Selenium	1,367,059	234	270,510	-	350,918	1,988,721
Silicon	12,552,574	10,260,941	3,014,048	2,396	65,768,802	91,598,761
Silver	679,337,242	44,380,854	730,231,388	285,481,284	2,221,023,490	3,960,454,258
Strontium	42,662	3,247	502,819	499,344	-	1,048,072
Tantalum	6,319,659	334,834	255,995	-	1,228,444	8,138,932
Tellurium	927,013	33,011,759	365	33	12,507,982	46,447,152
Thallium	31	-	-	-	121	152
Tin	21,573,078	2,884,146	1,654,123	992,034	60,652,647	87,756,028
Titanium metal	159,056,555	72,152,447	23,398,553	155,879	174,411,185	429,174,619
Tungsten	43,926,414	7,394,209	3,117,838	139,225	3,825,903	58,403,589
Uranium and thorium	112,799,989	8,039,799	23,459,396	-	938,182,650	1,082,481,834
Vanadium	1,913,157	25,289,456	11,345,397	-	66,352,704	104,900,714
Zinc	631,901,015	14,798,371	20,422,664	85582725	448,228,617	1,200,933,392
Zirconium	55,202,517	547,573	308,122	-	5,666,928	61,725,140
Other metals	9,210,989,768	3,610,760,723	2,285,873,429	1,684,028,246	4,276,476,814	21,068,128,980
Grand Total	**45,148,013,150**	**10,806,870,493**	**9,323,690,834**	**4,366,004,455**	**34,654,177,020**	**104,298,755,952**

NONMETALS	U.S.A.	China	European Union (EU-27)	Mexico	Other Countries	Total
Abrasives	311,204,150	89,175,590	140,517,818	20,203,939	143,015,340	704,116,837
Arsenic	70,770	43,117	1,445	-	3,852	119,184
Barite and witherite	11,975,491	1,337,743	887,190	-	13,639,729	27,840,153
Boron	42,516,954	1,311,536	1,712,010	-	37,672,777	83,213,277
Bromine	475,590	205,323	10,654	-	4,710,940	5,402,507
Cement	593,206,803	168,281,768	104,672,699	39,749,235	153,096,067	1,059,006,572
Chlorine and chlorine compounds	176,371,912	21,682,727	14,147,152	1,464,158	14,727,661	228,393,610
Chrysotile (Asbestos)	222,204,337	11,734,259	7,308,309	254,807	18,206,458	259,708,170
Clay and clay products	439,457,269	493,230,747	346,631,462	92,650,152	240,878,655	1,612,848,285
Diamonds	57,094,275	3,275,528	15,086,055	7,123	310,577,361	386,040,342
Dolomite	16,570,653	45,769	8,539	-	30,843	16,655,804
Feldspar	427,414	146	26,639	-	450	454,649
Fluorspar	29,484,964	15,858,948	27,097,357	62,881,284	14,841,026	150,163,579
Glass and glassware products	2,462,633,927	770,155,466	378,152,703	305,669,066	279,752,830	4,196,363,992
Granite	13,534,639	17,480,963	9,070,400	1,890	35,954,707	76,042,599
Graphite	132,992,992	484,164,831	141,119,759	10,115,774	96,602,341	864,995,697
Gypsum	272,799,407	618,023	31,604,951	15,778,992	1,834,010	322,635,383
Iodine	9,500,514	281,843	156,927	198	26,726,915	36,666,397
Lime	63,019,566	28,698	500,335	885	999,252	64,548,736
Limestone flux and other limestone	32,368,207	101,652	800,534	406	910,847	34,181,646
Marble travertine and other calcareous stones	19,052,818	17,686,328	33,209,709	947,714	21,921,538	92,818,107
Mica	5,179,781	288,999	784,448	115,716	495,455	6,864,399
Mineral pigments	173,179,985	14,263,126	37,737,104	2,359,850	17,892,551	245,432,616
Nepheline syenite	2,633,095	123,399	514	-	5,759	2,762,767
Olivine	417,658	71,168	1,832	886	422,405	913,949
Pearls	12,429,221	26,278,902	3,641,187	80,157	21,479,779	63,909,246
Peat	18,230,547	57,558	4,756,915	-	1,836,621	24,881,641
Perlite	15,088,560	132	-	117,134	4,828	15,210,654
Phosphate and phosphate compounds	1,249,696,572	22,716,746	13,492,111	72,953,733	392,295,347	1,751,154,509
Potash and potassium compounds	133,222,585	10,814,182	16,773,091	231,264	32,673,926	193,715,048
Salt and sodium compounds	864,638,573	59,452,996	69,895,189	36,625,371	131,116,176	1,161,728,305
Sand and gravel	33,157,542	892,442	209,841	167,220	333,033	34,760,078
Sandstone	1,953,622	5,622	241,091	-	2,264,896	4,465,231
Silica and silica compounds	497,072,768	60,893,441	26,958,807	6,145,634	18,622,977	609,693,627
Slate	2,109,754	1,755,740	219,572	13,414	1,591,001	5,689,481
Sulphur and sulphur compounds	33,205,463	1,328,280	6,768,388	211	1,614,504	42,916,846
Talc soapstone and pyrophyllite	18,924,724	1,559,808	608,055	-	408,768	21,501,355
Titanium oxides	254,705,529	76,374,498	16,781,596	11,259,038	8,537,757	367,658,418
Other nonmetals	1,541,944,376	497,247,088	330,766,350	33,090,163	223,955,906	2,627,003,883
Other structurals	173,556,534	58,469,609	34,942,393	12,460,278	38,452,931	317,881,745
Grand Total	**9,938,309,541**	**2,929,294,741**	**1,817,301,131**	**725,345,692**	**2,310,108,219**	**17,720,359,324**

MINERAL FUELS	U.S.A.	China	European Union (EU-27)	Mexico	Other Countries	Total
Coal	1,496,232,644	6,043,416	15,192,676	10,618	211,258,077	1,728,737,431
Coke	519,877,630	7,129	2,595,420	-	18,408,705	540,888,884
TOTAL MINERAL FUELS	**2,016,110,274**	**6,050,545**	**17,788,096**	**10,618**	**229,666,782**	**2,269,626,315**

TOTAL MINING IMPORTS	**57,102,432,965**	**13,742,215,779**	**11,158,780,061**	**5,091,360,765**	**37,193,952,021**	**124,288,741,591**

Sources: Natural Resouces Canada; Statistics Canada.

- Nil.

Note: Stages 1 to 4 - includes ores, concentrates and semi-fabricated and fabricated metal and mineral products

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