Canada’s Metals Industry: A Global and Domestic Analysis

PRIMARY METALS MANUFACTURING, STEEL & ALUMINUM

CWB Group

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EXECUTIVE SUMMARY

Metals are essential to the modern world, supplying the fundamental materials needed for infrastructure, technology, and countless everyday products. This report provides an overview of the metals industry in Canada and globally, focusing on primary metal manufacturing, steel, and aluminum. It highlights each industry's economic contributions, employment statistics, regional distribution, and global market trends.

Primary Metals Manufacturing

In 2023, Canada's primary metals manufacturing sector contributed $11.1 billion to the GDP, making it the 7th largest in manufacturing. The sector faced a 12.3% GDP decline in 2020 due to COVID-19 and has not fully recovered. In 2022, there were 579 employer establishments, mostly micro and small businesses, and 327 non-employer establishments. The industry employed 54,643 people in 2023, mainly in Ontario (52.1%) and Quebec (33.7%). Employment declined 8.4% in 2020 due to the pandemic and has not yet recovered, despite an increase in 2021. Quebec is the largest manufacturer of primary metal, followed by Ontario.

Steel

The global steel industry saw a 4.4% production drop in 2022 due to the Russia-Ukraine conflict and China's COVID-19 policies. The industry is adopting sustainable practices, notably using steel scrap. Canada’s steel industry, contributing $2.8 billion to GDP and employing over 23,700 people, faces labor shortages and regulatory challenges. It remains closely tied to the U.S., significantly affecting trade dynamics. Canada produced 12.1 million tonnes of steel in 2023, ranking 16th globally.

Aluminum

Driven by sustainability efforts, demand for aluminum is projected to increase by 33.3 million tonnes by 2030, mainly from the transportation, electrical, construction, and packaging sectors, with China leading the growth. In 2023, global primary aluminum production reached 70.5 million tonnes. Canada, a key producer with a low carbon footprint, produced 3 million tonnes in 2022 and expects an increase to 3.2 million tonnes in 2023. The Canadian aluminum industry supports numerous jobs, primarily exports to the U.S., and imports bauxite and alumina, with strong long-term growth prospects despite price fluctuations.

Conclusion

The metal industry in Canada is at a crossroads, facing numerous challenges such as economic uncertainties, labor shortages, and environmental pressures. However, opportunities abound in the form of technological advancements, sustainable practices, and growing global demand for greener products. Strategic investments in clean technologies, workforce development, and embracing sustainability will be critical for the sector's long-term growth and competitiveness.

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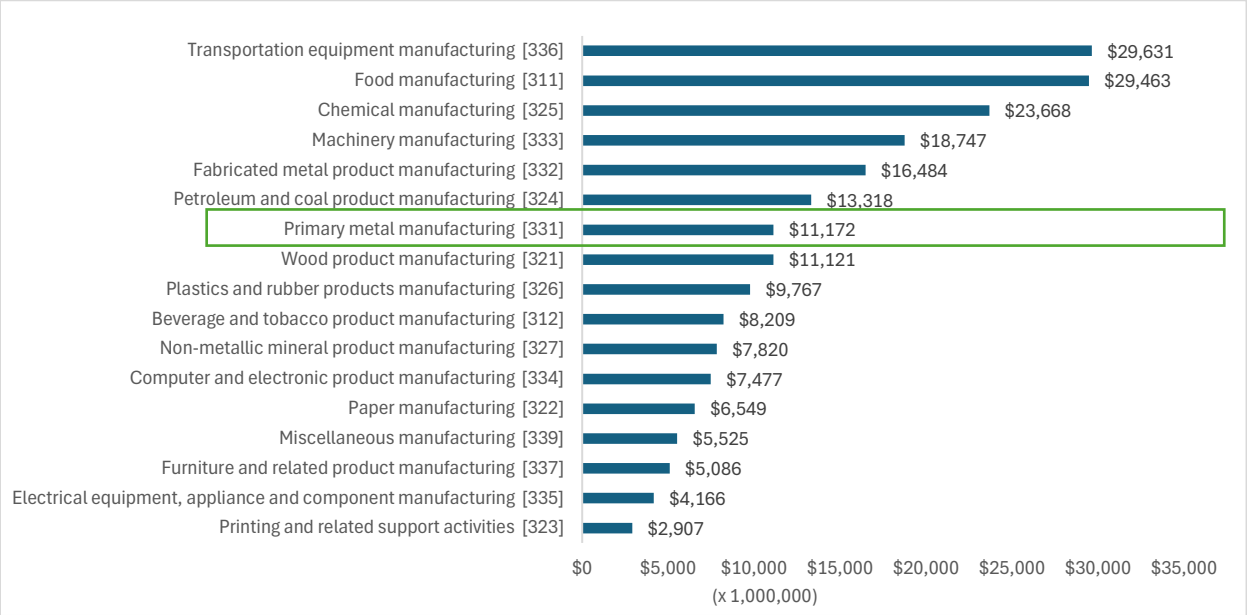
Primary Metal Manufacturing – Canada

According to North American Industry Classification System, the primary metals manufacturing subsector includes establishments focused on smelting and refining ferrous and non-ferrous metals from ores, pig iron, or scrap materials using blast or electric furnaces. Metal alloys are produced by adding other chemical elements. The resulting ingots are used in rolling and drawing operations to create sheets, strips, bars, rods, and wire, or in molten form to produce castings and other basic metal products.

Primary Metal Manufacturing is the 7th largest contributor to Canada's manufacturing industry, with a GDP of 11.1 billion in 2023.

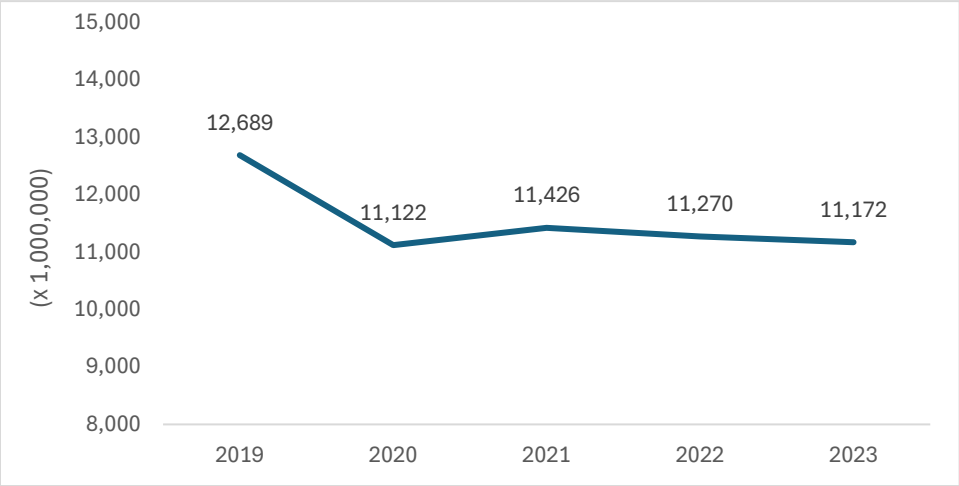
Figure 1: Manufacturing by GDP (2023)



Source: Statistics Canada. Table 36-10-0434-06

The primary metals manufacturing industry saw a significant decline in GDP due to the COVID-19 pandemic, dropping 12.3% from $12.7 billion in 2019 to $11.1 billion in 2020. Although there was a slight increase in 2021, GDP has not returned to pre-pandemic levels and has been declining since 2021.

Figure 2: Primary Metals Manufacturing GDP over time



Source: Statistics Canada. Table 36-10-0434-06

In 2023, primary metals manufacturing contributed 5.2% to Canada's manufacturing GDP. *Alumina and aluminum production and processing* was the top contributor to primary metals manufacturing by GDP, accounting for 39.7% of the subsector's GDP and 2.1% of total manufacturing GDP.

Table 1: Primary Metals Manufacturing GDP – 2023

North American Industry Classification System (NAICS)	GDP (x1,000,000)	Proportion of Manufacturing
Primary metal manufacturing [331]	$11,172	5.2%
Alumina and aluminum production and processing [3313]	$4,439	2.1%
Iron and steel mills and ferro-alloy manufacturing [3311]	$3,186	1.5%
Non-ferrous metal (except aluminum) production and processing [3314]	$2,095	1.0%
Steel product manufacturing from purchased steel [3312]	$1,216	0.6%
Foundries [3315]	$824	0.4%
Total Manufacturing [31-33]	**$213,189**	**100.0%**

Source: Statistics Canada. Table 36-10-0434-06

Number of Businesses

According to Innovation, Science and Statistics Canada (ISED), there were 579 employer establishments (businesses with one or more employers) and 327 non-employer or indeterminate establishments in 2022. "Non-employers or indeterminate" are establishments that do not maintain

an employee payroll but may have a workforce that consists of contracted workers, family members, or business owners, ISED.

Table 2: Establishments by employment type and province/territory (2022)

Province/territory	Employers	Non-employers / Indeterminate
Ontario	264	149
Quebec	167	72
Alberta	62	45
British Columbia	50	40
Manitoba	14	6
Saskatchewan	14	7
Newfoundland and Labrador	4	2
Nova Scotia	3	4
Prince Edward Island	1	0
New Brunswick	0	2
Northwest Territories	0	0
Nunavut	0	0
Yukon	0	0
Canada	**579**	**327**

Source: Innovation, Science and Statistics Canada (ISED)

Note: exercise caution when using the establishment counts for both employment types in combination. According to ISED, the data is collected from different sources. Added together the two employment types do not necessarily make up the universe of companies- ISED.

In 2022, about 81% of employer establishments in the sector were micro or small-sized businesses (employing less than 100 employees).

Table 3: Employer establishments by employment size category and province/territory (2023)

Province/Territory	Micro (1-4)	Small (5-99)	Medium (100-499)	Large (500+)
Ontario	69	141	45	9
Quebec	27	98	32	10
Alberta	20	39	3	0
British Columbia	13	32	3	2
Manitoba	1	8	4	1
Saskatchewan	5	8	1	0
Newfoundland and Labrador	0	3	0	1
Nova Scotia	1	2	0	0
Prince Edward Island	0	1	0	0
New Brunswick	0	0	0	0
Northwest Territories	0	0	0	0
Nunavut	0	0	0	0
Yukon	0	0	0	0
Canada	136	332	88	23
Percent distribution %	23.5	57.3	15.2	4

Source: Innovation, Science and Statistics Canada (ISED)

Number of Employees

The primary metals manufacturing industry employed 54,643 people in 2023. In 2020, employment dropped 8.4% and has not fully recovered since, despite an increase in 2021. As of 2023, employment was 5.6% lower compared to 2019 (57,912 in 2019 vs. 54,643 in 2023).

Table 4: Primary Metals Manufacturing – Number of Employees by Province

	Number of employees					Percent change				
Geography	2019	2020	2021	2022	2023	2020	2021	2022	2023	2019 vs 2023
Newfoundland and Labrador	--	--	--	--	--	--	--	--	--	--
Prince Edward Island	--	--	--	--	--	--	--	--	--	--
Nova Scotia	--	--	--	--	--	--	--	--	--	--
New Brunswick	--	--	--	--	--	--	--	--	--	--
Quebec	16,243	17,070	17,706	18,117	18,401	5.1%	3.7%	2.3%	1.6%	13.3%
Ontario	29,085	26,543	29,231	29,526	28,459	-8.7%	10.1%	1.0%	-3.6%	-2.2%
Manitoba	3,251	2,643	2,613	2,106	1,710	-18.7%	-1.1%	-19.4%	-18.8%	-47.4%
Saskatchewan	--	--	219	--	589	--	--	--	--	--
Alberta	3,358	2,477	2,362	2,423	2,546	-26.2%	-4.6%	2.6%	5.1%	-24.2%
British Columbia	3,706	3,543	4,002	2,780	2,671	-4.4%	13.0%	-30.5%	-3.9%	-27.9%
Total	**57,912**	**53,022**	**56,463**	**55,593**	**54,643**	**-8.4%**	**6.5%**	**-1.5%**	**-1.7%**	**-5.6%**

Source: Statistics Canada. Table 14-10-0202-01 Employment by industry, annual

Employment in the industry is predominantly concentrated in Ontario and Quebec, which together account for nearly 86% of the sector's workforce. Ontario is the largest employer, with approximately 52% of all industry employees residing in the province.

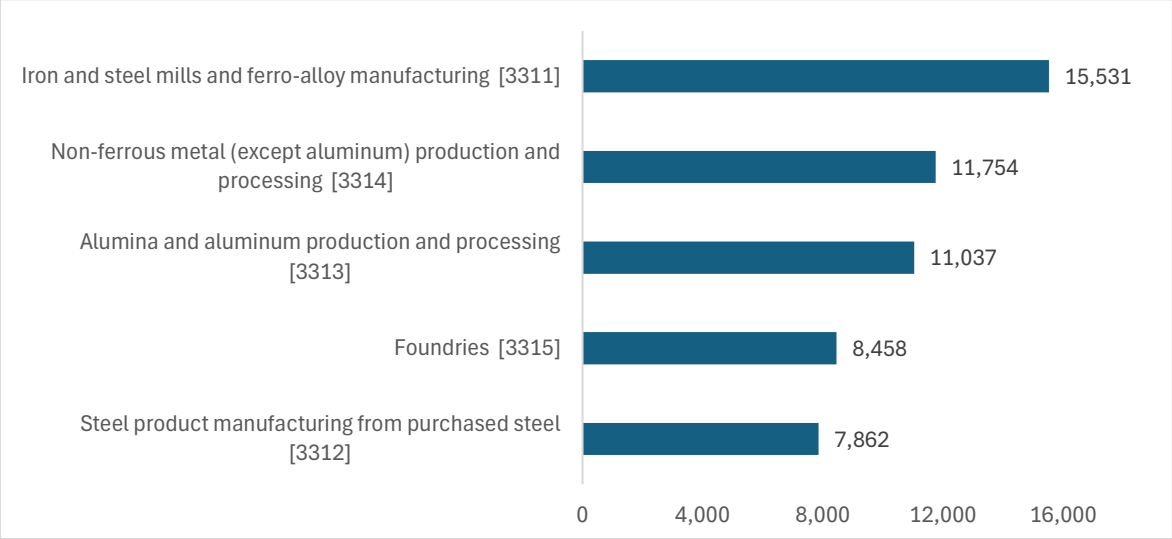
Table 5: Proportion of Employees by Province (2023)

Province	Percent
Newfoundland and Labrador	--
Prince Edward Island	--
Nova Scotia	--
New Brunswick	--
Quebec	33.7%
Ontario	52.1%
Manitoba	3.1%
Saskatchewan	1.1%
Alberta	4.7%
British Columbia	4.9%

Source: Statistics Canada. Table 14-10-0202-01 Employment by industry, annual

By subsector, *Iron and steel mills and ferro-alloy manufacturing* is the largest employer in the industry.

Figure 3: Number of Employees by Primary Metal Manufacturing (2023)



Source: Statistics Canada. Table 14-10-0202-01 Employment by industry, annual

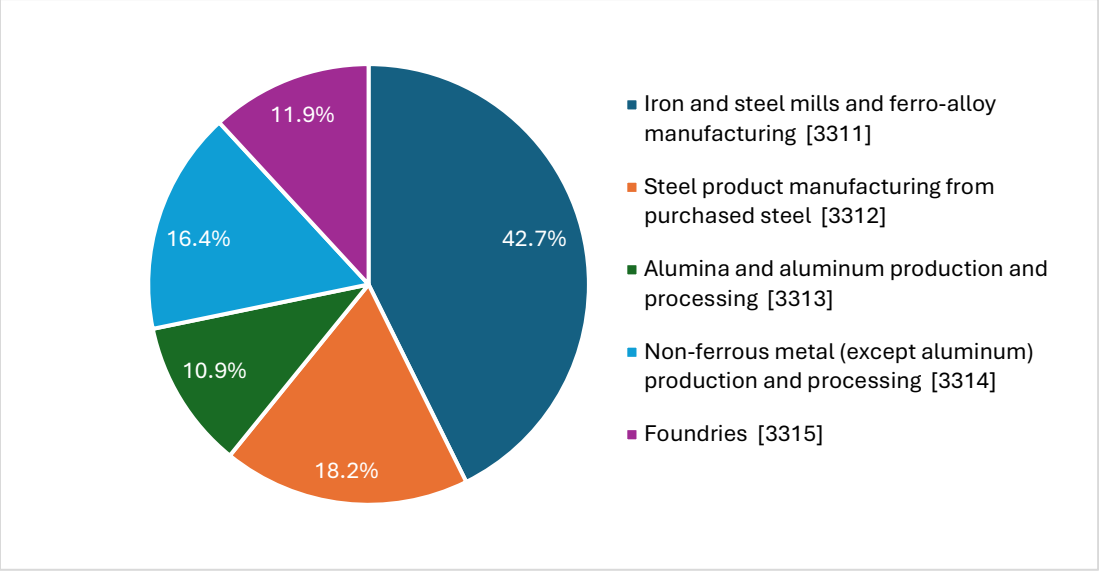
Primary Metal Manufacturing – Ontario

According to the Job Bank, the primary metal (PM) manufacturing industry is integral to Ontario's industrial landscape, supplying both intermediary and end-use goods to various sectors, including construction, motor vehicle manufacturing, and natural resources.

Ontario is the second–largest manufacturer of primary metal in Canada, trailing Quebec, which is the largest. The province employs over half (52.1%) of the workers in Canada's PM manufacturing industry. Employment dropped 8.7% in 2020 due to the pandemic and recovered in 2021 and 2022, surpassing 2019 levels (29,085). In 2023, employment dipped below pre-pandemic levels, standing at 28,459.

About 42.7% of Ontario's PM manufacturing workers are employed in iron and steel mills and ferro–alloy manufacturing. A significant number of employments is also concentrated in steel product manufacturing from purchased steel (18.2%) and non–ferrous metal (except aluminum) production and processing (16.4%).

Figure 4: Employment Share by Subsector (2023)



Source: Statistics Canada. Table 14-10-0202-01 Employment by industry, annual

Ontario's primary metal (PM) manufacturing industry is well distributed across the province. The Hamilton–Niagara Peninsula Economic Region (ER) leads with over a third of the province's employment in this sector, particularly in Hamilton, which has a high concentration of steel manufacturing, including Stelco Inc. and ArcelorMittal Dofasco Inc. Toronto and the Northeast region also significantly contribute, accounting for 26.2% and 12.9% of the employment, respectively.

Table 6: Employment by Economic Region

Economic Region	Employed 2021	Sector Share (%)
Ottawa	0	0.0%
Kingston-Pembroke	280	1.1%
Muskoka-Kawarthas	0	0.0%
Toronto	6,930	26.2%
Kitchener-Waterloo-Barrie	2,050	7.8%
Hamilton-Niagara Peninsula	8,780	33.2%
London	1,300	4.9%
Windsor-Sarnia	1,050	4.0%
Stratford-Bruce Peninsula	0	0.0%
Northeast	3,410	12.9%
Northwest	0	0.0%

Source: Job Bank

Workforce Characteristics

- In Ontario, the average weekly earnings for the sector were $1,541.85 in 2021, higher than the provincial manufacturing average of $1,204.75.
- The industry is predominantly male, with men comprising 83.0% of the workforce compared to 52.7% in the overall provincial workforce.
- High school graduates represent 33.7% of the industry's workforce, higher than the provincial average of 17.9%.
- Nearly one-third (31.1%) of primary metal manufacturing workers were aged 55 and over, compared to 22.3% across all industries in Ontario.

Employment Outlook 2022-2024

Employment in Ontario's PM manufacturing industry is expected to remain stable from 2022 to 2024, Job Bank . The industry increasingly requires higher-skilled labor to adapt to advanced manufacturing needs and new product demands like advanced high-strength steel. Workers need expertise in computer-controlled tools, robotics, and manufacturing software, such as computer–aided design (CAD) and computer–aided manufacturing (CAM). Companies may face challenges recruiting workers, especially in manufacturing-related skilled trades in machining and metal forming. Engineers, technologists, and technicians are also required to work on new products and process improvements.

Economic uncertainty, rising inflation, and supply chain constraints continue to impact new orders and sales. Rising interest rates in Canada and key export markets like the U.S. may reduce demand. Additionally, a push for local steel in U.S. infrastructure projects could lower exports from Ontario.

Conversely, increased business investment, particularly in oil and gas, and easing supply chain restrictions in automotive manufacturing may support industry demand. Significant investments in electric vehicle production, aerospace manufacturing, public transit expansion, infrastructure construction, and northern Ontario mining projects are expected to boost employment. Additionally, large public transit projects, such as the Ontario Line and Hamilton LRT, will drive demand for primary metal manufacturing.

Key trends affecting the outlook of the primary metal manufacturing sector:

- Investments in clean steelmaking technology.
- An aging workforce in the industry could lead to increased shortage in the skilled trades labour market.
- Softened outlook for provincial economic growth and key downstream industries.

Primary Metal Manufacturing – Quebec

Quebec's primary metal manufacturing sector is significant not only in terms of the number of people employed but of the industry's economic benefits for the province. In 2022, the value of GDP represented 9.4% of the province's entire manufacturing sector, according to the Job Bank.

This industry is also highly susceptible to international conditions, with a significant proportion of shipments directed outside Canada, mainly to the United States. Quebec leads in alumina and aluminum production but also has significant employment in foundries, non-ferrous metal processing, and to a lesser extent, iron and steel mills. This sector supports vital supply chains for transportation equipment, fabricated metal products, machinery manufacturing, and construction activities.

As of 2023, Quebec employed 18,400 people in the primary metal manufacturing sector, representing 33.7% of the total industry employment in Canada. Unlike the national average, Quebec's primary metals manufacturing industry showed resilience during the COVID-19 pandemic, experiencing a 5.1% increase in employment in 2020 and continued growth thereafter. From 2019 to 2023, the sector in Quebec grew at an average annual growth rate (AAGR) of 3.2%.

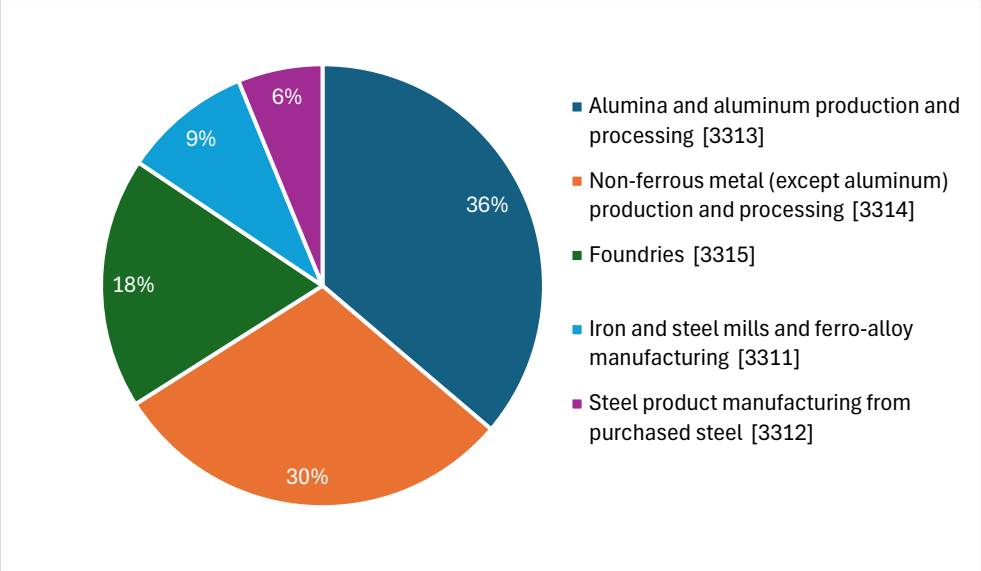
Table 7: Primary Metal Manufacturing – Number of Employees in Quebec and Canada

	Number of employees					Percent change				
Geography	2019	2020	2021	2022	2023	2020	2021	2022	2023	AAGR
Quebec	16,243	17,070	17,706	18,117	18,401	5.1%	3.7%	2.3%	1.6%	3.2%
Canada	**57,912**	**53,022**	**56,463**	**55,593**	**54,643**	**-8.4%**	**6.5%**	**-1.5%**	**-1.7%**	-1.3%

Source: Statistics Canada. Table 14-10-0202-01 Employment by industry, annual

As Canada's largest producer and processor of alumina and aluminum, about 36% of Quebec's PM manufacturing workers are employed in alumina and aluminum production and processing. Approximately 30% are employed in non-ferrous metal (except aluminum production and processing) and 18% in foundries.

Figure 5: Employment Share by Subsector in Quebec (2023)



Source: Statistics Canada. Table 14-10-0202-01 Employment by industry, annual

Job Perspectives and Trends

Overall, employment for the Quebec PM manufacturing industry is expected to remain fairly stable over the 2023 to 2025 period (Job Bank). The metals market faces uncertainty due to economic and geopolitical factors, leading to volatile base metal prices. While short-term price increases are possible, volatility is expected to continue amidst a global economic slowdown. Demand for industrial metals and non-metallic mineral products, especially for structural components, cement, and concrete, remains high.

Quebec's Infrastructure Plan for projects in the health, education, and transportation sectors and the *American Jobs Plan* are driving significant demand, ensuring benefits for Quebec due to the extensive integration of North American supply chains.

Environmental concerns and social acceptability are becoming crucial for companies. Quebec's high environmental standards make its metals and minerals industries attractive internationally. Government commitments to greener practices could drive significant investments in plant modernization over the next few years.

The push for materials with lower carbon footprints presents opportunities for Quebec's aluminum industry, recognized as the greenest globally. Government investments aim to boost production, exports, and innovation, benefiting regions like Saguenay-Lac-Saint-Jean, Côte-Nord, and Nord-du-Québec, where aluminum processing is prominent.

Supply chain disruptions from the pandemic are improving but remain uncertain due to economic slowdown and inflation. This may lead companies to prioritize local suppliers over foreign ones. Rising transport costs, especially for small and medium-sized enterprises further emphasize the need for local market focus.

Skilled labor shortages hinder employment growth, as the workforce often lacks the necessary experience and skills. Insufficient graduates exacerbate the issue, making process automation a potential solution to overcome labor shortages in the coming years.

The Steel Industry

Global Overview

The steel industry is crucial to the global economy, yet it's vulnerable to international events. In 2022, the industry faced significant challenges such as the Russia-Ukraine war, which exacerbated raw material and energy shortages. The ongoing energy crisis, coupled with reduced household incomes, led to decreased global consumption. Additionally, disruptions from China's "Zero COVID" policy further impacted the supply chain, resulting in a 4.4% drop in global crude steel production compared to 2021, Statista.

China remained the dominant force in steel production and exports in 2022. The China-based steelmaker, Baowu Group, was the world's largest crude steel producer in 2022, significantly outpacing competitors like ArcelorMittal in both production and revenue.

Environmental concerns are also growing in the steel industry, known for its high carbon emissions. The push for decarbonization has made steel scrap—an extensively recycled material—an increasingly vital resource. Using steel scrap reduces resource consumption and emissions, making it a key strategy for addressing both environmental and material scarcity challenges in the sector. In 2022, nearly 500 million tons of steel scrap were utilized worldwide, with China consuming about 43% of this total. This approach not only helps reduce the carbon footprint but also mitigates raw material shortages, particularly critical in the construction and infrastructure sectors during disruptions like the COVID-19 pandemic.

Global Steel Production

According to WorldSteel Association, global crude steel production reached 1,888.2 million tonnes (Mt) in 2023 and remained largely unchanged compared to 2022. China produces 54% of the world's steel, making it the leading steel producer globally.

Table 8: Top 10 steel-producing countries

Rank	Country	2022 (Mt)	2023 (Mt)	% change
1	China	1,019.1	1,019.1	0.0%
2	India	125.4	140.2	11.8%
3	Japan	89.2	87	-2.5%
4	United States	80.5	80.7	0.2%
5	Russia (e)	71.7	75.8	5.7%
6	South Korea	65.8	66.7	1.4%
7	Germany	36.9	35.4	-4.1%
8	Türkiye	35.1	33.7	-4.0%
9	Brazil	34.1	31.9	-6.5%
10	Iran	30.6	31.1	1.6%
	World	**1,888.7**	**1,888.2**	**0.0%**

Source: WorldSteel Association
Notes: e – annual figure estimated using partial data or non-worldsteel resource.

By region, Asia and Oceania produced the most steel, followed by the European Union and North America. However, steel production in the European Union, South America, and the regional aggregation "Other Europe" has declined the most since 2022.

Table 9: Crude steel production by region

Region	2023 (Mt)	% change 2022/2023
Africa	22.0	5.7%
Asia and Oceania	1,367.2	0.7%
EU (27)	126.3	-7.4%
Europe, Other	41.7	-4.6%
Middle East	53.2	1.3%
North America	109.6	-1.7%
Russia & other CIS + Ukraine	88.1	4.5%
South America	41.5	-5.7%
Total 71 countries	**1,849.70**	**-0.1%**

Source: WorldSteel Association

Note: The 71 countries included in this table accounted for approximately 98% of total world crude steel production in 2022. Regions and countries covered by the table:

- Africa: Algeria, Egypt, Libya, Morocco, South Africa, Tunisia
- Asia and Oceania: Australia, China, India, Japan, Mongolia, New Zealand, Pakistan, South Korea, Taiwan (China), Thailand, Viet Nam
- European Union (27): Austria, Belgium, Bulgaria, Croatia, Czechia, Finland, France, Germany, Greece, Hungary, Italy, Luxembourg, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden
- Europe, Other: Macedonia, Norway, Serbia, Türkiye, United Kingdom

- Middle East: Bahrain, Iran, Iraq, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates, Yemen
- North America: Canada, Cuba, El Salvador, Guatemala, Mexico, United States
- Russia & other CIS + Ukraine: Belarus, Kazakhstan, Russia, Ukraine
- South America: Argentina, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Venezuela

Predictions for the global steel industry in 2024

According to Federal Steel Supply, industry experts have outlined several key predictions and trends for the steel industry, highlighting the following expected developments:

- **Rising demand in developing regions:** There is an expected surge in demand for steel within developing nations, especially in Asia and Africa. This demand is driven primarily by substantial investments in infrastructure projects within these regions.
- **Technological advancements**: The industry is likely to see a greater integration of advanced technologies such as automation and digitalization, aiming to enhance production efficiencies and reduce operational costs.
- **Sustainable production practices:** There will be an increased emphasis on sustainable production techniques. These practices are intended to comply with stricter environmental regulations and to cater to the growing consumer demand for eco-friendly products.
- **Price volatility:** Steel prices are anticipated to fluctuate due to various factors including raw material costs, trade policies, and geopolitical shifts. Steel manufacturers will need to remain flexible in their pricing strategies to adapt to these changes.
- **Research and development investments:** The industry is expected to ramp up investments in research and development. These investments will focus on creating innovative steel products and applications, such as high-strength steel that is both lightweight and durable for use in the automotive and aerospace sectors.

Canadian Steel Industry

The Canadian steel industry is a fundamental pillar of the Canadian economy, deeply intertwined with the nation's economic development and prosperity. It not only provides substantial employment but also drives economic expansion by supplying essential materials to vital sectors including manufacturing, infrastructure, transportation, and energy.

According to the Government of Canada, in 2021, the Canadian steel industry employed over 23,700 workers and contributed $2.8 billion to Canada’s gross domestic product (GDP). The steel industry also indirectly generates over 100,000 jobs in supporting industries, Canadian Steel Producers Association (CSPA).

The Canadian and United States steel industries are deeply integrated, supporting continental supply chains that strengthen the global competitiveness of the North American economy. Canada

imports more steel from the U.S. than any other country in the world, accounting for nearly 45% of U.S. exports. In 2021, $17.4 billion of steel was traded between Canada and the United States.

According to WorldSteel estimations, Canada produced 12.1 million tonnes (Mt) of steel in 2023, representing a 1.6% decline from 2022.

Rank	Country	2022 (Mt)	2023 (Mt)	% change
16	Canada (e)	12.3	12.1	-1.6%

Notes: e – annual figure estimated using partial data or non-Worldsteel resource

Canadian Steel Producers Association Member Companies

Below are member companies of the Canadian Steel Producers Association(CSPA). These 13 member companies are located over 30 facilities across 5 provinces and represent Canada's primary steel producers and pipe and tube manufacturers:

Challenges facing the Canadian Steel Industry

- **Increased offshore imports:** The Canadian Steel Producers Association (CSPA) has expressed concern over rising offshore imports, which have grown from 19% of the market in 2014 to 39% in 2022. This surge in imports, often from countries with unfair trade practices, is undercutting Canadian producers and affecting local jobs and investments in sustainable steel production (Canadian Steel Producers Association).
- **Labour and skills shortages:** The manufacturing sector, which includes steel production, has been facing severe labor and skills shortages. This has led to substantial economic losses, estimated at $13 billion in 2022 due to lost sales, penalties for late delivery, and canceled or delayed capital projects (CME).
- **Supply chain disruptions:** The Canadian manufacturing sector has been heavily affected by global supply chain disruptions. This includes difficulties in acquiring inputs and maintaining inventory levels, with many businesses expecting these challenges to persist (Statistics Canada).
- **Regulatory and environmental pressures:** The industry is under increasing pressure to reduce carbon emissions and adhere to stricter environmental standards. Canadian steel is among the greenest in the world, yet the sector must continue to invest heavily in technologies and processes that reduce its environmental impact (Canadian Steel Producers Association).
- **Geopolitical and economic factors:** The geopolitical landscape and trade policies, such as tariffs and trade agreements, significantly affect the steel industry. For example, the U.S. Inflation Reduction Act provides incentives that enhance the competitiveness of U.S. steel, potentially drawing investments away from Canada (CME) (KPMG).
- **Technological Changes:** Advancements in technology and automation are reshaping the industry. Companies need to adapt by investing in new technologies to stay competitive and manage operational costs effectively (Federal Steel Supply).

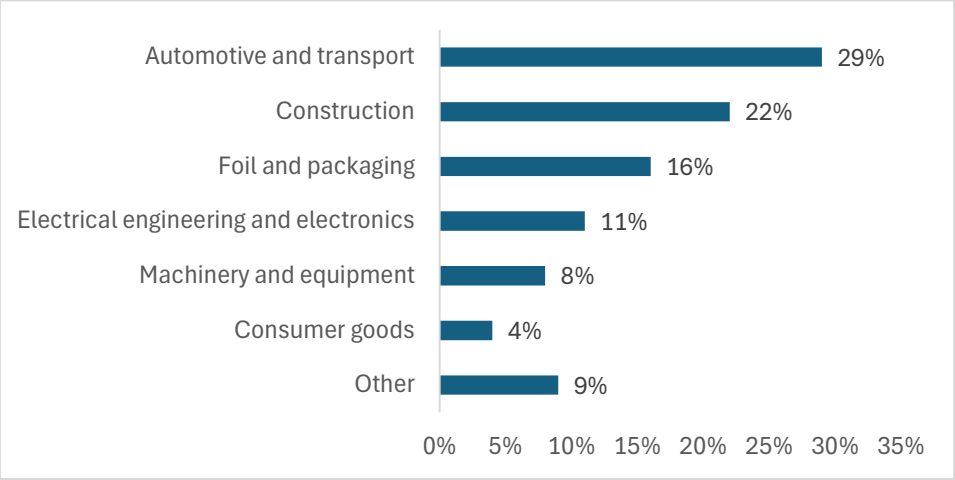
Aluminum Industry

Global Overview

The aluminum industry is the world's second-largest metal industry after the steel industry. Aluminum is a versatile and essential material that is pivotal to daily life. Lightweight, durable, flexible, resistant to corrosion, and infinitely recyclable, it is one of the most extensively utilized and recycled metals globally.

Due to its lightweight and strength, aluminum is extensively used in the automotive and aerospace industries to improve fuel efficiency and performance. In the construction industry, aluminum's durability and resistance to corrosion make it a popular choice for building materials, including windows, doors, roofing, and facades. Aluminum's flexibility and electrically conductive properties give it an advantage in electronics industries, while its recyclability makes it popular for use in making food-safe foils and cans.

Figure 6: Global uses of aluminum, 2022



Source: Aluminum facts (canada.ca)

Demand by Application

The shift towards sustainability and decarbonization will provide substantial opportunities for the aluminum industry. Demand will be driven by the greater adoption of renewable energy solutions, electric vehicles (EVs), as well as the implementation of sustainable solutions in the packaging and construction sectors.

According to a report by the International Aluminium Institute, about 75% of the demand growth for aluminum (from 2020 to 2030) is forecast to come from transportation (35%), electrical (16%), construction (14%), and packaging (10%) sectors combined.

- **Transportation:** global decarbonization efforts and the shift towards the production of more electric vehicles will drive aluminum production in this sector. This trend is expected to be particularly strong in China, which is likely to spearhead this shift.
- **Electrical**: the shift from traditional sources of power towards renewable energy sources like solar power, which uses 25 times more aluminum than coal power plants, will drive demand for this sector.
- **Packaging:** the rise in the popularity of canned drinks in North America, Europe, and China is driving the demand for aluminum in this industry. This is further reinforced by the introduction of new products and a strong consumer preference for eco-friendly packaging options. This sector will see most of its growth coming from North America, followed by China.
- **Construction:** growth in this sector will be driven by economic factors and population increases, mainly from developing regions in Asia (excluding China).

Global Aluminum Production

Aluminum is made from bauxite ore, which is refined into alumina. Alumina, in turn, is smelted to create pure aluminum metal, called primary aluminum. In 2023, 70.5 million tonnes (Mt) of primary aluminum was produced compared to 69 million tonnes in 2022, a 2.2% growth. China is by far the largest producer of primary aluminum, followed by Asia (excluding China), and the Middle East.

Table 10: Primary Aluminum production by region, 2022 and 2023 (in thousand tonnes)

Region	2022	2023	% change
Africa	1,620	1,594	-1.6%
North America	3,743	3,897	4.1%
South America	1,288	1,466	13.8%
Asia (ex China)	4,591	4,673	1.8%
Western & Central Europe	2,913	2,713	-6.9%
Russia & Eastern Europe	4,081	4,016	-1.6%
Oceania	1,843	1,884	2.2%
Gulf Cooperation Council (Middle East)	6,074	6,217	2.4%
China (Estimated)	40,430	41,666	3.1%
Estimated Unreported to IAI	2,455	2,455	0.0%
Total	**69,038**	**70,581**	**2.2%**

Source: International Aluminum Institute

By country, Australia is the largest producer of bauxite ore, followed by China, which is the largest producer of alumina and primary aluminum. In 2022, China produced 55.7% of the world's alumina and 58.3% of global primary aluminum.

Table 11: Production of bauxite ore, alumina, and primary aluminum by country (2022)

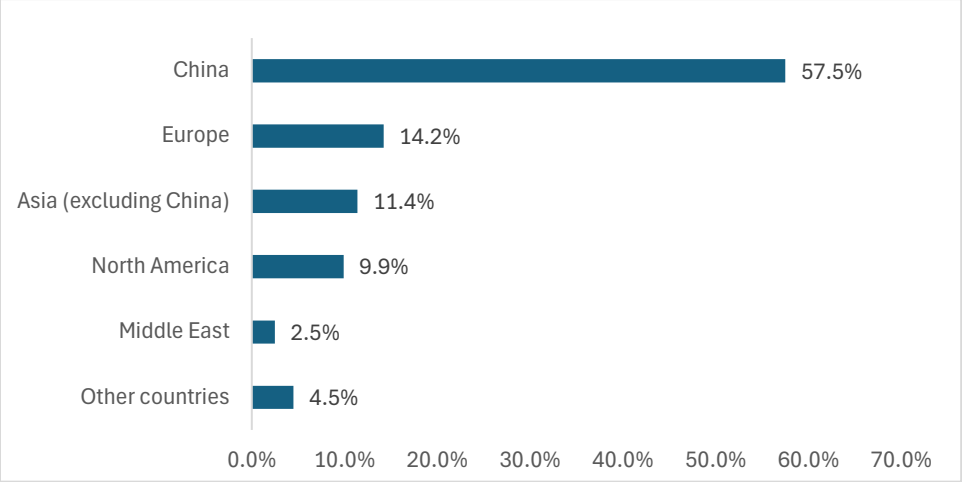
	Bauxite ore			Alumina			Primary aluminum		
Ranking	Country	Thousand tonnes	Percent	Country	Thousand tonnes	Percent	Country	Thousand tonnes	Percent
1	Australia	100,000	26.5%	China	76,000	55.7%	China	40,000	58.3%
2	China	90,000	23.8%	Australia	20,000	14.7%	India	4,000	5.8%
3	Guinea	86,000	22.8%	Brazil	11,000	8.1%	Russia	3,700	5.4%
4	Brazil	33,000	8.7%	India	7,400	5.4%	Canada	3,000	4.4%
5	Indonesia	21,000	5.6%	Russia	3,100	2.3%	United Arab Emirates	2,700	3.9%
6	India	17,000	4.5%	United Arab Emirates	2,300	1.7%	Bahrain	1,600	2.3%
7	Russia	5,000	1.3%	Saudi Arabia	2,000	1.5%	Australia	1,500	2.2%
8	Saudi Arabia	4,800	1.3%	Ireland	1,800	1.3%	Norway	1,400	2.0%
9	Kazakhstan	4,400	1.2%	Spain	1,700	1.2%	United States	860	1.3%
10	Jamaica	3,900	1.0%	Vietnam	1,500	1.1%	Iceland	750	1.1%
	Other	12,700	3.4%	Other	9,610	7.0%	Other	9,100	13.3%
	Total	**380,000**	**100.0%**	**Total**	**140,000**	**100.0%**	**Total**	**69,000**	**100.0%**

Source: Aluminum facts (canada.ca)

Primary Aluminum Demand

According to the Government of Canada, global primary aluminum demand has grown at an average annual rate of 2.4% between 2015 and 2022, mainly due to increased demand in China as well as the transportation and construction sectors. China accounted for the largest share of global aluminum consumption by region in 2022, followed by Europe, Asia (excluding China), North America and the Middle East.

Figure 7: Primary aluminum demand, by region, 2022



Source: Aluminum facts (canada.ca)

The International Aluminium Institute reports that aluminum demand is projected to increase by 33.3 million tonnes (Mt) over the next decade, rising from 86.2 million tonnes in 2020 to 119.5 million tonnes in 2030. Approximately 37% of this growth is expected to come from China, 26% from Asia excluding China, 15% from North America, and 14% from Europe.

Figure 8: Aluminum demand by region – growth 2020 to 2030 (Mt)

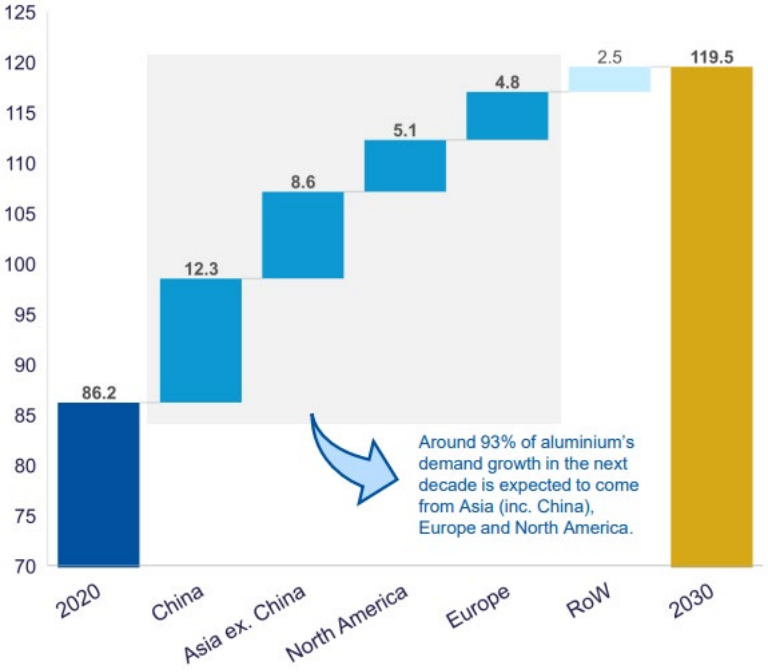
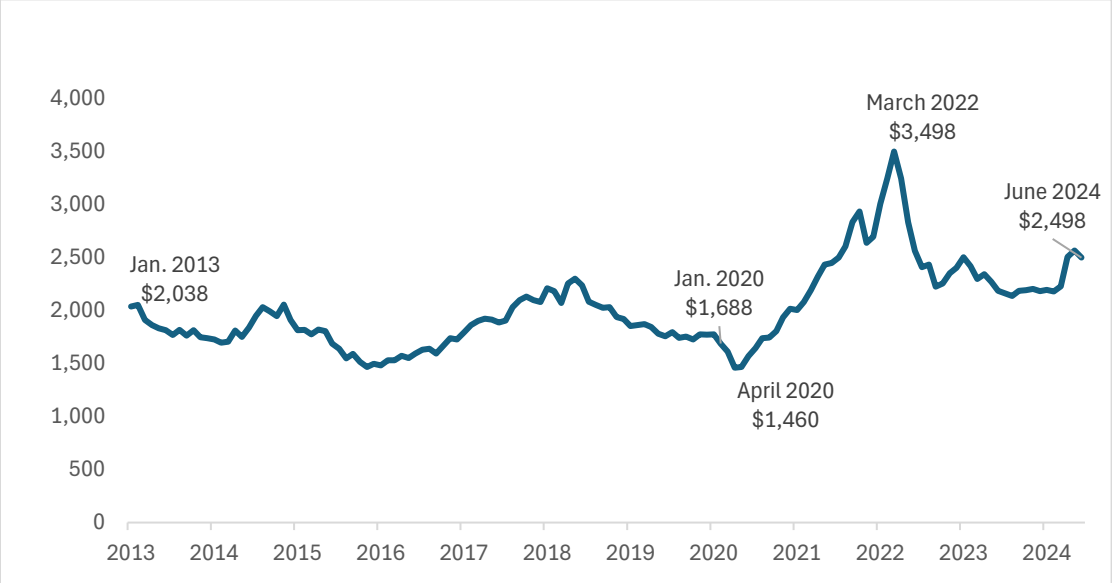


*Image derived from the International Aluminium Institute

Aluminum Prices

Over the past five years, aluminum prices have fluctuated significantly due to factors such as the COVID-19 pandemic, geopolitical tensions, changing supply and demand conditions, and trade policies and tariffs. After hitting a low of $1,460 USD per ton in April 2020, aluminum prices increased considerably and hit a peak in March 2022 due to the war in Ukraine. Prices have since stabilized and sat at $2,498 USD per ton as of June 2024.

Figure 9: Global Aluminum prices, monthly average, 2013–2024, USD per ton



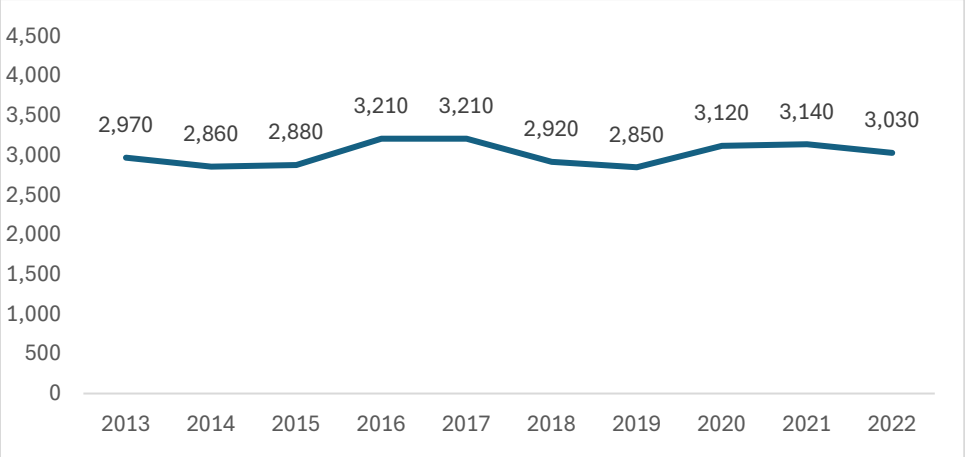
Source: Aluminum Price Monthly Trends: Commodity Markets Review | YCharts

Canadian Aluminum Industry

The Canadian aluminum industry is the fourth-largest producer of primary aluminum globally and has the lowest carbon footprint worldwide, thanks to its utilization of hydroelectric power and cutting-edge technologies.

In 2022, Canada produced about 3.0 million tonnes of primary aluminum, marking a 4% decrease from 2021. The country contributes 4.4% to the world's primary aluminum production.

Figure 10: Production of primary aluminum in Canada (in 1000 tonnes, rounded)



Source: The Aluminum Association of Canada

The latest data up to May 2023 indicates that Canada's primary aluminum production increased by 8.0% year-over-year compared to the same period last year. Canadian primary aluminum production is projected to reach 3.2 million tonnes by the end of 2023, reflecting a 6.1% increase over 2022.

Table 12: Canadian Primary Aluminum Production, 2022 vs 2023 (in tonnes)

Month	2022	2023	% change
January	252,235	269,973	7.0%
February	228,211	243,833	6.8%
March	254,136	272,796	7.3%
April	245,717	268,980	9.5%
May	253,510	276,592	9.1%
Year-to-date	**1,233,809**	**1,332,174**	**8.0%**
Total Year	**3,033,966**	**3,219,688 p**	**6.1%**

Source: The Aluminum Association of Canada, 2023 projection

Quebec accounts for the majority of aluminum production in Canada, hosting eight of the country's nine primary aluminum smelters. The remaining smelter is situated in Kitimat, British Columbia. Additionally, Quebec is home to the only alumina refinery in Canada. The key players in Canadian aluminum production are Alcoa, Aluminerie Alouette, and Rio Tinto.

3 smelters | 1 smelter | 5 smelters, 1 refinery

Source: Aluminium Association of Canada

Workforce Statistics

- The industry supports 9,000 direct and 20,000 indirect jobs in Canada
- Approximately 15,000 retirees are from the aluminum industry
- 4,000 jobs in the equipment suppliers sector in Quebec
- 30,000 jobs in the processing industry in Quebec
- 2,400 suppliers in Quebec
- 1,700 manufacturers in Quebec

Source: Aluminium Association of Canada

Trade: Imports and Exports

In 2022, Canada imported aluminum products worth $10.4 billion, a 24% increase from 2021. Bauxite concentrate and alumina for aluminum processing accounted for $2.2 billion (21%) of the imports. Most imports came from the United States (41%), Brazil (20%), China (18%), and Australia (3%).

Canada is the world's largest exporter of aluminum. In 2022, Canadian aluminum product exports were valued at $18.2 billion, a 20% increase from 2021 due to higher prices. The United States was the largest export destination in 2022, accounting for 92% of aluminum exports, followed by Mexico at 3% and Hong Kong at 1%.

The breakdown of exports in 2022 was the following:

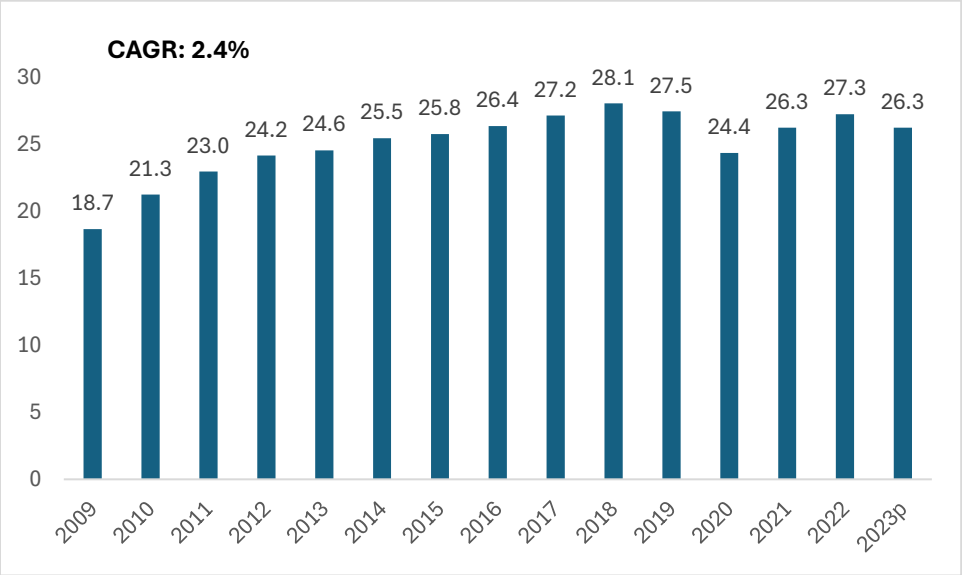
- $12.1 billion in unwrought alloyed and non-alloyed aluminum
- $2.8 billion in semi-finished aluminum products
- $1.5 billion in finished aluminum products
- $1.8 billion in aluminum waste and scrap

North American Aluminum Demand in 2023

According to the Aluminum Association, aluminum demand in the United States and Canada (shipments by domestic producers plus imports) totaled an estimated 26,271 million pounds in 2023, compared to 27,337 million pounds in 2022, a 3.9% decline. However, data show early signs of recovery with the association's Index of Net New Orders of Aluminum Mill Products reaching 114.5 in January 2024 (baseline index of 100), its highest level since June 2022.

Since 2009, the domestic aluminum industry has grown at a compound annual growth rate (CAGR) of 2.4%.

Figure 11: North American Aluminum (billions of pounds)



Source: The Aluminum Association, 2023 preliminary

Conclusion

The metals industry in Canada faces a complex landscape of challenges and opportunities. Economic uncertainties, labour shortages, dynamic trade policies, geopolitical tensions, and stringent environmental regulations pose substantial hurdles, affecting supply chains and production costs.

Global market dynamics, including the rising demand for sustainable practices, are boosting the demand for greener Canadian steel and aluminum. However, increased competition from China and other developing countries presents a significant challenge.

Technological advancements, including automation and digitalization, are essential for enhancing production efficiency and maintaining competitiveness. This shift necessitates a skilled workforce, highlighting the need for investment in education and training.

Investment in clean technologies, adoption of sustainable practices, and development of a skilled workforce will be crucial to ensuring long-term growth and competitiveness in the Canadian metals industry.