

Global Mining • B0611-GL

# Global Iron Ore Mining



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# About

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[About This Industry](#)

## Definition

The Global Iron Ore Mining industry consists of companies that mine iron-bearing ores that are primarily hematite, magnetite and taconite. In addition to ore extraction, mining includes the development of mine sites and the processing of ore mined into a concentrate or pellet form. The iron ore and iron ore pellets are then sold as an input to blast furnace steel production.

## Codes

## What's Included

- Mining iron bearing ore
- Processing iron bearing ore into pellets

## Companies

- Vale SA
- BHP Group Limited
- Rio Tinto PLC
- Fortescue Metals Group Ltd.
- ArcelorMittal SA

## Related Industries

### Domestic industries

#### Competitors

- Global Gold and Silver Ore Mining
- Global Copper, Nickel, Lead and Zinc Mining

#### Complementors

- Global Coal Mining
- Global Iron and Steel Mills

### International industries

- Iron Ore Mining in the US
- Iron Ore Mining in Canada
- Iron Ore Mining in Australia
- Iron Ore Mining in New Zealand
- Iron Ore Mining in China

## Related Terms

### IRON ORE

Rocks or deposits containing compounds from which iron can be extracted.

### IRON ORE PELLET

Marble-size balls of an iron ore and clay mixture, baked in a large furnace.

### OPEN CUT MINING

A type of surface excavation in the form of an inverted cone. The shape of the mine opening varies with the shape of the mineral deposit.

### TACONITE

An iron-bearing, high-silica, flint-like rock, typically containing between 20.0% and 30.0% iron.

### MAGNETITE

A natural black oxide of iron, typically containing between 65.0% and 72.0% iron.

### HEMATITE

A red-colored form of iron ore that occurs in crystalline, massive or granular forms, and typically contains at least 70.0% iron.

### FINES

A finely crushed or powdered ore.

## Additional Resources

- United Nations Commodity Trade Statistics Database
- World Steel Association
- BHP
- US Geological Survey

## At a Glance

|                                                                           |                                                                       |                                                                         |
|---------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------|
| <b>Revenue</b><br><b>\$263.9bn</b><br>'21-'26 ↓ 12.4 %<br>'26-'31 ↓ 0.7 % | <b>Employees</b><br><b>354k</b><br>'21-'26 ↓ 1.1 %<br>'26-'31 ↓ 0.5 % | <b>Businesses</b><br><b>2,150</b><br>'21-'26 ↓ 1.3 %<br>'26-'31 ↑ 0.1 % |
| <b>Profit</b><br><b>\$85.8bn</b><br>'21-'26 ↓ 15.6 %                      | <b>Profit Margin</b><br><b>32.5%</b><br>'21-'26 ↓ 6.6 pp              | <b>Wages</b><br><b>\$21.5bn</b><br>'21-'26 ↑ 1.9 %<br>'26-'31 ↓ 0.5 %   |

Five-year growth rates display historic and forecast CAGRs

## ➔ Major Players

| Company                     | Revenue   | Market Share |
|-----------------------------|-----------|--------------|
| Vale SA                     | \$27.8bn  | 10.5%        |
| BHP Group Limited           | \$27.3bn  | 10.4%        |
| Rio Tinto PLC               | \$26.5bn  | 10.1%        |
| Fortescue Metals Group Ltd. | \$17.4bn  | 6.6%         |
| Other Companies             | \$164.8bn | 62.4%        |

## ⌚ Products and Services

| Item             | Revenue   | Market Share |
|------------------|-----------|--------------|
| Iron ore fines   | \$224.6bn | 85.1%        |
| Iron ore pellets | \$39.3bn  | 14.9%        |

## 🗉 Key External Drivers

| Key External Drivers                          | Impact   |
|-----------------------------------------------|----------|
| World price of iron ore                       | Positive |
| GDP of mainland China                         | Positive |
| GDP of the BRIC nations                       | Positive |
| Industrial production index of OECD countries | Positive |

## Key Takeaways

## Performance

- Rising diesel costs are emerging as a serious threat to iron ore miners' already weakened profit. With every incremental fuel hike adding tens of millions to operating bills, producers are being pushed toward price hikes now and deeper efficiency and electrification investments over time.
- Iron ore pellets are poised to become a bigger revenue driver as steelmakers pivot toward cleaner, EAF- and hydrogen-based production routes. Miners that ramp up high-grade and DR-grade pellet capacity will be best placed to capture rising premiums and long-term contracts.

## Products and Markets

- Tariffs on steel imports could potentially decrease demand for iron ore. As steel becomes more expensive due to tariffs, steel production may slow down, reducing the need for iron ore.
- Chinese retaliatory tariffs on US goods may indirectly affect global iron ore prices. Reduced US exports to China could shift demand patterns, potentially influencing the global iron ore market.
- Iron ore fines remain the backbone of global steel and construction because they're the cheapest and most widely available feedstock. They're the natural output of most mines, can be sold after basic processing and still underpin dominant blast furnace routes, especially in cost-sensitive markets like China.
- China's steel output has fallen to multi-year lows. While domestic construction and property demand have slumped, mills have leaned on manufacturing demand and near-record exports, prompting tighter export controls as Beijing tries to rein in low-value shipments and rising trade frictions.

## SWOT

|               |                                    |
|---------------|------------------------------------|
| Strengths     | High Profit vs. Sector Average     |
|               | Low Customer Class Concentration   |
|               | High Revenue per Employee          |
| Weaknesses    | Very High Volatility               |
|               | High Product/Service Concentration |
|               | High Capital Requirements          |
| Opportunities | High Revenue Growth (2025-2030)    |
|               | High Performance Drivers           |
|               | GDP of mainland China              |
| Threats       | Low Revenue Growth (2020-2025)     |
|               | Low Outlier Growth                 |
|               | World price of iron ore            |

## Industry Structure

| Characteristic        | Level     | Trend  |
|-----------------------|-----------|--------|
| Concentration         | Low       |        |
| Barriers To Entry     | High      | Steady |
| Regulation and Policy | High      | Steady |
| Life Cycle            | Mature    |        |
| Revenue Volatility    | Very High |        |
| Assistance            | Low       | Steady |
| Competition           | High      | Steady |
| Innovation            | Moderate  |        |

## Executive Summary

Global iron ore miners have spent the past few years wrestling with a sharp turn in market conditions, as prices retreated from 2021 highs and costs pushed relentlessly higher. While Chinese crude steel output has trended lower and hit a five-year low in 2024 before falling again in 2025, iron ore demand hasn't followed suit because of a pronounced shift in how and where steel is being used. Manufacturing-related steel consumption, stockbuilding and a move toward higher-grade products have kept Chinese buyers active on the seaborne market, with imports from Brazil and Australia still edging up in 2025. At the same time, rising diesel, labor, machinery and explosives costs have compressed profit, leaving miners caught between softer pricing and a stubbornly expensive cost base. Industry revenue has been decreasing at a CAGR of 12.4% over the past five years to total an estimated \$263.9 billion in 2026, including an estimated drop of 0.6% in 2026.

Over the past five years, the industry's performance has been defined by this squeeze between normalizing prices and escalating operating expenses. Profit has declined from the windfall levels enjoyed during the 2021 price spike, as diesel inflation and broader input cost pressure outpaced miners' ability to strip out inefficiencies. Chinese property-driven steel demand has faded, but export-oriented producers have kept blast furnaces running by shipping more steel abroad, while India's record steel output, supported by infrastructure and housing, has anchored regional ore demand. In contrast, mature producers like Japan and South Korea have cut crude steel capacity amid weak domestic construction, high building costs and fierce competition from low-priced Chinese steel, eroding their iron ore import needs and reinforcing the industry's pivot toward the most cost-competitive suppliers.

Over the next five years, global iron ore miners are likely to see top-line performance constrained by a forecast decline in iron ore prices, even as structural shifts in steelmaking open higher-value niches. China's apparent steel use is expected to fall further as the housing downturn drags on, tempering demand from the industry's biggest buyer and putting persistent downward pressure on benchmark prices. Major low-cost producers in Australia and Brazil are set to keep ramping output, tightening their grip on seaborne trade and forcing higher-cost rivals to consolidate or exit. Rising demand for high-grade fines and DR-grade pellets, tied to the spread of EAF and hydrogen-ready processes, will shift the product mix. Industry revenue is forecast to decrease at a CAGR of 0.7% to total an estimated \$254.7 billion through the end of 2031.

Performance

Key Takeaways

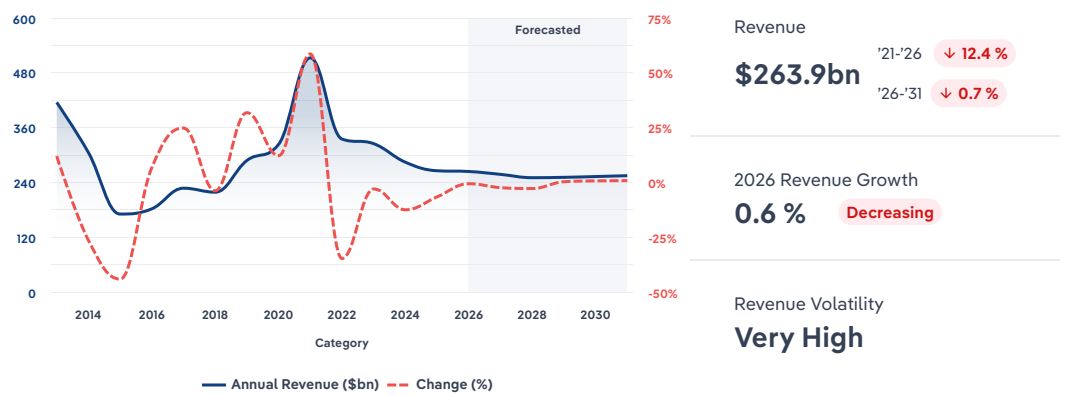
**Rising diesel costs are emerging as a serious threat to iron ore miners' already weakened profit.** With every incremental fuel hike adding tens of millions to operating bills, producers are being pushed toward price hikes now and deeper efficiency and electrification investments over time.

**Iron ore pellets are poised to become a bigger revenue driver as steelmakers pivot toward cleaner, EAF- and hydrogen-based production routes.** Miners that ramp up high-grade and DR-grade pellet capacity will be best placed to capture rising premiums and long-term contracts.

Performance Snapshot

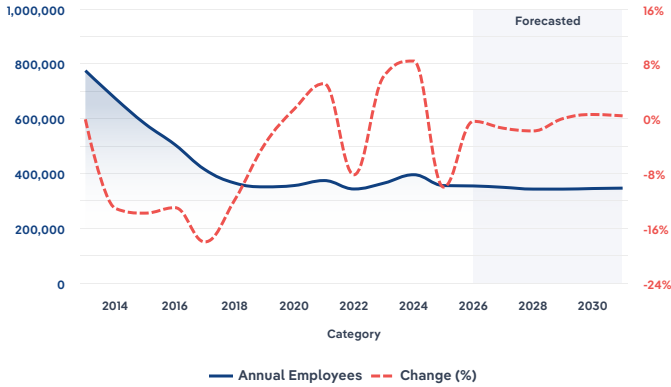
Revenue

Total value (\$) and annual change from 2013 – 2031. Includes 5-year outlook.



## Employees

Total number of employees and annual change from 2013 – 2031. Includes 5-year outlook.



### Employees

**354k**

'21-'26 ↓ 1.1 %

'26-'31 ↓ 0.5 %

### Employees per Business

**165**

'21-'26 ↑ 0.3 %

'26-'31 ↓ 0.5 %

### Revenue per Employee

**\$745k**

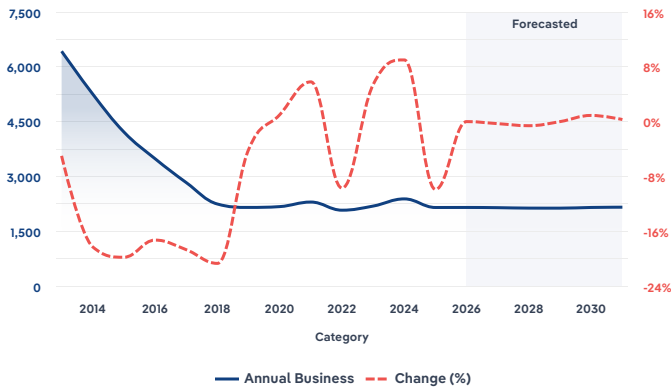
'21-'26 ↓ 11.5 %

'26-'31 ↓ 0.3 %

Source: IBISWorld

## Business

Total number of businesses and annual change from 2013 – 2031. Includes 5-year outlook.



### Businesses

**2,150**

'21-'26 ↓ 1.3 %

'26-'31 ↑ 0.1 %

### Employees per Business

**165**

'21-'26 ↑ 0.3 %

'26-'31 ↓ 0.5 %

### Revenue per Business

**\$122.7m**

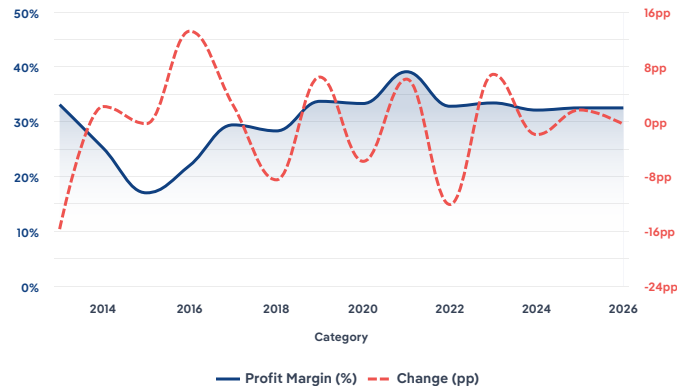
'21-'26 ↓ 11.3 %

'26-'31 ↓ 0.8 %

Source: IBISWorld

## Profit Margin

Total profit margin (%) and annual change from 2013 – 2031



Total Profit

**\$85.8bn**

'21-'26 ↓ 15.6 %

Profit Margin

**32.5%**

'21-'26 ↓ 6.6 pp

Profit per Business

**\$39.9m**

## Current Performance

↓ 2021-26 Revenue CAGR -12.4%

### What's driving current industry performance?

Chinese steel production has dropped but the contrary's iron ore demand hasn't dropped

- The industry remains heavily dependent on Chinese steel production as the country is the largest steel producer in the world. Chinese steel output continued to drop in 2025, after reaching a five-year low in 2024.
- Chinese steel output has been trending lower over the past five years due to several factors. Softening demand from the domestic property sector has reduced construction-related steel use, while government policies aimed at cutting carbon emissions have also capped production levels. Manufacturing has remained a key source of support amid these woes in terms of iron ore demand. Steel used in machinery, automobiles and other industrial applications accounted for more than half of total consumption in 2025.
- Another factor buoying iron ore demand has been Chinese steel exports continuing to expand despite US tariffs and other trade-remedy actions targeting low-priced Chinese material, with export volumes approaching record levels in 2025.
- While total steel production has fallen, stockbuilding and a shift toward higher-grade products have sustained demand for seaborne iron ore, driving increased purchases from major suppliers such as Brazil and Australia, where shipments to China rose 2.3% and 2.7% respectively in 2025, according to AXSMarine.
- Iron ore volumes into China can hold up in the near term thanks to stockbuilding and a tilt toward higher-grade imports from Brazil and Australia, but the longer Chinese steel output grinds lower, the more exposed global miners become to policy shifts, trade frictions and changes in China's product mix rather than simple volume growth.

Steel production by other major producers has been mixed

- India's steel output has climbed, driven by strong demand from infrastructure, residential construction and manufacturing, reaching record levels in 2025. The majority of steel production is supported by domestically sourced iron ore. Following net import positions in 2023 and 2024, primarily from China, South Korea and Japan, the government introduced a 12.0% provisional safeguard duty on certain flat steel imports in April 2025 to limit low-cost inflows and bolster local producers.
- The Buy America, Build America provisions under the Infrastructure Investment and Jobs Act have supported growth in US steel production by requiring domestically sourced materials for federally funded infrastructure projects. At the same time, higher steel tariffs introduced during the Trump administration have constrained imports, reinforcing domestic demand and encouraging further expansion of US steel manufacturing.
- Japan's crude steel production contracted for 12 consecutive months into early 2025 and declined again across the full fiscal year, reaching its lowest level since 1968. Weaker construction demand tied to high building costs and labor constraints, alongside competition from low-cost Chinese steel and concerns over rising US tariffs, has weighed on output and reduced the country's iron ore import demand.

- South Korea's crude steel output has also retreated from its 2021 peak, with capacity cuts extending beyond smaller companies to major producers. POSCO closed its Pohang No. 1 Steelmaking Plant and No. 1 Bar Mill in 2024, while Hyundai Steel suspended operations at its Pohang No. 2 Plant indefinitely. These actions reflect persistent demand weakness, import competition and trade tensions, which have curtailed South Korea's iron ore imports.

#### Rising fuel costs threaten profit late

- Iron ore miners have endured profit and revenue declines over the past five years. This profit decline has largely stemmed from iron ore prices dropping from highs in 2021, but costs have also climbed. Labor, machinery, explosive and transport costs have all increased. Rising diesel costs greatly threaten profit in 2026.
- Increasing diesel prices have been a key driver of rising operating expenses, with the recent conflict in Iran further pushing fuel costs upward. In March 2026, Fortescue reported that every \$0.10 increase in diesel prices raises its costs by \$70.0 million, suggesting a combined \$500.0 million increase in fuel expenses for the four largest iron ore producers.
- Sustained diesel cost inflation is likely to compress profit and incentivize producers to adjust pricing strategies or accelerate cost-control measures. In the near term, miners may pass through higher transportation and extraction costs to buyers, contributing to elevated iron ore prices. Longer term, persistently high fuel costs are likely to drive investment in energy efficiency, electrification of mining fleets and alternative fuels to reduce exposure to diesel price volatility.
- Investment in renewable energy is likely to increase to prevent this sensitivity to fuel costs. For example, Fortescue has stated its shift to renewable-powered electrification is expected to trim its diesel bill by at least \$100.0 million from March 2026 to March 2027.

#### Scale advantages drive consolidation in global iron ore mining sector

- Declining iron ore prices since 2021, combined with rising input costs, have accelerated consolidation across the global mining base, disproportionately pressuring small and medium-sized enterprises (SME). Smaller miners typically lack the scale and cost efficiencies needed to remain profitable during downturns, forcing production cuts or market exit. In contrast, major producers have sustained output growth, leveraging low-cost structures to remain competitive even as profit tightens.
- As iron ore prices weaken, major producers including Vale, Rio Tinto, BHP Group and Fortescue are prioritizing output growth, relying on low-cost operations and integrated supply chains to sustain high production levels while higher-cost competitors scale back. Vale increased production by 2.6% to 336.1 million tonnes in 2025, marking its highest output since 2018.
- Similarly, other leading miners achieved record volumes, underscoring this strategy. BHP reported iron ore production of 263 million tonnes in fiscal 2024 to 2025, Fortescue shipped a record 198.4 million tonnes and Rio Tinto posted record Pilbara shipments of 91.3 million tonnes in the fourth quarter of 2025.
- Rising diesel and input costs have further widened the competitive gap, as fuel represents a significant share of operating expenses. Larger companies are better positioned to absorb or mitigate these increases through hedging, supplier contracts and capital investment, while SMEs face greater exposure to price volatility. This dynamic intensifies financial strain on smaller companies, potentially accelerating industry concentration.
- To manage escalating fuel costs, major producers are increasingly investing in electrification, automation and alternative energy solutions to improve efficiency and reduce long-term reliance on diesel. SMEs, constrained by limited capital access, are slower to adopt such technologies and instead rely on short-term cost-cutting measures, reducing their competitiveness and reinforcing the structural decline in smaller mining operations globally.

# Volatility

Very High

## What influences industry volatility?

### The price of iron ore introduces significant volatility

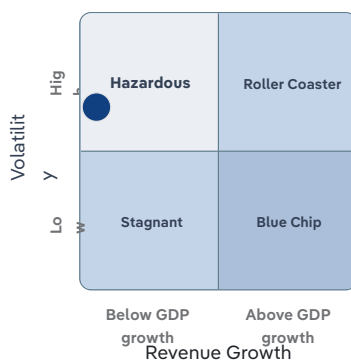
- Revenue depends on the price of iron ore and steel. Fluctuations in commodity prices greatly impact selling prices for iron ore miners. When the price of iron ore increases, miners pass along the costs downstream. Still, buyers may be reluctant to purchase these products if prices are too high.
- Revenue and iron ore prices have been extremely volatile over the past five years. With iron ore prices climbing 48.5% in 2021, revenue surged 58.6%. Still, iron ore prices and revenue have steadily declined since this spike. The world price of iron ore is forecast to drop at a CAGR of 9.6% from 2021 to 2026.

### The condition of the Chinese steelmaking industry has contributed to volatility

- Over the past five years, iron ore miners have faced significant revenue volatility as China's crude steel production has dropped. The 2021 government mandates to curb steel output for carbon reduction purposes, coupled with a downturn in China's property sector, have resulted in fluctuating demand for iron ore exports to the country.
- While total steel production has fallen in China, with total output falling to 2019 levels in 2025, and slowed growth in iron ore exports to the country, exports by steel manufacturers in China, demand from the manufacturing sector, stockpiling and upgrading iron ore quality have kept exports to the country fairly strong, preventing greater revenue volatility and declines.

## Hazardous

Industry volatility vs. revenue growth (2021-2026 CAGR)



### ☆ Key Success Factors

## How do successful businesses overcome volatility?

### Access to high-quality inputs

Access to large, high-grade reserves of iron ore lowers production costs and yields higher prices, shielding iron ore miners during times of low demand.

### Effective cost controls

Close control over costs is important, as a lean operation is far more likely to survive downturns in demand or price.

## Outlook

↓ 2026-31 Revenue CAGR -0.7%

### What's driving the industry outlook?

#### Iron ore pellets are likely to grow as a share of revenue

- There is an increasing demand for high-grade iron ore and pelletized products, largely driven by the steel industry's shift toward cleaner production methods and stringent environmental regulations. Still, currently, iron ore fines continue to dominate the market.
- The growing preference for high-quality pellets, especially DR-grade, supports the rising use of electric arc furnaces (EAFs) and hydrogen-based processes in steelmaking, which aligns with decarbonization goals. SteelWatch and Global Energy Monitor's 2024 analysis indicates a pronounced shift toward electric arc furnace (EAF) technology, with EAF routes accounting for 93.0% of all newly announced steelmaking capacity in early 2024. The share of global steel capacity under development using EAF has risen to 49.0%, up from 43.0% a year earlier, underscoring accelerating decarbonization-led investment.
- Iron ore miners globally can gradually adapt to this shift by enhancing their capacity to produce high-grade products and pellets to meet the evolving market demands. This transition will require investment in technology and infrastructure to meet increasing demands for greener steel production while balancing the ongoing need for iron ore fines.
- An emerging shortage of DR-grade pellets is expected to intensify competition for high-quality ore over the next decade, supporting pricing for premium products. As more DRI-EAF projects advance toward 2030, demand for low-impurity, high-Fe pellets is expected to outpace new supply additions, particularly in Europe and the Middle East. This potential deficit positions miners capable of upgrading ore quality and pelletizing capacity to capture higher profit and secure long-term offtake agreements.

#### Iron ore miners are likely to endure declines as prices drop

- According to the World Steel Association, China's apparent steel use is forecast to decline by 1.0% in 2026 as the prolonged housing downturn continues to weigh on construction activity. Persistently softer steel demand in China, the dominant buyer of seaborne iron ore, is therefore expected to constrain growth prospects for iron ore miners over the next five years.
- The world price of iron ore is forecast to decrease at a CAGR of 2.4% through the end of 2031. Given that price is the primary factor dictating revenue gains for iron ore miners, these falling prices will likely contribute to overall revenue declines for the industry over the next five years.
- Miners may increasingly look to markets outside China to buffer against domestic demand fluctuations. This might involve targeting emerging markets, like India, with increasing infrastructure needs, where steel demand could be more robust. Increasingly focusing on producing higher-quality iron ore can also aid in attracting customers and reducing price-based declines, particularly in Europe, where EAF adoption is high.

#### Low-cost iron ore giants to tighten grip as global supply expands

- Major low-cost seaborne producers, notably Rio Tinto, BHP and Fortescue in Australia and Vale in Brazil, are set to keep lifting output through incremental debottlenecking and new projects, even as prices ease. Australia's iron ore production, for example, is expected grow further in 2026 on the back of ramp-ups at South Flank, Iron Bridge and Western Range.
- As these scale companies add relatively low-cost tonnes, benchmark prices and traded premiums will increasingly reflect their cost curves, compressing profit for higher-cost miners in regions with weaker infrastructure or lower-grade ore. Smaller and mid-tier producers in places like India, Canada or smaller African operations face greater pressure to rationalize capacity, upgrade quality or exit marginal assets as global supply remains ample.
- This supply dynamic is likely to accelerate consolidation, with well-capitalized majors acquiring distressed assets or allowing swing producers to shut, further entrenching the dominance of Vale, Rio Tinto, BHP and Fortescue in seaborne trade. Looking ahead, iron ore miners that cannot match leading producers on cost, product quality or logistics will need to reposition toward niche grades, pellets or domestic markets to remain viable.

#### Investments in operations can benefit profit

- By deploying autonomous trucks and loaders, miners significantly cut human labor costs and increase operational consistency. Centralized remote centers, like Rio Tinto's in Perth, streamline multiple site operations using real-time data, which reduces inefficiencies and boosts adaptability. This precision reduces fuel consumption, minimizes safety-related expenses and maintains uninterrupted production. Reducing fuel consumption is expected to be crucial as energy prices remain elevated.
- Predictive maintenance uses AI to foresee equipment issues, providing timely interventions that prevent costly downtime. By scheduling repairs efficiently, miners can strengthen workforce use and extend equipment lifespan, which reduces the need for frequent machinery replacements. This maintenance will lead to steady production and drive long-term cost savings by enhancing asset performance and operational reliability, particularly as machinery costs have steadily climbed in recent years.
- These investments will aid iron ore miners in managing labor costs. The number of establishments is forecast to increase at a CAGR of 0.1%

through the end of 2031. At the same time, the number of employees is forecast to decrease at a CAGR of 0.5%. Reduced reliance on workers and more efficient operations will help limit profit declines as iron ore prices drop.

- In the Pilbara region, Rio Tinto stated its driverless truck fleet operates with load-and-haul unit costs that are 15.0% lower than those of its conventional trucks. Rio Tinto's Gudai-Darri mine in Western Australia has run a fully autonomous fleet of 42 haul trucks from the outset in 2022, cutting maintenance expenses by 8.0% thanks to smoother, more consistent operation and less operator-related equipment stress.

## Life Cycle

Mature

### Why is the industry mature?

#### Contribution to GDP

Iron ore miners' contribution to GDP is decreasing. The primary factor contributing to this decrease is the falling price of iron ore. Also, the uptick in adoption of electric arc furnaces has decreased the need for iron in the steelmaking process.

#### Market Saturation

The iron ore mining industry is becoming increasingly saturated as supply expands aggressively while demand growth, particularly from China, slows. This has caused oversupply and price drops, making it tough for producers to expand market share or profitability, edging closer to full saturation.

#### Innovation

Product segments are well-defined and stable, indicating that there is little room for innovation. Most innovations relate to streamlining the production process. Some innovations in the production process involve predictive maintenance on machinery and equipment and the use of automated machinery.

#### Consolidation

Market share concentration has inched up in recent years. Also, there is heavy merger and acquisition activity along with an elevated level of vertical integration. Still, steel producers in many countries largely rely on domestic iron ore, making it difficult for the largest iron ore miners globally to penetrate these markets, preventing considerable consolidation.

#### Technology & Systems

Innovation is mostly limited to creating more efficient, less costly production processes. These innovations tend to automate various production functions. Still, efforts to reduce production costs and meet increasingly stringent environmental standards will continue to dominate technological change for iron ore miners.

## Life Cycle

Indication of the industry's stage in its life cycle compared to similar industries



\*Growth is based on change in share of economy combined with change in establishment numbers

## Products and Markets

## Key Takeaways

**Tariffs on steel imports could potentially decrease demand for iron ore.** As steel becomes more expensive due to tariffs, steel production may slow down, reducing the need for iron ore.

**Chinese retaliatory tariffs on US goods may indirectly affect global iron ore prices.** Reduced US exports to China could shift demand patterns, potentially influencing the global iron ore market.

**Iron ore fines remain the backbone of global steel and construction because they're the cheapest and most widely available feedstock.** They're the natural output of most mines, can be sold after basic processing and still underpin dominant blast furnace routes, especially in cost-sensitive markets like China.

**China's steel output has fallen to multi-year lows.** While domestic construction and property demand have slumped, mills have leaned on manufacturing demand and near-record exports, prompting tighter export controls as Beijing tries to rein in low-value shipments and rising trade frictions.

Largest Market

**\$224.6bn** Iron ore fines

Product Innovation

**Moderate**

## Products and Services

## How are the industry's products and services performing?

## Iron ore fines are key inputs for steel production and construction

- Most ore consist of fines or small particles, that are beneficiated to increase iron content and are agglomerated into materials that can be charged in blast furnaces more easily. Fine ores are screened ores that are primarily sold to sinter plants and are often the least expensive product available to the steel industry blast furnaces.
- Iron ore fines dominate production and sales because they are the default output of most mines and require fewer processing steps than pellets. Producers can sell fines directly after crushing, screening and basic beneficiation, avoiding the capital and energy costs of pellet plants, which keeps fines cheaper and supports much larger installed capacity.
- On the demand side, fines underpin blast furnace steelmaking, which still accounts for the majority of global crude steel production. Most blast furnaces use sinter and lump derived from fines and cost-sensitive mills in China and other major producers prioritize mainstream fines grades that balance price and performance, reinforcing their dominance in seaborne trade.
- Vale's sales to China are heavily weighted toward fines, while pellets remain a smaller, higher-margin portion of its global portfolio, with 31.3 million tonnes of pellet output in 2025 compared with 336 million tonnes of total iron ore production.

because of their role in low-carbon steelmaking. As industries shift toward decarbonization, especially in Europe, China and India, the use of electric arc furnaces (EAFs) and hydrogen-based reduction processes is on the rise. This trend necessitates premium pellets, particularly DR-grade, to support greener steel production, driving their popularity.

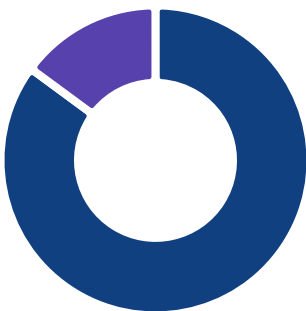
- SteelWatch and Global Energy Monitor's 2024 work reports that 93.0% of new steelmaking capacity announcements in early 2024 were EAF-based and that 49.0% of global steel capacity under development is now EAF, up from 43.0% a year earlier.

## Iron ore pellets are growing in popularity alongside EAF adoption

- Pellets consist of iron ore formed into small balls and baked for easier handling. These attract higher prices than concentrates or raw iron ore and because of this, pellets as a share of revenue are more extensive than their share of production volume.
- The demand for high-quality iron ore pellets is rapidly growing

## Products & Services Segmentation

Industry revenue in 2026 broken down by key product and service lines.



IBISWorld

Source: IBISWorld

## What are innovations in industry products and services?

Moderate

### Wearable technology and real-time monitoring

- Mining operations are increasingly adopting AI-integrated wearable devices to boost safety. These innovative technologies, like sensor-equipped hard hats, continuously monitor health metrics such as brain waves to detect driver fatigue. They facilitate immediate responses and significantly boost accident prevention by providing real-time alerts, creating a safer and more responsive work environment.
- BHP's integration of AI-powered wearable devices, such as smart hard hats at the Escondida mine in Chile, boosts safety measures. By analyzing brain waves to track truck driver fatigue, these devices enable real-time alerts that help mitigate accidents related to drowsiness.

### Automation and autonomous fleets

- The integration of autonomous haul trucks, drills and loaders in iron ore mining has increased efficiency, lowered costs and boosted safety. For instance, Rio Tinto's Pilbara mines use these technologies to slash haulage costs. This approach minimizes human error and maximizes operational efficiency through precision and consistency.
- Remote centers like Rio Tinto's in Perth exemplify how integrating data from autonomous equipment and sensors can lead to real-time optimization across multiple mine sites. These centers manage operations remotely, enabling centralized control and data-driven decision-making, streamlining processes and boosting the ability to respond quickly to operational changes or challenges.

### Predictive maintenance

- Iron ore miners increasingly implement AI-driven predictive maintenance to tackle equipment degradation. These systems forecast potential malfunctions by analyzing performance data, allowing for preemptive interventions. This approach, used by industry leaders like Rio Tinto and Vale, drastically reduces unexpected downtimes and maintenance expenses, enhancing operational efficiency and asset longevity by targeting issues before they disrupt production.
- Companies employing predictive maintenance technologies benefit from a streamlined maintenance process. By using AI to anticipate equipment failures, iron ore miners can schedule timely repairs, optimize workforce allocation and maintain consistent production levels. This strategic move minimizes unplanned interruptions and extends equipment life cycles, representing a forward-thinking shift toward sustainable and cost-effective mining operations.

## ☆ Key Success Factors

**What products or services do successful businesses offer?****Access to high-quality inputs**

Access to large, high-grade reserves of iron ore lowers production costs, yields higher prices and attracts various downstream steel producers.

**Find new resource deposits**

Iron ore miners with access to new resource deposits with high-quality materials will benefit from lower production costs and higher prices.

**Major Markets****What's influencing demand from the industry's markets?****Steel output in China has declined**

- China is the largest market for global iron ore miners for iron ore processing and steel production. Since China accounts for the largest segment of world demand for iron ore and steel products, steel manufacturers in China account for the largest downstream market for iron ore miners.
- China's steel production fell to a five-year low in 2024. A weaker domestic property sector domestically and a zero increase in annual output mandated by the Chinese government in 2021 have contributed to these declines. While domestic consumption has dipped, exports hit highs not seen since 2015 in 2024, with exports going to countries like India and Japan.
- In 2025, China's crude steel output continued to drop compared to 2024, as the prolonged property downturn continued to weigh on construction steel demand. At the same time, steel use shifted toward manufacturing, with steel for machinery, autos and other industrial uses exceeding 50.0% of total consumption.
- Weaker domestic demand continued to push mills to rely more on overseas markets. China's finished steel exports rose more than 6.0% year over year in the first eleven months of 2025 to 108 million tonnes and likely approached 120 million tonnes for the full year, near record highs. Beijing responded by announcing export licensing for many steel products from 2026, aiming to curb low-value exports and ease trade tensions. Despite declining steel output, stockpiling and quality upgrading have pushed up iron ore sales to China.
- While the lack of sizable iron ore reserves in Japan and South Korea prevents vertical integration domestically, these countries are massive export markets for many iron ore miners globally. Steel producers in these countries acquire stakes in iron ore or coal mining operations to boost production capabilities, like Nippon Steel and POSCO acquiring a sizable stake in Teck's coal mining operations in 2025.
- The Buy America, Build America mandate in the Infrastructure Investment and Jobs Act led to an uptick in domestic steel manufacturing, as all materials used on the sizable infrastructure bill had to be produced domestically. Increased tariffs on steel products by the Trump Administration are likely to have hindered steel exports to the US, likely sustaining and expanding domestic manufacturing.
- According to the Japan Iron and Steel Federation, Japan's crude steel output fell for twelve consecutive months through early 2025 and then declined again for the full 2025 fiscal year, dropping to its lowest level since 1968. Weak construction demand amid high building costs and labor shortages, rising competition from cheaper Chinese steel and growing concerns over the impact of US steel tariffs on Japanese exporters have weighed on Japanese production.
- Steel production in India has been surging, supported by rapid growth in infrastructure, housing and manufacturing demand, reaching all time highs in 2025. Domestic iron ore supplies most of the country's steelmaking requirements. India was a net importer of finished steel in 2023 and 2024, largely from China, South Korea and Japan, prompting the government to impose a 12% provisional safeguard duty on selected flat steel imports in April 2025 to curb cheap inflows and support domestic producers.

**Other steel manufacturers face stiff competition from Chinese steelmakers**

- This market comprises other steel manufacturers. Some of the largest steel manufacturers in the world include the United States, India, Japan, Russia and South Korea. Some of these steel producers, like China, Japan and South Korea, rely on iron ore imports for their steel production. Other countries like Russia, the United States and India rely on domestic iron ore for steel production.
- Still, intracompany sales of iron ore in various countries have increased over the past decade as steel manufacturers have vertically integrated, acquiring the assets of iron and coal suppliers. For example, US Steel is the largest iron ore miner in the US.

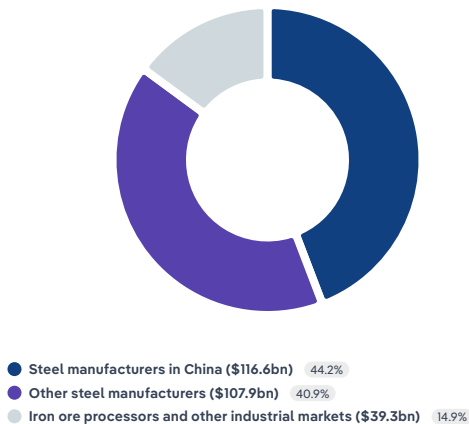
**Iron ore processors and other industrial markets account for a comparatively small share of demand**

- Shipments to iron ore processing plants and other purchasers of iron ore products account for a relatively small portion of industry revenue. In particular, nonferrous metal manufacturing industries use iron ore in lead refining or other metal alloying where iron is the secondary metal.
- Iron ore is used for the production of alloys, like kovar (iron and cobalt), invar (iron and nickel) or spiegeleisen (iron mixed with manganese, carbon and silicon). Iron ore is also used in paint manufacturing and cement production.

- The increased use of Electric Arc Furnaces reduces the need for traditional iron ore processing (for blast furnaces), but increases the need for high-quality iron ore pellets, having a mixed impact on iron ore processors. The use of iron ore for other industrial uses has been somewhat stable, but higher construction material prices have curbed some production as demand has slowed.

## Major Markets Segmentation

Industry revenue in 2026 broken down by key markets



IBISWorld

Source: IBISWorld

## International Trade

Total Imports

**\$174.2bn**

'21-'26

↓ 12.7 %

'26-'31

↓ 0.1 %

Total Exports

**\$193.8bn**

'21-'26

↓ 10.8 %

'26-'31

↓ 0.8 %

Trade Balance

**Net Exporter**

Surplus: \$19.5bn

## Imports

High

Decreasing

## What are the industry's import trends?

Chinese imports have remained solid despite declining domestic steel demand

- As the largest steel producer in the world, China imports a massive amount of iron ore. Although China mines substantial volumes of iron ore, its output is used by the domestic steel industry and it is not a major exporter. Also, much of the iron ore deposits in China are of lower grade, increasing the need for higher quality imports.
- Chinese steel production has been dropping for various reasons. To begin with, declining demand by the property sector in China has contributed to falling production. Also, measures placed by the Chinese government to curb carbon emissions have limited steel output. The manufacturing sector in China has continued to demand steel, keeping domestic demand afloat. Steel has shifted toward manufacturing, with steel for machinery, autos and other industrial uses exceeding 50.0% of total consumption in 2025.
- While Tariffs by the US and other antidumping measures on less expensive Chinese steel have curbed production, exports have continued to climb, reaching near record highs in 2025. Export growth for Chinese steelmakers, stockpiling and quality upgrading have continued to increase imports from key iron ore producers like Brazil and Australia, with iron imports from these countries increasing 2.3% and 2.7% in 2025, according to AXSMarine.

Japanese and South Korean imports have fallen alongside steel production

- Japan and South Korea are major importers of iron ore. Relatively small iron ore deposits in these countries contribute to high iron ore imports. Japan and South Korea require iron ore for steel production for various industries like automobile manufacturing, ship manufacturing and the construction of buildings and manufacturing facilities. Steel producers in these countries acquire stakes in iron ore or coal mining operations to boost production capabilities, like Nippon Steel and POSCO acquiring a sizable stake in Teck's coal mining operations in 2025.

- Japan's crude steel output declined for twelve straight months into early 2025 and then fell again over the full 2025 fiscal year, reaching its lowest level since 1968. Soft construction activity caused by elevated building costs and labor shortages, increased pressure from low-priced Chinese steel and worries about higher US tariffs on steel exports have all dragged on Japanese production. This has contributed to declining iron ore imports.
- South Korea's crude steel output has fallen from its peak in 2021. The halt in operations is not limited to smaller mills. Major producers have also cut capacity: POSCO permanently shut its Pohang No. 1 Steelmaking Plant and No. 1 Bar Mill in 2024, while Hyundai Steel placed its Pohang No. 2 Plant on indefinite hiatus. These closures underscore how weak demand, cheap Chinese imports and trade frictions are prompting structural capacity reductions in South Korea's steel industry. This has hindered iron ore imports by the country.

## Exports

High

Decreasing

### What are the industry's export trends?

#### Australia is a powerhouse in international trade

- Oceania is by far the largest iron exporting region, as Australia is estimated to account for over half of the exports in 2026. Three of the four largest iron ore miners in the world, Rio Tinto, BHP and Fortescue, have establishments in Australia because of the country's massive iron ore deposits, boosting exports.
- Proximity to the largest steel producer in the world, China, boosts Australian exports. While China and Australia have endured tensions leading to trade restrictions, iron ore has been excluded from restrictions because of China's dependence on Australia's iron ore. Lagging steel production in China, because of reduced domestic demand from the property sector and government restrictions on steel output, has slowed iron ore export growth for Australia.
- As Chinese steelmakers have increasingly relied on exports to sustain steel sales, stockpiled and upgraded iron ore quality, Australian miners have continued to export considerable volumes of iron ore to China. According to AXSMarine, Australian exports to China increased 2.7% in 2025.

#### Brazil is a major exporter of iron ore

- Brazil is the second-largest exporter of iron ore and is home to Vale, the largest iron ore miner in the world. Like other large iron ore producers, Vale looks to China for export growth. According to the company's first-quarter 2026 reporting, 47.0% of the company's net sales revenue came from China.
- According to AXSMarine, China continued to increase its imports of iron ore from Brazil in 2025 despite declining steel production. Chinese imports of Brazilian iron ore increased 2.3% in 2025. Given that Vale is the largest Brazilian iron ore miner, many of these shipments likely came from the company.
- Vale's iron ore exports to Japan and other Asian countries comprise a sizable portion of the company's revenue. In 2024, these countries accounted for 17.8% of iron ore revenue. Japan and South Korea are the other largest markets for Brazilian iron ore miners. Declining steel production in these countries has likely hindered Brazilian exports.

[Geographic Breakdown](#)

## Key Takeaways

**Australia's a prominent producer in the global iron ore market, heavily influencing exports, particularly to China.** BHP Group and Rio Tinto lead production in Western Australia.

**Vale SA is a Brazil-based iron ore mining company that currently has the highest market share.** The bulk of the country's iron ore output is exported.

## Business Locations

### Where are industry businesses located?

#### Iron ore miners concentrate heavily in Oceania

- A considerable portion of iron ore output comes from Australia, the largest iron ore-producing country after adjusting Chinese production to account for its inferior grade. Much of the iron ore mined in Australia is exported, mainly to China.
- Three of the world's largest iron ore producers, BHP, Rio Tinto and Fortescue Metals Group, operate large-scale mines in Western Australia's Pilbara region, and together they produce over 800.0 million tons of iron ore annually, contributing to Australia's 924-million-tonne export volume in 2025, which represented more than 50.0% of global seaborne iron ore supply.
- Severe cyclones in early 2025 cut Rio Tinto's first-quarter Pilbara shipments to 70.7 million tonnes, down 9.0% year over year and 17.0% quarter over quarter. Still, full-year Pilbara shipments still reached 326.2 million tonnes, down just 1.0% year over year and supported by a record fourth quarter with 91.3 million tons shipped and 89.7 million tonnes produced.

#### Brazil is a powerhouse in South America

- Iron ore miners in Brazil account for more than 90.0% of total production in South America. The other major iron ore-producing nations in South America are Venezuela, Chile and Peru, with Chile and Peru being the two other most prominent.
- Although Brazil's domestic steel industry consumes a substantial volume of iron ore, the bulk of its output is exported. Vale is the world's largest producer of iron ore. In 2024, 73.3% of Vale's iron ore revenue came from exports to China. Despite heavy rainfall that hindered production in early 2025, Vale alone produced 336 million tonnes of iron ore in 2025, its highest output since 2018 and more than the annual production of many countries, underscoring Brazil's dominant role in South American iron ore supply.
- In October 2024, Brazilian authorities reached a comprehensive settlement with BHP, Vale and Samarco over the 2015 Fundão dam collapse, with a total value of \$31.7 billion, covering past spending,

future compensation and long-term environmental and resettlement obligations.

#### The North Asia region's output is primarily from China

- China is the world's largest producer of the metal, although only a small percentage of its production has high-quality ferrous content and is comparable to the world average. China's iron ore reserves are of low grade, averaging 30.0% iron content. Despite its large iron ore output, China is also the world's largest importer of iron ore. China's high level of iron ore demand reflects its high steel output.
- China's high iron ore demand has historically reflected very large steel output, but according to China's National Bureau of Statistics data, crude steel production fell 4.4% year over year to 960.81 million tonnes in 2025, the lowest level since 2018. Even with this decline, China is expected to keep importing significant volumes of high-grade iron ore because domestic ore is comparatively low-quality, requiring higher-grade imports for efficient, lower-emission steelmaking.

#### Production in India and Central Asia is climbing

- India and Central Asia are among the world's third-largest sources of iron ore. Mining in India comprises the majority of this production. Surging steel production in India has driven a strong uptick in iron ore output recently.
- According to India's Ministry of Mines, iron ore production reached a record 289 million tonnes from April 2024 to March 2025, up 4.3% from 277 million tonnes in 2023 to 2024. The government attributes this growth to rising steel demand, stable policy and improved operational capacity.

Share of Volume of Output (%) vs. share of population (%)

## ☆ Key Success Factors

## How do businesses use location to their advantage?

### Downstream ownership links

Iron ore miners with ownership links with steel manufacturers permit easier access to markets and can shield themselves from considerable declines when demand is weak.

### Access to rail and port infrastructure

Rail and port facilities are required to facilitate the movement, particularly the export, of iron ore, so access to transportation is crucial to success.

## Competitive Forces

## Key Takeaways

**Being able to properly manage costs is a vital competitive tool.** Low operational expenses enable companies to better withstand reductions in iron ore prices

**Competitive pricing is key in commodity markets.** Iron ore miners must be able to deliver high-quality ore at a marketable price.

Concentration Low

## What impacts the industry's market share concentration?

The largest companies are heavily focused on international trade

- The four largest companies, Vale, BHP Group, Rio Tinto and Fortescue have considerably high production capacities and have historically dominated among iron ore miners globally. These companies enjoy the massive and most productive iron ore reserves in Brazil and Australia.
- These companies are heavily focused on international trade in iron ore and their diverse mineral base often means they have more capital available to invest in projects than smaller miners. Much of their exports go to Chinese steelmakers. For example, in 2024, 73.3% of Vale's iron ore revenue came from exports to China.

Largest miners have grown volumes despite weaker prices

- Vale, Rio Tinto, BHP Group and Fortescue are competing on volume as prices soften, using very low operating costs and integrated logistics to keep mines running hard while higher-cost producers cut back. Vale's iron ore output rose 2.6% to 336.1 million tonnes in 2025, its highest level since 2018.
- The other majors also set new production or shipment records, reinforcing this volume-led strategy. BHP reported record iron ore production of 263 million tonnes in FY 2024 to 2025, Fortescue shipped a record 198.4 million tonnes that year and Rio Tinto delivered record fourth-quarter Pilbara shipments of 91.3 million tons in 2025.

Smaller miners globally can hold considerable influence in their respective countries

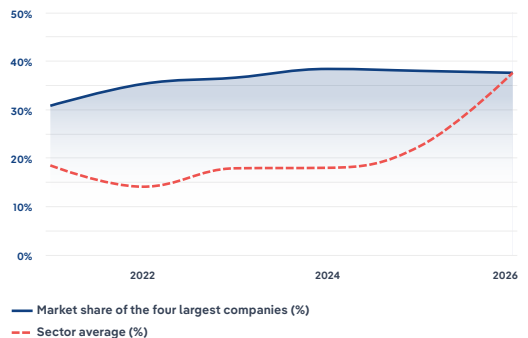
- The iron ore market is dominated by a few massive producers, primarily located in Australia and Brazil. These companies leverage

enormous reserves and highly efficient operations to produce hundreds of millions of tonnes annually, controlling the majority of global exports and shaping worldwide pricing and supply dynamics.

- In countries with smaller iron ore reserves, such as the United States, domestic companies like Cleveland-Cliffs and US Steel become major companies in their national markets, with these two companies controlling more than 50.0% of the US market. Despite their relatively smaller production volumes compared to global giants, they hold significant influence locally, supplying primarily to domestic steelmakers.

## Market Share Concentration

Combined market share of the four largest companies in this industry



IBISWorld

Source: IBISWorld

## ☆ Key Success Factors

## How do successful businesses handle concentration?

## Effective cost controls

Close control over costs is important, as a lean operation is far more likely to survive downturns in demand or price.

## Secure economies of scale

Larger miners securing economies of scale reduce the per-unit cost of producing iron ore, enabling them to better deal with lower prices and endure downturns.

## Barriers to Entry

High

Steady

### What challenges do potential industry entrants face?

#### Legal

- Iron ore miners face stringent legal challenges, varying by region and country. Exploration and mining require permits and licenses, often involving comprehensive environmental impact assessments. These legal procedures demand significant research and can incur substantial legal costs, adding complexity and expense to the mining process.

#### Start-up Costs

- Start-up costs in mining are steep. Large capital expenditures are needed for exploration programs and mining development. Miners often struggle to secure funding for new mines, as acquiring operational rights can be difficult and involve hefty royalties, posing a barrier to entry.

#### Differentiation

- The iron ore mining industry is dominated by a few major companies controlling most high-production mines. New entrants struggle to compete, often resorting to operating lower-grade mines or facilities with higher operating costs. This lack of differentiation creates significant challenges in breaking into the market.

#### Capital Expenses

- Iron ore mining is capital-intensive. Substantial investments in large-scale equipment like electric shovels and conveyors are necessary. Additionally, miners need considerable funds on hand to cover fuel and materials required for continuous operation, emphasizing the financial demands of the industry.

#### ☆ Key Success Factors

### How can potential entrants overcome barriers to entry?

#### Effective cost controls

Close control over costs is important, as a lean operation is far more likely to survive downturns in demand or price.

#### Secure economies of scale

Establishing a mining operation with substantial mineral reserves to ensure strong economies of scale is crucial to success. Still, it is difficult to acquire high-grade mines.

## Substitutes

Moderate

Increasing

### What are substitutes for industry services?

#### Recycled steel

- According to the January to June 2025 update of the 16th edition of World Steel Recycling in Figures, prepared by the Bureau of International Recycling (BIR), 630.0 million tonnes of recycled steel are used each year in global steel production, based on BIR's calculations and world steel data. This corresponds to nearly one-third of global crude steel output, as shown by World Steel in Figures 2025 and related world steel statistics. In the first half of 2025, BIR reports that recycled steel use in key countries and regions totaled 235.96 million tons, accounting for 76.0% of steelmaking during that period.
- According to the same BIR update, the respective shares of recycled steel in crude steel production in the first half of 2025 were 21.2% in China, 24.5% in India, 33.4% in South Korea, 36.7% in Japan, 60.2% in the EU-27, 66.4% in the United States and 87.7% in Turkey, confirming that secondary steel dominates in several mature markets but remains a minority globally. Most recycled steel is processed in electric arc furnaces, which melt scrap using electricity rather than burning large volumes of coal in a blast furnace, so growth in scrap-based steelmaking is closely tied to the expansion of EAF capacity.
- BIR and complementary analyses from Global Energy Monitor indicate that each ton of recycled steel used in place of primary ore-based production can save 1.4 tons of iron ore and 0.74 tons of coal, reducing energy use and avoiding roughly 1.5 ton of CO<sub>2</sub> per tonnes of scrap consumed. As recycled steel volumes and recycling rates rise over time, especially in regions with high end-of-life scrap availability, secondary steelmaking increasingly substitutes for primary ore-based routes, constraining long-term growth in demand for newly mined iron ore.

### Other metals as partial substitutes for steel

- In selected end-use markets, aluminum and magnesium alloys are increasingly used instead of steel to save weight and improve fuel efficiency, especially in automotive and aerospace applications, because these alloys offer high strength at about one-third the density of steel and are widely recyclable.
- Structural and industrial designers are also adopting fiber-reinforced polymer (FRP) composites and other advanced materials in place of steel in corrosive or weight-sensitive environments, such as certain building components and infrastructure, which reduces steel intensity in those niches even though steel remains the dominant structural material overall.
- Over time, the combination of light-weighting in vehicles, increased use of non-ferrous metals and composites and design changes that reduce steel per unit of output acts as a gradual headwind to long-term steel demand growth, indirectly limiting the pace at which demand for newly mined iron ore and metallurgical coal can expand.

### ☆ Key Success Factors

## How do successful businesses compete with substitutes?

### Economies of scale

Larger iron ore miners enjoy lower per unit costs than smaller mines, enabling them to compete with less expensive substitutes on price.

### Keep running costs low

Close control over costs is important, as a lean operation is far more likely to survive downturns in demand or price and compete with substitute materials.

## Buyer & Supplier Power



## What power do buyers and suppliers have over the industry?

Moderate

Steady

### Buyers: Quality and price competition

- Large steelmakers source iron ore in high volumes from multiple miners and benchmark products against global indices, which allows them to shift tonnage between suppliers and negotiate delivered cost and quality rather than accepting posted prices.
- However, supplier concentration among a handful of low-cost large producers limits buyers' ability to push prices down, so purchasing power is strongest where demand is highly concentrated (for example, China's coordinated import buying) or where mills can substitute toward scrap, DRI or captive mines.
- Overall, buyers exert moderate power. They are price-sensitive, can play suppliers off against each other on quality and logistics and increasingly use alternatives, but structurally low-cost ore and limited world-class deposits allow major miners to retain significant pricing influence.

High

Steady

**Suppliers: switching costs**

- Iron ore miners depend on fuel, explosives, mining chemicals, power and heavy equipment and cost spikes in diesel and other consumables quickly feed through to operating costs, giving key input suppliers scope to raise prices and pressure miners' profit, especially during energy shocks.
- Because large deposits are often in remote, off-grid locations, miners must secure dedicated fuel and power solutions and long-term contracts with a limited pool of service providers, which raises switching costs and gives local suppliers moderate bargaining power over terms and pricing. However, for globally traded inputs like diesel and some bulk consumables, miners can tender across multiple vendors and reference international benchmarks, which partly caps supplier leverage and prevents supplier power from becoming overwhelming.
- The 2026 Iran conflict and associated diesel spike have made this dependence more visible, with, in March 2026, Fortescue estimating that a 10-cent move in diesel shifts its costs by \$70.0 million and that the four largest iron ore miners collectively face \$500.0 million in additional fuel expenses, underscoring suppliers' ability to pass through higher energy costs.

**☆ Key Success Factors****How do successful businesses manage buyer & supplier power?****Access to high-quality inputs**

Access to large, high-grade reserves of iron ore lowers production costs and yields higher prices, attracting buyers and dissuading them from purchasing secondary and recycled materials.

**Downstream ownership links**

Iron ore miners with ownership links with steel manufacturers permit easier access to markets, shielding them from declines when demand is weak.

**Access to rail and port infrastructure**

Rail and port facilities are required to facilitate the movement, particularly the export, of iron ore. Iron ore miners with access to rail and port infrastructure enjoy less buyer power because transport costs are lower.

Companies

Key Takeaways

The biggest iron ore miners are doubling down on volume even as prices soften. Vale, Rio Tinto, BHP and Fortescue are running flat-out on the back of ultra-low costs and slick logistics, setting fresh production records while higher-cost rivals quietly step aside.

Weather-related disruptions in early 2025 hindered production in Australia and Brazil. But Vale and Rio Tinto both bounced back fast, using the rest of the year to restore and even exceed prior production levels.

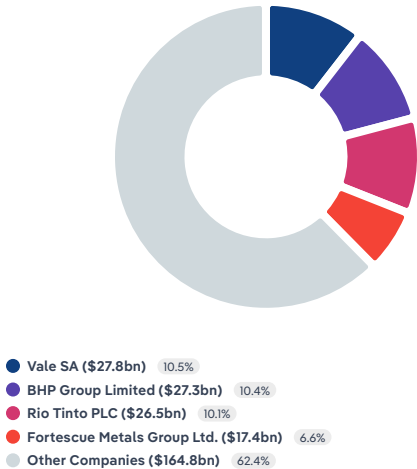
➔ Major Players

| Company                     | Revenue   | Market Share |
|-----------------------------|-----------|--------------|
| Vale SA                     | \$27.8bn  | 10.5%        |
| BHP Group Limited           | \$27.3bn  | 10.4%        |
| Rio Tinto PLC               | \$26.5bn  | 10.1%        |
| Fortescue Metals Group Ltd. | \$17.4bn  | 6.6%         |
| Other Companies             | \$164.8bn | 62.4%        |

Market Share

Industry Market Share by Company

Industry-specific company revenue as a share of total industry revenue



Source: IBISWorld

Companies

| Company                     | Market Share (%)<br>2026 | Revenue (\$m)<br>2026 | Profit (\$m)<br>2026 | Profit Margin (%)<br>2026 |
|-----------------------------|--------------------------|-----------------------|----------------------|---------------------------|
| Vale SA                     | 10.5 ↘                   | 27,809.4 ↘            | 14,851.2 ↘           | 53.4 ↘                    |
| BHP Group Limited           | 10.3 ↗                   | 27,306.7 ↘            | 17,299.2 ↘           | 63.4 ↗                    |
| Rio Tinto PLC               | 10.1 ↗                   | 26,541.6 ↘            | 11,721.1 ↘           | 44.2 ↗                    |
| Fortescue Metals Group Ltd. | 6.6 ↗                    | 17,437.8 ↗            | N/A                  | N/A                       |
| ArcelorMittal SA            | 1.6 ↘                    | 4,205.7 ↘             | N/A                  | N/A                       |

# Vale SA

## Company Details

|                                  |          |
|----------------------------------|----------|
| Industry Specific Revenue (2026) | \$27.8bn |
| Industry Profit (2026)           | \$14.9bn |
| Company Employees (2026)         | 234,000  |
| Market Share (2026)              | 10.5%    |

## Description

Brazil-based Vale SA (Vale) is the largest metals and mining company in the world and the world's largest producer of iron ore and iron ore pellets. It is also the world's second-largest producer of nickel and one of the world's largest producers of manganese ore and ferroalloys. Vale also produces copper, thermal and metallurgical coal, phosphates, potash, cobalt and platinum group metals. The company employs 234,000 people worldwide, with most of them located in South America, where the company has the majority of its iron ore mining locations.

## Other Industries

- Copper, Nickel, Lead & Zinc Mining in Canada

## Company's Industry Revenue, Market Share, and Profit Margin Over Time

| Year | Market Share (%) | Revenue (\$m) | Profit (\$m) | Profit Margin (%) |
|------|------------------|---------------|--------------|-------------------|
| 2020 | 12.1             | 31,527.0      | 18,004.9     | 57.1              |
| 2021 | 10.6             | 45,754.0      | 27,378.0     | 59.8              |
| 2022 | 11.4             | 34,444.0      | 16,315.2     | 47.4              |
| 2023 | 11.0             | 33,435.1      | 18,264.9     | 54.6              |
| 2024 | 11.3             | 30,827.6      | 14,820.7     | 48.1              |
| 2025 | 10.7             | 27,809.4      | 14,851.2     | 53.4              |
| 2026 | 10.5             | 27,809.4      | 14,851.2     | 53.4              |

## What's impacting Vale SA's performance?

### More production woes for Vale in early 2025

- Vale experienced significant production setbacks because of the impact of the 2019 mining disaster in southeastern Brazil. This incident has led to years of operational challenges for the company.
- While the company managed to increase its output to a six-year high in 2024, in the first quarter of 2025, Vale endured production challenges in its Brazilian Northern mining complex because of heavy rainfall, with production volumes falling 4.5% compared to the first quarter of 2024.

### Vale looks to secure full ownership of Baovale Project

- Vale has moved to purchase the remaining 50.0% stake in the Baovale iron ore project from its partner, Baosteel. This move, initiated through an option in their joint venture agreement, requires approval from Brazil's antitrust authority, CADE, to proceed.
- If approved, full ownership would allow Vale to boost operations at the Agua Limpa mine. It would consolidate Vale's presence in Minas Gerais, bolstering operational control.

# BHP Group Limited

## Company Details

|                                  |          |
|----------------------------------|----------|
| Industry Specific Revenue (2026) | \$27.3bn |
| Industry Profit (2026)           | \$17.3bn |
| Company Employees (2026)         | 40,872   |
| Market Share (2026)              | 10.3%    |

## Description

BHP Group Limited (BHP) is headquartered in both London and Melbourne, Australia and is a multinational mining, oil and gas company. The company is the third-largest supplier of seaborne iron ore globally, with operations located in Western Australia and Brazil. The company and has over 90,000 employees and contractors globally.

## Other Industries

- GL Global Coal Mining

## Company's Industry Revenue, Market Share, and Profit Margin Over Time

| Year | Market Share (%) | Revenue (\$m) | Profit (\$m) | Profit Margin (%) |
|------|------------------|---------------|--------------|-------------------|
| 2019 | 9.0              | 20,797.0      | 12,924.0     | 62.1              |
| 2020 | 13.2             | 34,475.0      | 24,294.0     | 70.5              |
| 2021 | 7.1              | 30,767.0      | 19,471.0     | 63.3              |
| 2022 | 8.2              | 24,812.0      | 14,699.0     | 59.2              |
| 2023 | 9.2              | 27,952.0      | 16,886.0     | 60.4              |
| 2024 | 10.0             | 27,306.7      | 17,299.2     | 63.4              |
| 2025 | 10.5             | 27,306.7      | 17,299.2     | 63.4              |
| 2026 | 10.3             | 27,306.7      | 17,299.2     | 63.4              |

## What's impacting BHP Group Limited's performance?

### BHP is involved in several joint ventures

- In Australia, BHP operates through multiple joint ventures specifically in Western Australia through its Western Australia Iron Ore (WAIO) venture, in which it holds an 85.0% interest.
- The venture includes the Mount Newman joint venture, the Goldsworthy joint venture, the Yandi joint venture and the Area C joint venture.
- Also, the company has a railway infrastructure and port facility in the Pilbara region of North Western Australia to support its iron ore mining operations.
- The company will increase capacity in its joint ventures and produce increased quantities of iron ore moving forward.

### Strong management has enabled the company's financial performance to accelerate

- Similar to other large iron ore miners in the industry, BHP has been able to withstand volatile prices due to the company's access to high quality and low-cost iron ore deposits, enabling profit to grow.
- The company reported strong growth throughout the COVID-19 pandemic and they have successfully mitigated the negative effects of adverse weather events.

#### Legal issues hinder the company's operational capacity and growth

- In Brazil, BHP operates via the Samarco Iron Ore joint venture.
- The other participant in the Samarco joint venture is Vale, the largest iron ore producer in the world. Similar to Vale, the company has contended with litigation in relation to the Samarco joint venture.

#### BHP looks to expand in Brazil

- BHP is actively seeking to expand its presence in Brazil, highlighting the country's underexplored mineral potential. The company is committed to its Samarco joint venture and is open to exploring partnerships, aligning its strategy with global growth directives in copper and iron ore.
- Following a settlement for the 2015 Samarco disaster, BHP sees renewed opportunities in Brazil. While still facing legal challenges, BHP wishes to explore potential acquisitions and strengthen ties in the region's mining sector.

#### BHP and partners launch low-carbon iron pilot

- In collaboration with Rio Tinto and BlueScope Steel, BHP is developing a pilot plant in Western Australia. The facility will use Pilbara iron ore, renewable energy and direct reduced iron technology to produce low-carbon iron, targeting an annual output of 30,000 to 40,000 tonnes.
- The project is scheduled to begin feasibility studies in 2025, with operational targets set for 2028. This initiative involves assessing the economic and technical viability of producing low-carbon iron while using BHP's iron ore assets in the Pilbara region.

## Rio Tinto PLC

#### Company Details

|                                  |          |
|----------------------------------|----------|
| Industry Specific Revenue (2026) | \$26.5bn |
| Industry Profit (2026)           | \$11.7bn |
| Company Employees (2026)         | 60,000   |
| Market Share (2026)              | 10.1%    |

#### Description

Rio Tinto PLC (Rio Tinto) is one of the world's leading mining and exploration companies and is a London-listed public company headquartered in the United Kingdom. The company also includes Rio Tinto Limited, listed on the Australian Securities Exchange. Both companies are joined in a dual-listed company structure as a single entity. In addition to iron ore, Rio Tinto's major products include aluminum, copper, diamonds, energy products, gold and industrial minerals (e.g., borates, titanium dioxide, salt and talc). Rio Tinto employs 60,000 people worldwide.

Company's Industry Revenue, Market Share, and Profit Margin Over Time

| Year | Market Share (%) | Revenue (\$m) | Profit (\$m) | Profit Margin (%) |
|------|------------------|---------------|--------------|-------------------|
| 2020 | 10.5             | 27,508.0      | 11,398.0     | 41.4              |
| 2021 | 9.1              | 39,582.0      | 17,323.0     | 43.8              |
| 2022 | 10.2             | 30,906.0      | 11,182.0     | 36.2              |
| 2023 | 10.6             | 32,249.0      | 11,882.0     | 36.8              |
| 2024 | 10.7             | 29,339.0      | 17,561.0     | 59.9              |
| 2025 | 10.2             | 26,541.6      | 11,721.1     | 44.2              |
| 2026 | 10.1             | 26,541.6      | 11,721.1     | 44.2              |

What's impacting Rio Tinto PLC's performance?

Adverse weather hindered Rio Tinto in early 2025

- Rio Tinto's operations in the Pilbara region have been significantly impacted by recent cyclones, resulting in their lowest first-quarter iron ore shipments since 2019. The company is now projecting its 2025 shipments at the lower end of its forecast, highlighting the vulnerability of its supply chain to weather disruptions.
- To address the weather-related setbacks, Rio Tinto is investing \$96.7 million in recovery plans, focusing on repairing damages and enhancing contract mining. However, further adverse weather could hinder these efforts, emphasizing the need for strategic resilience and robust risk management to stabilize future production and shipment targets.

Rio Tinto's Strategic Leadership Shift

- In May of 2025, the CEO of Rio Tinto announced he would step down later this year. As Rio Tinto seeks a new CEO with deep operational mining expertise, the shift signals an emphasis on leveraging key growth assets like the Oyu Tolgoi and Simandou projects.
- Stausholm's unexpected departure, after notable strides in trust restoration and diversification into lithium, underscores the board's pivot towards aggressive growth strategies. Future priorities will likely focus on operational prowess to navigate the challenges of volatile commodity markets and potential industry consolidation, reshaping Rio's long-term trajectory.

Fortescue Metals Group Ltd.

Company Details

|                                  |          |
|----------------------------------|----------|
| Industry Specific Revenue (2026) | \$17.4bn |
| Industry Profit (2026)           | N/A      |
| Company Employees (2026)         | 10,165   |
| Market Share (2026)              | 6.6%     |

Description

Formed in 2003, Fortescue Metals Group Ltd. (Fortescue) has quickly grown to become one of the largest iron ore mining companies in the world. The company has two main areas of operation in the Pilbara region of Australia. Fortescue currently holds reserves of more than 2.3 billion metric tons of hematite ore within the Pilbara region, with a resource base totaling more than 13.9 billion metric tons. With substantial exploration potential, Fortescue holds one of the world's major iron ore resources.

## Company's Industry Revenue, Market Share, and Profit Margin Over Time

| Year | Market Share (%) | Revenue (\$m) | Profit (\$m) | Profit Margin (%) |
|------|------------------|---------------|--------------|-------------------|
| 2019 | 5.0              | 11,581.0      | 6,244.0      | 53.9              |
| 2020 | 8.0              | 20,853.0      | 13,986.2     | 67.1              |
| 2021 | 4.0              | 17,364.0      | 8,986.5      | 51.8              |
| 2022 | 5.5              | 16,764.0      | 6,975.5      | 41.6              |
| 2023 | 5.9              | 18,129.0      | 8,446.6      | 46.6              |
| 2024 | 6.4              | 17,437.8      | N/A          | N/A               |
| 2025 | 6.7              | 17,437.8      | N/A          | N/A               |
| 2026 | 6.6              | 17,437.8      | N/A          | N/A               |

## What's impacting Fortescue Metals Group Ltd.'s performance?

## Fortescue Strengthens Position with Red Hawk Acquisition

- Fortescue's acquisition of Red Hawk Mining boosts its resource base with the Blacksmith Iron Ore Project, located near existing operations. This consolidation supports Fortescue's expansion in the Pilbara region, adding 243.0 million tonnes of iron ore to its portfolio.
- By achieving a 90.0% stake and proceeding with compulsory acquisition, Fortescue ensures full control over Red Hawk's assets. The \$254.0 million investment and increased offer price underscore the project's strategic value in enhancing their iron ore production capabilities.

## Fortescue Eyes Green Transition Amid Challenges

- Fortescue is exploring the shift to green iron production as Pilbara's lower-grade ores necessitate traditional coal-based processing. This reliance conflicts with the rising global demand for decarbonized steel, highlighting the pressing need for sustainable innovation.
- CEO Dino Otranto emphasized using Australia's solar and wind resources to maintain the market position. With emerging competition from low-carbon projects globally, Fortescue plans to employ green hydrogen at its Christmas Creek operations to advance sustainable iron production efforts.

## ArcelorMittal SA

## Company Details

|                                  |         |
|----------------------------------|---------|
| Industry Specific Revenue (2026) | \$4.2bn |
| Industry Profit (2026)           | N/A     |
| Company Employees (2026)         | N/A     |
| Market Share (2026)              | 1.6%    |

## Description

ArcelorMittal SA (ArcelorMittal) is one of the largest steel producers in the Commonwealth of Independent States (CIS) region, with operations in more than 60 countries. Headquartered in Luxembourg, the company formed in 2006 from the merger of Arcelor and Mittal Steel Company NV, which had previously acquired US-based International Steel Group in 2005.

## Other Industries

- Iron & Steel Manufacturing in Canada

Company's Industry Revenue, Market Share, and Profit Margin Over Time

| Year | Market Share (%) | Revenue (\$m) | Profit (\$m) | Profit Margin (%) |
|------|------------------|---------------|--------------|-------------------|
| 2020 | 2.4              | 6,317.3       | 3,389.3      | 53.7              |
| 2021 | 1.9              | 8,231.0       | 4,962.1      | 60.3              |
| 2022 | 1.8              | 5,494.9       | 2,728.1      | 49.6              |
| 2023 | 1.7              | 5,064.1       | 2,434.9      | 48.1              |
| 2024 | 1.7              | 4,638.5       | 2,492.4      | 53.7              |
| 2025 | 1.6              | 4,205.7       | N/A          | N/A               |
| 2026 | 1.6              | 4,205.7       | N/A          | N/A               |

What's impacting ArcelorMittal SA's performance?

ArcelorMittal operates its own iron ore mines in several countries

- These countries include Algeria, Bosnia, Brazil, Canada, Kazakhstan, Mexico, Ukraine and the United States.
- Its own output, together with long-term strategic supply contracts in South Africa and the United States, provides ArcelorMittal with a hedge against raw material price increases.

ArcelorMittal diversifies its operations through strategic investments

- The company owns a 93.0% stake in Baffinland Iron Mines Corporation, which has reserves in Baffin Island, Canada.
- The company has also been developing new mines in Senegal, Liberia, Mauritania and India.
- The company's total iron ore production has increased through the end of 2023, especially as iron ore prices rose amid the COVID-19 pandemic.
- Also, the company is currently ramping up of production of its mines to keep up with growing demand.

You can view and download more company details on [my.ibisworld.com](https://my.ibisworld.com).

External Environment

# Key Takeaways

**Iron ore mining is heavily regulated worldwide, with each country imposing unique rules and taxes.** From environmental mandates to property taxes and royalties, miners must navigate a complex web of laws to operate efficiently and sustainably.

**Australia's iron ore industry benefits from advantages like fuel tax credits and the Green Iron Investment Fund.** These incentives boost competitiveness, foster sustainable practices and help maintain the country's leadership in the global market.

**In India, state-owned companies dominate the iron ore industry, benefiting from government support and strategic initiatives like Atmanirbhar Bharat.** This backing drives expansion, modernization and a focus on green production.

Regulation & Policy

High Steady

Assistance

Low Steady

# External Drivers

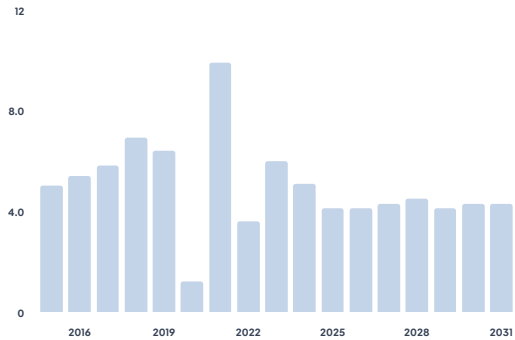
## What demographic and macroeconomic factors impact the industry?

The world price of iron ore and industry performance are positively correlated, as higher prices bolster revenue and profit. Demand for iron ore increases almost exclusively in conjunction with demand for steel products. Iron ore prices dictate price-based gains and losses. Declines in the world price of iron pose a potential threat to the industry.

China accounts for most global iron ore demand and the largest share of global iron ore production. The country's steel manufacturing sector is the direct purchaser of iron ore, although its downstream construction and industrial markets also help fuel demand. Growth in the GDP of mainland China represents a potential opportunity for the industry.

## GDP of the BRIC nations

Growth



IBISWorld

Source: IBISWorld

The GDP of the BRIC nations measures the combined output of Brazil, Russia, India and China (BRIC), representing the world's largest developing countries. As these countries continue to industrialize, demand for steel and iron ore will climb. Growth in the GDP of the BRIC nations benefits the performance of iron ore miners.

Manufacturing activity greatly impacts iron ore consumption, particularly steel manufacturing and metal purchasers, like automobile manufacturers and constructors. As industrial production rises, the need for products made using steel and upstream iron ore grows as well. As industrial production drops, the need for products made using steel and upstream iron ore drops as well.

# Regulation & Policy

## What regulations impact the industry?

### Environmental regulations

Once iron ore mines are operational, businesses are subject to environmental laws and regulations governing noise, air emissions and the use, handling and disposal of hazardous materials and waste. Industry companies are also required to comply with federal and state government occupational health and safety regulations, acts and other mandatory requirements for employees, contractors and visitors. These regulations vary by country and region for global iron ore miners.

### Tax regulations

Global iron ore mining is highly regulated worldwide. State and local authorities may tax the value of iron ore mining companies' landholdings (property taxes), their revenue (gross receipts taxes), purchases of materials and services (sales and use taxes) and a range of other items that vary according to the particular taxing authority. In many countries, iron ore mining companies are also responsible for remitting some federal taxes, mainly federal income tax and employees' share of Social Security taxes, on behalf of their employees. These do not form part of the company's own tax costs. In addition, most countries impose royalties on iron ore mining.

### Brazilian law

In Brazil, the federal government is responsible for legislating on deposits, mines or mineral resources and metallurgy. Mineral resources, including those in the subsoil, are the property of the federal government. Exploration and exploitation of mineral resources may be undertaken after authorization is gained from the federal government. According to the Constitution, such activity must be undertaken in the national interest by a Brazilian company or by a company incorporated under Brazilian law and which has its main office and administration in Brazil. There are also restrictions on undertaking mining near borders and in areas reserved for indigenous peoples.

### Australian legislations

In Australia, state governments determine what land is open to exploration and mining, issue exploration and mining leases and collect royalties from producers. Iron ore miners are also open to native title claims under the Native Title Act 1993, commonly known as the Mabo legislation. Iron ore producers are required to pay royalties based on the volume or value of mine production to the relevant state government. The royalties charged by the Western Australian State Government vary according to the type and use of the iron ore mined.

### Chinese regulations

In China, central authorities set the overall legal framework for mining, including the Mineral Resources Law and associated regulations on exploration rights, mining rights, safety and environmental protection. Historically, foreign companies have faced restrictions on direct investment and exploration in certain strategic non-renewable mineral resources, while domestic state-owned and private companies dominate iron ore mining. Over time, China has encouraged consolidation, stricter environmental and safety compliance and higher-efficiency operations, which have pressured smaller, higher-cost iron ore mines. The government's drive to reduce emissions from steelmaking has also increased scrutiny of low-grade domestic ores and beneficiation practices and influenced policy on mine approvals, product standards and support for technological upgrading in the iron and steel value chain.

### India's Department of Mines

In India, the Mines and Minerals (Development and Regulation) Act (MMDR Act) and associated rules govern the allocation and administration of mineral rights, including iron ore. Recent reforms shifted towards auction-based allocation of mining leases and extended typical lease tenures, seeking to improve transparency, efficiency and revenue for resource-owning states. The Ministry of Mines and state departments oversee licensing, performance obligations and compliance with the Mineral Conservation and Development Rules, which set standards for systematic mining, reporting and environmental management. Iron ore mining is treated as a strategic sector, with conditions on end-use in some cases and oversight of exports. At the same time, regulatory changes continue to balance revenue mobilization, supply security for domestic steelmakers and environmental and social safeguards.

### US Regulations

In the United States, iron ore miners operate under a combination of federal, state and local rules. On federal lands, legacy frameworks such as the General Mining Law of 1872 still influence hard-rock mineral rights, while separate leasing regimes apply in some areas; on private or state lands, terms are set through state law and private contracts. Environmental compliance is governed by statutes such as the Clean Water Act, Clean Air Act and National Environmental Policy Act and is administered by agencies including the EPA and relevant state bodies. Worker health and safety are regulated by the Mine Safety and Health Administration (MSHA), which sets standards for ventilation, ground control, training, dust exposure and other hazards. States further impose permitting, reclamation and financial assurance requirements.

### Russia's Ministry of Natural Resources

In Russia, the Ministry of Natural Resources and Environment oversees subsoil policy. At the same time, the Federal Agency for Subsoil Use

administers licensing for exploration and production of mineral resources, including iron ore. The legal framework is centered on the Federal Law "On Subsoil," which defines the licensing regime, subsoil user obligations and grounds for suspension or termination of rights. Exploration licenses are typically granted for an initial multi-year period and production licenses cover longer terms tied to mine life, sometimes via combined licenses that span exploration and extraction. Licensees must comply with technical standards, environmental and industrial-safety regulations and reporting requirements and they pay royalties and other taxes on extracted minerals under Russia's broader fiscal regime for natural resources.

## Assistance

### What assistance is available to this industry?

#### *Government*

##### **State-Owned Miners Anchor India's Iron Ore and Steel Expansion**

India's iron ore mining sector remains dominated by state-owned companies such as NMDC, KIOCL, SAIL and Odisha Mining Corporation, which benefit from the mineral security policy and long-term lease arrangements. NMDC, India's largest iron ore producer, is pursuing a plan to nearly double its iron ore capacity to 100 Mt per year by 2030, supported by significant capex on slurry pipelines, beneficiation plants and evacuation infrastructure under the Atmanirbhar Bharat program. SAIL couples captive iron ore with an expansion of crude steel capacity from roughly 19 Mt to about 35 to 36 Mt by 2030 to 2031, including pilots for green hydrogen and carbon capture, while KIOCL and OMC retain state backing for palletization and resource development, respectively.

#### *Government*

##### **Australia's fuel tax credits system**

Australia's Fuel Tax Credits Scheme continues to significantly reduce operating costs for iron ore miners by refunding most of the excise on diesel used in off-road mining, rail and ancillary activities. The program costs the federal budget of \$6.5 to \$7.2 billion, with a substantial share flowing to large mining companies, including iron ore producers. This assistance has become politically contested: Fortescue and some policy groups now advocate capping individual mining companies' annual credits at US\$32.5 million, which would limit subsidies to major iron ore exporters while reallocating fiscal space toward decarbonization and household support.

#### *Government*

##### **The Green Iron Investment Fund**

Australia's Green Iron Investment Fund provides a \$650.0 million package to accelerate low emissions ironmaking using domestic iron ore. At least \$325.0 million in competitive grants under the National Development Stream supports early-mover commercial-scale projects, such as hydrogen-based direct reduction and electric smelting of Australian ores. The program aims to de-risk high-capex projects, crowd in private capital and embed a domestic green iron industry, positioning Australian miners and technology partners to supply premium, low-carbon feedstock into global steel markets while maintaining export value as traditional blast furnace demand gradually erodes.

#### *Government*

##### **The Soo Locks in the United States**

The Soo Locks in Michigan are a critical link in the US iron ore infrastructure, enabling shipments from mines in Minnesota and Michigan to reach Great Lakes steel mills alongside coal and grain. Congress authorized construction of a new large lock in 2002 and the three-phase expansion now underway is reported by the US Army Corps of Engineers to be on track for completion in 2030, following recent contracts for the chamber, mechanical and electrical works. Once finished, the new lock will enhance reliability and capacity for iron ore movements through this strategic bottleneck.

#### *Government*

##### **US Tariffs**

The United States maintains Section 232 tariffs on most steel and aluminum imports and has recently strengthened these measures, including higher duties on commodity grade metal and derivative products, while preserving lower, preferential rates for certain products made entirely from US sourced metal. These measures do not directly cover iron ore itself. Still, tariffs on steel products can reduce exports to the US from affected countries, negatively influencing steel production incentives and indirectly weighing on iron ore demand in export oriented steelmaking hubs exposed to US trade restrictions.

#### *Non-government*

##### **The Iron Mining Association of Minnesota (IMA)**

The Iron Mining Association of Minnesota (IMA) is a key industry group for Minnesota's iron ore and taconite mines, including operations such as Minntac, Hibbing, United Taconite and Northshore. It provides a coordinated platform for producers and their supply chains to engage on environmental regulation, tax and royalty policy, workforce development and education. By representing member interests before state and

local governments, schools and community organisations, the IMA helps maintain a supportive operating environment for Minnesota's iron ore sector and promotes the industry's role in regional employment, infrastructure investment and long-term economic development.

Financial Benchmarks

Key Takeaways

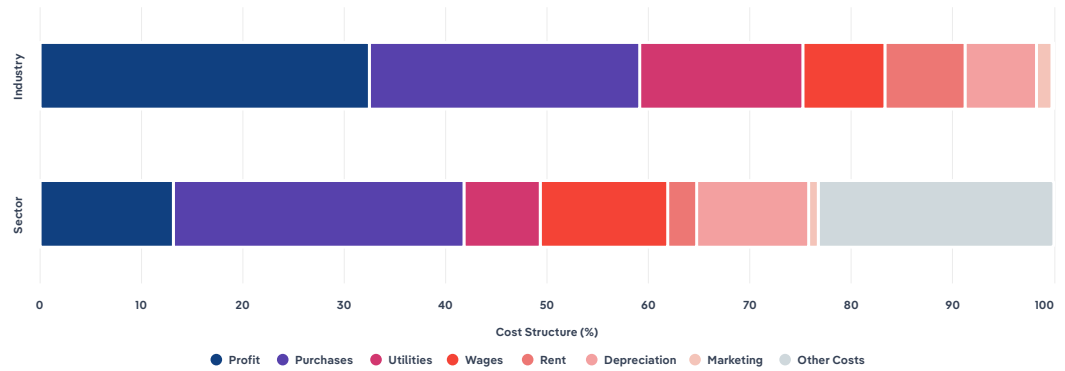
**Profit for iron ore miners has slumped from earlier peaks as the post-pandemic boom faded.** Once China's demand cooled and prices fell back, rising wages, fuel and equipment costs piled on, squeezing profit in what now feels like a much tougher business.

**Labor shortages have driven wage costs sharply higher for iron ore miners.** Even as companies rollout automation and remote operations, they're still paying more to attract scarce skilled workers and facing added pressure from tough wage negotiations.



Cost Structure Benchmarks

Average operating costs by industry and sector as a share (%) of revenue 2026



Cost Structure Benchmarks

| Operating costs | Industry (%) | Sector (%) |
|-----------------|--------------|------------|
| Profit          | 32.5         | 13.17      |
| Purchases       | 26.6         | 28.60      |
| Utilities       | 16.1         | 7.52       |
| Wages           | 8.1          | 12.60      |
| Rent            | 7.9          | 2.90       |
| Depreciation    | 7            | 11.00      |
| Marketing       | 1.6          | 0.93       |
| Other Costs     | 0.2          | 23.27      |
| Taxes           | 0.5          | -          |

| Operating costs               | Industry (%) | Sector (%) |
|-------------------------------|--------------|------------|
| Repair and Maintenance        | 1.3          | -          |
| IT services and related spend | 0.1          | -          |
| Distribution                  | 87.7         | -          |
| Research and Development      | 7.4          | -          |
| Franchise fees and Royalties  | 1            | -          |
| Management and Administration | 1.6          | -          |
| Temporary employees           | 0.2          | -          |
| Subcontractors                | 0.1          | -          |
| Telecommunications            | 0.1          | -          |

## What trends impact industry costs?

### Profit has fallen from highs

- Initially, iron ore miners saw immense profit because of unprecedented demand from China and supply disruptions following the pandemic, which drove prices sky-high. As the market normalized, increased global supply and a slowdown in China's construction sector led to a price drop, squeezing profit. Also, rising wages, fuel and equipment costs add further financial pressure, further affecting profit.
- Even with declining profit, iron ore miners still outperform many in the mining sector. During the peak, they achieved very high profit because of efficient production and high demand. In contrast, other industries like gold or copper mining often face higher operational costs and lower profit. Iron ore typically remains a more lucrative industry, showcasing resilience even amid downturns.

### Inflationary pressures and falling iron ore prices have hiked purchase costs as a share of revenue

- Purchase costs include all the tools and materials needed to mine iron ore, like explosives, drilling gear, truck tires and spare parts for machinery. Miners need to keep their equipment running smoothly, which means having plenty of replacement parts and supplies on hand for immediate repairs. Contractors also fall under purchase costs.
- Prices have risen as key inputs like ammonia and ammonium nitrate have become more expensive and demand from both mining and fertilizer stayed strong. Manufacturers are passing these higher feedstock and energy costs through to customers, so miners pay more per kilogram of explosive.
- Global mining equipment markets and OEM parts businesses have raised prices to reflect higher input, labor and manufacturing costs. At the same time, contractor and maintenance service rates have climbed as skilled labor has become tighter and safety, environmental and compliance requirements have increased, so mines pay more for the same outsourced work.
- Iron ore mining is generally more cost-effective compared to the mining sector. Large companies can mine at lower costs, sometimes as low as \$12-\$20 per tonne. In contrast, mining operations for metals like copper or gold require more complex and expensive processes, making them pricier per tonne.

### Climbing diesel costs have push up utilities costs

- Utilities costs include electricity for running machines and lights, fuel like diesel for trucks and generators and water for processing and dust control. While miners have invested in the use of more efficient and automated machinery and switched to renewable energy sources at mine sites, like solar and wind, these costs have climbed.
- Climbing diesel costs have contributed to these higher costs. Most recently, the conflict in Iran has elevated these costs. According to Fortescue in March 2026, a 10-cent increase in diesel prices adds \$70.0 million to its costs and implies an additional \$500.0 million in fuel expenses for the four largest iron ore producers together.
- Iron ore miners generally have lower utilities costs compared to other types of mining, like gold or copper, because iron ore mining is typically more energy-efficient. Utilities make up a smaller portion of their total operating costs, whereas other mining sectors with more complex operations often see higher utility spending.

### Labor shortages have pushed up wage costs

- Wage costs include the regular pay for everyone at the mine, like miners, drivers and engineers. Over the past five years, this cost has risen because of a shortage of skilled workers and competition from other industries, meaning companies have to offer higher wages to attract and retain staff. Despite investments in automation, these costs have climbed.
- While BHP has invested heavily in autonomous haul trucks and remote-operated equipment to reduce unit labor requirements at its Australian iron ore operations, it still faces rising labor costs and industrial relations pressure across its global portfolio, including recent trans-Pacific wage and conditions negotiations that have tightened its overall labor cost base. Rio Tinto has said its driverless truck fleet in the Pilbara region operates with load-and-haul unit costs that are 15.0% lower than those of its conventional trucks.
- Wage costs in iron ore mining are often similar to or slightly lower than those in the broader mining sector. Iron ore mines are generally larger and more automated, which can keep costs lower. However, wages still make up a significant part of expenses across the entire mining sector, alongside equipment and energy costs.

### Rent has fallen as a share of revenue

- Over the past five years, rent costs for iron ore miners have decreased due to increased asset ownership and long-term leasing agreements. Many large mining companies have shifted to owning their land and equipment, reducing their reliance on leases. Also, improved technology and automation have lessened the need for temporary equipment, contributing to the downward trend in rent expenses.
- Compared to the broader mining sector, iron ore miners typically incur lower rent costs. This is because they often operate large-scale, long-term projects, allowing them to invest in ownership rather than rentals. In contrast, industries like gold or copper mining may face higher rent expenses because of more frequent equipment rentals and smaller-scale operations, making them more reliant on leased assets.

### Depreciation costs have inched down

- Depreciation for iron ore miners is spreading out the cost of wear and tear on equipment, machinery and buildings over the years they are used. Predictive maintenance has pushed down depreciation costs. Better maintenance can keep equipment running longer, so it depreciates over a longer period, lowering the

yearly cost.

- Due to greater operational efficiency, depreciation costs for iron ore miners are often on par or slightly lower than those of other mining sectors like copper or gold. Iron ore mining benefits from larger-scale operations and durable equipment, which means depreciation costs are spread over greater output, resulting in lower costs per tonne compared to less efficient sectors.

### Marketing costs are low and steady

- Marketing costs include placing ads in industry magazines, attending trade shows and digital marketing. These costs have remained stable over the past five years because of the consistent customer base of large steelmakers, which lessens the need for extensive advertising. Miners focus on maintaining industry visibility rather than expanding campaigns, keeping expenditures consistent.
- Compared to the broader mining sector, iron ore miners usually spend similarly or slightly less on branding and public relations. Since their audience is primarily industry stakeholders and investors, they focus on targeted PR efforts rather than broad media campaigns, maintaining steady budgets aligned with industry norms.

## Key Ratios

| Year | Revenue<br>per<br>Employee<br>(\$) | Revenue<br>per<br>Enterprise<br>(\$ Million) | Employees<br>per Estab.<br>(Units) | Employees<br>per<br>Enterprise<br>(Units) | Average<br>Wage<br>(\$) | Wages/<br>Revenue<br>(%) | Estab. per<br>Enterprise<br>(Units) | IVA/<br>Revenue<br>(%) | Imports/<br>Demand<br>(%) | Exports/<br>Revenue<br>(%) |
|------|------------------------------------|----------------------------------------------|------------------------------------|-------------------------------------------|-------------------------|--------------------------|-------------------------------------|------------------------|---------------------------|----------------------------|
| 2006 | 260,628                            | 30.5                                         | 84.6                               | 117.1                                     | 6,533                   | 2.5                      | 1.4                                 | 19.0                   | 45.2                      | 45.2                       |
| 2007 | 302,367                            | 31.8                                         | 75.4                               | 105.3                                     | 6,733                   | 2.2                      | 1.4                                 | 25.3                   | 73.2                      | 73.2                       |
| 2008 | 458,913                            | 42.7                                         | 65.6                               | 93.1                                      | 10,586                  | 2.3                      | 1.4                                 | 39.6                   | 59.9                      | 59.9                       |
| 2009 | 340,749                            | 33.2                                         | 66.5                               | 97.4                                      | 13,501                  | 4.0                      | 1.5                                 | 52.2                   | 48.3                      | 48.3                       |
| 2010 | 338,500                            | 35.3                                         | 69.3                               | 104.3                                     | 15,773                  | 4.7                      | 1.5                                 | 30.8                   | 86.5                      | 86.5                       |
| 2011 | 626,658                            | 68.7                                         | 70.7                               | 109.6                                     | 19,964                  | 3.2                      | 1.6                                 | 46.0                   | 58.4                      | 58.4                       |
| 2012 | 477,750                            | 54.8                                         | 72.2                               | 114.6                                     | 21,999                  | 4.6                      | 1.6                                 | 54.5                   | 63.8                      | 63.8                       |
| 2013 | 535,669                            | 64.6                                         | 74.6                               | 120.6                                     | 26,978                  | 5.0                      | 1.6                                 | 45.2                   | 65.4                      | 65.4                       |
| 2014 | 453,251                            | 58.1                                         | 68.4                               | 128.3                                     | 33,690                  | 7.4                      | 1.9                                 | 43.0                   | 70.4                      | 70.4                       |
| 2015 | 293,820                            | 40.5                                         | 63.1                               | 137.8                                     | 33,732                  | 11.5                     | 2.2                                 | 39.2                   | 73.3                      | 73.3                       |
| 2016 | 360,433                            | 52.3                                         | 54.4                               | 145.0                                     | 34,856                  | 9.7                      | 2.7                                 | 40.8                   | 73.6                      | 73.6                       |
| 2017 | 548,815                            | 80.3                                         | 46.5                               | 146.3                                     | 39,275                  | 7.2                      | 3.1                                 | 45.3                   | 74.4                      | 74.4                       |
| 2018 | 599,100                            | 97.4                                         | 41.7                               | 162.6                                     | 44,821                  | 7.5                      | 3.9                                 | 43.6                   | 74.9                      | 74.9                       |
| 2019 | 820,802                            | 133.9                                        | 41.5                               | 163.1                                     | 45,908                  | 5.6                      | 3.9                                 | 46.5                   | 68.7                      | 68.7                       |
| 2020 | 908,789                            | 148.8                                        | 41.5                               | 163.7                                     | 50,184                  | 5.5                      | 3.9                                 | 46.0                   | 70.8                      | 70.8                       |
| 2021 | 1,371,445                          | 223.1                                        | 41.2                               | 162.7                                     | 52,399                  | 3.8                      | 4.0                                 | 50.5                   | 66.9                      | 66.9                       |
| 2022 | 975,987                            | 161.4                                        | 41.2                               | 165.4                                     | 54,747                  | 5.6                      | 4.0                                 | 45.0                   | 71.7                      | 71.7                       |

## Global Iron Ore Mining

| Year | Revenue<br>per<br>Employee<br>(\$) | Revenue<br>per<br>Enterprise<br>(\$ Million) | Employees<br>per Estab.<br>(Units) | Employees<br>per<br>Enterprise<br>(Units) | Average<br>Wage<br>(\$) | Wages/<br>Revenue<br>(%) | Estab. per<br>Enterprise<br>(Units) | IVA/<br>Revenue<br>(%) | Imports/<br>Demand<br>(%) | Exports/<br>Revenue<br>(%) |
|------|------------------------------------|----------------------------------------------|------------------------------------|-------------------------------------------|-------------------------|--------------------------|-------------------------------------|------------------------|---------------------------|----------------------------|
| 2023 | 891,488                            | 148.5                                        | 40.7                               | 166.5                                     | 59,178                  | 6.6                      | 4.1                                 | 46.9                   | 72.5                      | 72.5                       |
| 2024 | 719,156                            | 119.2                                        | 40.1                               | 165.8                                     | 58,863                  | 8.2                      | 4.1                                 | 47.0                   | 71.8                      | 71.8                       |
| 2025 | 746,844                            | 123.6                                        | 39.7                               | 165.4                                     | 60,657                  | 8.1                      | 4.2                                 | 47.4                   | 72.4                      | 72.4                       |
| 2026 | 745,051                            | 122.7                                        | 39.6                               | 164.7                                     | 60,627                  | 8.1                      | 4.2                                 | 47.6                   | 71.3                      | 73.4                       |
| 2027 | 737,827                            | 120.2                                        | 39.1                               | 162.9                                     | 60,509                  | 8.2                      | 4.2                                 | 47.3                   | 71.4                      | 73.3                       |
| 2028 | 730,320                            | 117.4                                        | 38.7                               | 160.8                                     | 60,386                  | 8.3                      | 4.2                                 | 47.1                   | 71.5                      | 73.2                       |
| 2029 | 732,645                            | 117.8                                        | 38.6                               | 160.8                                     | 60,424                  | 8.2                      | 4.2                                 | 47.1                   | 71.5                      | 73.2                       |
| 2030 | 733,096                            | 117.6                                        | 38.5                               | 160.4                                     | 60,432                  | 8.2                      | 4.2                                 | 47.1                   | 71.6                      | 73.1                       |
| 2031 | 735,748                            | 118.1                                        | 38.5                               | 160.5                                     | 60,475                  | 8.2                      | 4.2                                 | 47.2                   | 71.6                      | 73.1                       |
| 2032 | 742,388                            | 120.0                                        | 38.8                               | 161.6                                     | 60,585                  | 8.2                      | 4.2                                 | 47.4                   | 71.7                      | 73.0                       |

Key Statistics

Industry Data

Values

| Year | Revenue<br>(\$ Million) | IVA<br>(\$ Million) | Estab.<br>(Units) | Enterprises<br>(Units) | Employment<br>(Units) | Exports<br>(\$ Million) | Imports<br>(\$ Million) | Wages<br>(\$ Million) |
|------|-------------------------|---------------------|-------------------|------------------------|-----------------------|-------------------------|-------------------------|-----------------------|
| 2006 | 176,372.7               | 33,459.5            | 7,999             | 5,778                  | 676,723               | 79,752.9                | 79,752.9                | 4,420.7               |
| 2007 | 214,754.0               | 54,320.4            | 9,420             | 6,745                  | 710,243               | 157,157.3               | 157,157.3               | 4,782.2               |
| 2008 | 360,139.2               | 142,458.8           | 11,955            | 8,430                  | 784,766               | 215,764.7               | 215,764.7               | 8,307.8               |
| 2009 | 254,172.2               | 132,643.9           | 11,212            | 7,657                  | 745,923               | 122,813.7               | 122,813.7               | 10,070.5              |
| 2010 | 268,591.6               | 82,685.8            | 11,457            | 7,608                  | 793,475               | 232,317.2               | 232,317.2               | 12,515.7              |
| 2011 | 485,812.0               | 223,257.4           | 10,964            | 7,071                  | 775,242               | 283,571.2               | 283,571.2               | 15,477.1              |
| 2012 | 370,573.4               | 202,106.3           | 10,739            | 6,767                  | 775,664               | 236,390.1               | 236,390.1               | 17,063.6              |
| 2013 | 415,211.8               | 187,813.0           | 10,397            | 6,426                  | 775,128               | 271,347.6               | 271,347.6               | 20,911.4              |
| 2014 | 305,460.2               | 131,316.1           | 9,858             | 5,253                  | 673,931               | 214,927.2               | 214,927.2               | 22,704.4              |
| 2015 | 170,687.0               | 66,842.4            | 9,200             | 4,215                  | 580,924               | 125,057.2               | 125,057.2               | 19,595.6              |
| 2016 | 182,064.2               | 74,206.4            | 9,278             | 3,484                  | 505,127               | 134,021.0               | 134,021.0               | 17,606.9              |
| 2017 | 227,260.3               | 102,911.2           | 8,914             | 2,831                  | 414,093               | 169,063.5               | 169,063.5               | 16,263.7              |
| 2018 | 218,607.5               | 95,224.4            | 8,744             | 2,244                  | 364,893               | 163,675.0               | 163,675.0               | 16,354.9              |
| 2019 | 288,018.5               | 134,064.9           | 8,464             | 2,151                  | 350,899               | 197,882.9               | 197,882.9               | 16,109.0              |
| 2020 | 323,265.3               | 148,804.2           | 8,576             | 2,173                  | 355,710               | 228,981.2               | 228,981.2               | 17,851.0              |
| 2021 | 512,697.0               | 258,664.3           | 9,082             | 2,298                  | 373,837               | 343,212.5               | 343,212.5               | 19,588.7              |
| 2022 | 334,863.2               | 150,547.2           | 8,332             | 2,075                  | 343,102               | 240,080.3               | 240,080.3               | 18,783.8              |
| 2023 | 324,835.1               | 152,387.3           | 8,954             | 2,188                  | 364,374               | 235,509.7               | 235,509.7               | 21,563.0              |
| 2024 | 284,178.9               | 133,545.0           | 9,843             | 2,384                  | 395,156               | 203,997.2               | 203,997.2               | 23,260.1              |
| 2025 | 265,512.7               | 125,835.4           | 8,944             | 2,149                  | 355,513               | 192,128.2               | 192,128.2               | 21,564.4              |
| 2026 | 263,888.2               | 125,526.1           | 8,953             | 2,150                  | 354,188               | 193,752.7               | 174,241.0               | 21,473.2              |
| 2027 | 257,628.4               | 121,971.7           | 8,924             | 2,144                  | 349,172               | 188,825.6               | 171,976.3               | 21,128.0              |
| 2028 | 250,302.5               | 117,928.5           | 8,866             | 2,132                  | 342,730               | 183,328.2               | 167,815.4               | 20,696.0              |
| 2029 | 251,058.3               | 118,222.1           | 8,870             | 2,131                  | 342,674               | 183,753.5               | 169,056.8               | 20,705.8              |
| 2030 | 252,761.8               | 119,164.8           | 8,951             | 2,150                  | 344,787               | 184,871.3               | 170,946.4               | 20,836.0              |
| 2031 | 254,707.0               | 120,258.4           | 8,985             | 2,157                  | 346,188               | 186,164.0               | 173,013.5               | 20,935.8              |
| 2032 | 257,854.3               | 122,230.0           | 8,963             | 2,149                  | 347,331               | 188,332.9               | 175,915.5               | 21,042.9              |

Note

Figures are inflation adjusted to 2026

## Industry Data

### Annual Change

| Year | Revenue<br>% | IVA<br>% | Estab.<br>% | Enterprises<br>% | Employment<br>% | Exports<br>% | Imports<br>% | Wages<br>% |
|------|--------------|----------|-------------|------------------|-----------------|--------------|--------------|------------|
| 2006 | N/A          | N/A      | N/A         | N/A              | N/A             | N/A          | N/A          | N/A        |
| 2007 | 21.8         | 62.3     | 17.8        | 16.7             | 5.0             | 97.1         | 97.1         | 8.2        |
| 2008 | 67.7         | 162.3    | 26.9        | 25.0             | 10.5            | 37.3         | 37.3         | 73.7       |
| 2009 | -29.4        | -6.9     | -6.2        | -9.2             | -4.9            | -43.1        | -43.1        | 21.2       |
| 2010 | 5.7          | -37.7    | 2.2         | -0.6             | 6.4             | 89.2         | 89.2         | 24.3       |
| 2011 | 80.9         | 170.0    | -4.3        | -7.1             | -2.3            | 22.1         | 22.1         | 23.7       |
| 2012 | -23.7        | -9.5     | -2.1        | -4.3             | 0.1             | -16.6        | -16.6        | 10.3       |
| 2013 | 12.0         | -7.1     | -3.2        | -5.0             | -0.1            | 14.8         | 14.8         | 22.5       |
| 2014 | -26.4        | -30.1    | -5.2        | -18.3            | -13.1           | -20.8        | -20.8        | 8.6        |
| 2015 | -44.1        | -49.1    | -6.7        | -19.8            | -13.8           | -41.8        | -41.8        | -13.7      |
| 2016 | 6.7          | 11.0     | 0.8         | -17.3            | -13.0           | 7.2          | 7.2          | -10.1      |
| 2017 | 24.8         | 38.7     | -3.9        | -18.7            | -18.0           | 26.1         | 26.1         | -7.6       |
| 2018 | -3.8         | -7.5     | -1.9        | -20.7            | -11.9           | -3.2         | -3.2         | 0.6        |
| 2019 | 31.8         | 40.8     | -3.2        | -4.1             | -3.8            | 20.9         | 20.9         | -1.5       |
| 2020 | 12.2         | 11.0     | 1.3         | 1.0              | 1.4             | 15.7         | 15.7         | 10.8       |
| 2021 | 58.6         | 73.8     | 5.9         | 5.8              | 5.1             | 49.9         | 49.9         | 9.7        |
| 2022 | -34.7        | -41.8    | -8.3        | -9.7             | -8.2            | -30.0        | -30.0        | -4.1       |
| 2023 | -3.0         | 1.2      | 7.5         | 5.4              | 6.2             | -1.9         | -1.9         | 14.8       |
| 2024 | -12.5        | -12.4    | 9.9         | 9.0              | 8.4             | -13.4        | -13.4        | 7.9        |
| 2025 | -6.6         | -5.8     | -9.1        | -9.9             | -10.0           | -5.8         | -5.8         | -7.3       |
| 2026 | -0.6         | -0.2     | 0.1         | 0.0              | -0.4            | 0.8          | -9.3         | -0.4       |
| 2027 | -2.4         | -2.8     | -0.3        | -0.3             | -1.4            | -2.5         | -1.3         | -1.6       |
| 2028 | -2.8         | -3.3     | -0.6        | -0.6             | -1.8            | -2.9         | -2.4         | -2.0       |
| 2029 | 0.3          | 0.2      | 0.0         | 0.0              | 0.0             | 0.2          | 0.7          | 0.0        |
| 2030 | 0.7          | 0.8      | 0.9         | 0.9              | 0.6             | 0.6          | 1.1          | 0.6        |
| 2031 | 0.8          | 0.9      | 0.4         | 0.3              | 0.4             | 0.7          | 1.2          | 0.5        |
| 2032 | 1.2          | 1.6      | -0.2        | -0.4             | 0.3             | 1.2          | 1.7          | 0.5        |

#### Note

Figures are inflation adjusted to 2026

### Key Success Factors

## How do successful businesses overcome volatility?

### Access to high-quality inputs

Access to large, high-grade reserves of iron ore lowers production costs and yields higher prices, shielding iron ore miners during times of low demand.

### Effective cost controls

Close control over costs is important, as a lean operation is far more likely to survive downturns in demand or price.

## What products or services do successful businesses offer?

### Access to high-quality inputs

Access to large, high-grade reserves of iron ore lowers production costs, yields higher prices and attracts various downstream steel producers.

### Find new resource deposits

Iron ore miners with access to new resource deposits with high-quality materials will benefit from lower production costs and higher prices.

## How do businesses use location to their advantage?

### Downstream ownership links

Iron ore miners with ownership links with steel manufacturers permit easier access to markets and can shield themselves from considerable declines when demand is weak.

### Access to rail and port infrastructure

Rail and port facilities are required to facilitate the movement, particularly the export, of iron ore, so access to transportation is crucial to success.

## How do successful businesses handle concentration?

### Effective cost controls

Close control over costs is important, as a lean operation is far more likely to survive downturns in demand or price.

### Secure economies of scale

Larger miners securing economies of scale reduce the per-unit cost of producing iron ore, enabling them to better deal with lower prices and endure downturns.

## How can potential entrants overcome barriers to entry?

### Effective cost controls

Close control over costs is important, as a lean operation is far more likely to survive downturns in demand or price.

### Secure economies of scale

Establishing a mining operation with substantial mineral reserves to ensure strong economies of scale is crucial to success. Still, it is difficult to acquire high-grade mines.

## How do successful businesses compete with substitutes?

### Economies of scale

Larger iron ore miners enjoy lower per unit costs than smaller mines, enabling them to compete with less expensive substitutes on price.

### Keep running costs low

Close control over costs is important, as a lean operation is far more likely to survive downturns in demand or price and compete with substitute materials.

## How do successful businesses manage buyer & supplier power?

### Access to high-quality inputs

Access to large, high-grade reserves of iron ore lowers production costs and yields higher prices, attracting buyers and dissuading them from purchasing secondary and recycled materials.

### Downstream ownership links

Iron ore miners with ownership links with steel manufacturers permit easier access to markets, shielding them from declines when demand is weak.

### Access to rail and port infrastructure

Rail and port facilities are required to facilitate the movement, particularly the export, of iron ore. Iron ore miners with access to rail and port infrastructure enjoy less buyer power because transport costs are lower.

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