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Global high-grade iron ore market is set to grow

Can Australia move fast enough to compete?

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Contents

Figures and Tables

Key Findings

With direct reduction (DR) emerging as the leading pathway for steel sector decarbonisation, a forecast supply deficit for DR-grade iron ore signals an opportunity for new suppliers. Moves to grasp this opportunity are being led by producers in Canada, Brazil, and the Nordic region, and prospective developments across Africa.

A strategic shift to DR-grade ore marks a key opportunity to diversify the demand base for Australia's largest export. At present, Australia's iron ore exports are dominated by blast furnace-grade material, which faces a challenging long-term outlook as global oversupply and declining Chinese demand put downward pressure on prices.

With most forecasts indicating supply deficits for high-grade ore emerging after 2030, Australia still has a window of opportunity over the coming decades to benefit from the green iron and steel transition, despite the long lead times required to develop new mines, provided that timely action is taken.

Australia may not hold a strong advantage in producing high-grade iron ore, given factors such as in-situ ore quality, amenability to beneficiation, and processing costs. However, the future market offers sufficient room for new entrants, presenting an opportunity that should not be missed.

Executive summary

The global steel sector is undergoing a technological shift to lower its significant carbon footprint. At the core of the transition for ore-based steelmaking is direct reduction (DR) of iron ore. When combined with green hydrogen and renewable energy, DR can significantly reduce carbon emissions compared with the coal-based blast furnace (BF) route. Although DR technology is already mature and widely adopted in some regions, it requires high-grade iron ore with very low impurities. DR-grade material represents only a small share of global iron ore supply, which is largely dominated by BF-grade ores.

While emerging technologies aim to broaden the range of iron ore grades suitable for low-emissions steelmaking, they will need time to scale and compete with established processes. In the meantime, the industry will continue to rely on mature DR technologies, which in turn will require greater availability of high-quality DR-grade iron ore.

Whether DR-grade iron ore becomes a constraint on low-emissions steel production will depend on future demand growth, driven primarily by the global expansion of direct reduction plants, and on how quickly iron ore producers can develop new capacity at scale.

Not all direct reduced iron (DRI) producers have access to DR-grade feedstock domestically, and an increasing number of new plants are coming online that do not have a dedicated local pellet supply source. This trend will place additional pressure on the global seaborne market for DR-grade iron ore. Most forecasts point to rising demand for DR-grade material, and many studies suggest that a supply deficit is likely to widen beyond 2030.

BloombergNEF expects a deficit of 15 million tonnes per annum (MTPA) by 2030, widening to 133MTPA by 2040. Midrex has also flagged a potential supply shortfall, of up to 16.4MTPA by 2034. This outlook presents significant challenges for DRI producers, while creating potential opportunities for emerging suppliers, including Australia.

Iron ore is Australia's largest export. However, with the long-term outlook for BF-grade iron ore declining, the global shift toward DR-grade material presents a significant opportunity for Australia to reposition and strengthen its role in the evolving low-emissions steel value chain.

Countries such as Canada, Brazil, and Sweden, along with emerging suppliers across Africa, are positioning themselves to support the growth in high-grade iron ore supply, with numerous projects in the pipeline.

Some companies are focusing on upgrading the quality of their existing products, primarily BF-grade material, in an approach that is also relevant to Australia's concentrate producers. A second strategy involves expanding capacity at existing operations wherever feasible, as demonstrated by Brazilian miners such as Vale and Samarco.

The third pathway involves greenfield development, which is the primary focus in Australia. The industry in Australia must remain competitive not only against existing producers that are expanding capacity, but also against those investing to improve product quality.

Although Australia's DR-grade feed production sits at the higher end of the global cost curve, the market appears to have sufficient capacity to absorb additional Australian supply. This is particularly the case if domestic production exceeds future local demand, as Australia positions itself to become a major producer of green iron.

While Australia may not currently have the highest-quality iron ore readily available for this transition, it holds significant potential in magnetite mining, which is key to producing high-grade ore.

Unlike Australia, countries such as Brazil, Canada and African nations are navigating this transition through established producers and major corporations, including Vale, ArcelorMittal, Anglo American, Rio Tinto, and China Baowu. In contrast, the transition in Australia is largely being driven by new entrants. With flagship projects such as Razorback by Magnetite Mines, Hawsons Iron, and CEIP, along with others in development, Australia is well positioned to remain competitive.

In terms of time to market, decisive, timely action will be critical for Australia to keep pace with global developments in low-emissions ironmaking. While production from new deposits may remain a decade away, this timing could align well with the expected global wave of new DRI projects.

Based on the maturity of various technologies in the pipeline, and considering the urgency of moving to a green economy, Australia is unlikely to become a green iron superpower without producing high-grade ore for DRI production. Even if Australia chooses not to export high-grade iron ore at scale, supplying suitable material for low-emissions ironmaking domestically will still require the production of high-grade ores in the short-to-medium term.

Introduction

Decarbonising the steel sector is a multi-faceted challenge, encompassing economic constraints, investment requirements, and technological barriers. Among these, the supply of suitable raw materials is particularly critical and widely debated, especially regarding the availability of adequate volumes of appropriate feedstocks to support the transition. A key concern is whether limited access to suitable materials could become a bottleneck for green steel production.

Across both mature and emerging technological pathways, direct reduction (DR) of iron ore is widely regarded as the most promising route, even though it requires higher-grade (known as DR-grade) ore with lower impurity levels than that used in blast furnace (BF) ironmaking. While less than 10% of global iron production currently uses direct reduction, the landscape is shifting rapidly.[1] As more producers transition to this pathway, demand for high-grade iron ore is accelerating and becoming increasingly competitive.

Other decarbonisation pathways are also advancing, albeit at different speeds. Several technology developments aim to enable the use of lower-grade ore in green iron and steel production. One alternative pursued by a number of companies is direct electrolysis of iron ore, with some technologies under development for many years. For example, Boston Metal, founded in 2013, is often regarded as a flagship project in molten oxide electrolysis, but technical challenges have reportedly delayed progress, highlighting the risks and long timelines associated with bringing breakthrough technologies to commercial maturity.[2]

Smelting technologies, when combined with DRI processes to enable the use of lower-grade iron ore, are also viewed as a potential alternative pathway. However, these integrated solutions still require further technical validation and large-scale commercial demonstration before they can achieve broad industry acceptance and deployment.[3]

Given the uncertainty around the timing, scalability, and commercial readiness of these innovations, the global steel industry should begin its decarbonisation journey using mature DR technology, which requires increased volumes of DR-grade ore.

There is compelling evidence that Australia's iron ore sector faces significant threats, amid supply challenges for high-grade ore, and growing international competition.[4,5] New entrants such as the Simandou project in Guinea are expected to increase global supply, placing long-term pressure on BF-grade iron ore.[6] Meanwhile, China's demand is likely to decline due to slowing steel production

[1] Worldsteel. World Steel in Figures 2025.
[2] Canary Media. Green steelmaker Boston Metal to cut jobs following equipment failure. 23 February 2026.
[3] IEEFA. Australia's path to green iron. 25 September 2025.
[4] IEEFA. Iron ore quality a potential headwind to green steelmaking – Technology and mining options are available to hit net-zero steel targets. 28 June 2022.
[5] IEEFA. Australia faces growing green iron competition from overseas. September 2023.
[6] ABC. Why Australia's ironclad future is under threat. 11 November 2025.

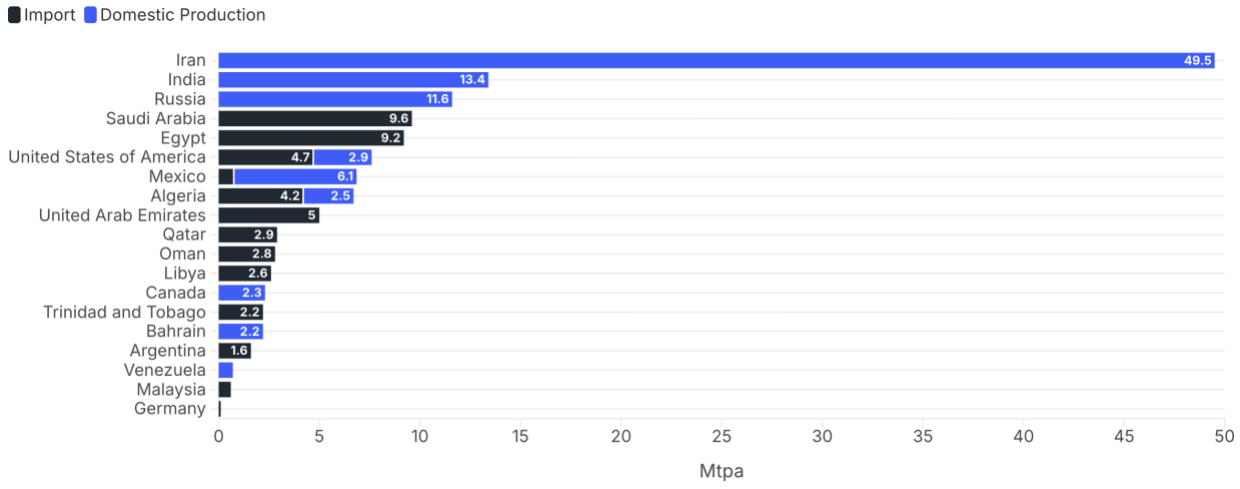
and a gradual supply shift to other regions. Together with the prospect of lower iron ore prices, these factors point to increasing structural challenges for Australia's traditional BF-grade exports.[7]

Whether availability of DR-grade iron ore becomes a constraint on low-emissions steel production will depend on future demand growth, driven primarily by the global expansion of DR plants, and on how quickly iron ore producers can develop new capacity at scale. Australia has long discussed the development of a green iron industry; however, more detailed assessment and swifter action are required to keep the country competitive. This report reviews other contenders vying for this emerging market and assesses Australia's position across a range of competitiveness factors.

DR-grade feedstock – demand and supply

Most direct reduced iron (DRI) producers operating shaft furnaces rely primarily on domestic or regional iron ore pellet supply, with only about 31% sourced from the seaborne market in 2024. Although several countries produce DR-grade pellets, availability of high-grade ore suitable for pellet production is limited. Among existing DRI-producing nations, only a few, including Iran, Canada, India, Russia, Mexico, and the US, have access to high-grade resources. Other major pellet producers, such as Bahrain and Oman, remain highly dependent on imported high-grade ore supply.

Figure 1: DR-grade pellet supply 2024



Source: IEEFA.[8]

Note: Figures are based on volume of DR-grade pellets required for DRI production in shaft furnaces. Sponge iron production via rotary kilns in India is excluded. However, in some countries, such as Iran, there may be surplus DR-grade pellet capacity not utilised in the DRI process. This market is evolving with new production coming online every year.

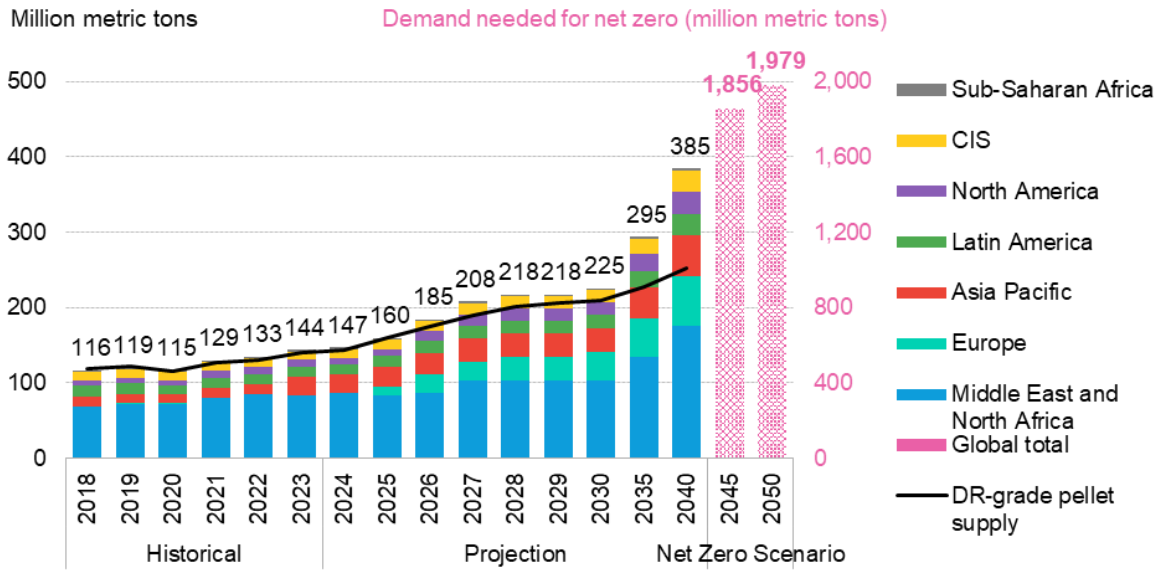
[7] Office of Chief Economist. Resources and Energy Quarterly. December 2025.
[8] IEEFA. Australian Green Iron Tracker.

More countries – particularly in the EU and the Middle East and North Africa (MENA) region – that lack a reliable supply of DR-grade feed materials are expanding DR capacity. This is placing additional pressure on the global supply chain – especially the seaborne market. Nearly all forecasts indicate rising demand for DR-grade ore, and most studies show the supply deficit is expected to widen after 2030.

BloombergNEF estimates that by 2040, the seaborne market for DR-grade pellets will face a supply deficit of 133 million tonnes per annum (MTPA).[9] This projection is based on a 4.6-fold increase in seaborne demand between 2022 and 2040 from 42 million tonnes (Mt) to 197Mt. Figure 2 shows the projected total DR-grade pellet demand for 2040 is 385Mt, while the available pellet supply (black line) can only reach 252Mt, implying a 133Mt deficit. For 2030, pellet demand is 225Mt, whereas pellet supply is expected to reach only 210Mt, resulting in a deficit of 15MTPA. With the available pellet supply, DRI production would be capped at approximately 145Mt by 2030 and 174Mt by 2040.

In addition, a growing share of DR-grade pellet supply is expected to be absorbed by domestic markets, leaving less material available for seaborne trade.

Figure 2: Global DR-grade iron ore pellet, demand vs supply



Source: BloombergNEF.[10]
Note: Columns show demand and black line is supply. Historical demand is calculated from shaft furnace DRI output, while future demand is estimated using a global average of 83% capacity utilisation. CIS = Commonwealth of Independent States.

Midrex forecasts that if all proposed DR projects reach production, significant challenges in DR-grade pellet supply could emerge by the 2030s, with conditions deteriorating further thereafter.[11] Its

[9] BloombergNEF. Direct Reduction Grade Iron Ore: A Green Steel Bottleneck. 18 April 2024. [Subscription required].
[10] Ibid.
[11] Midrex. Iron Ore for Direct Reduction: The Challenge Updated. December 2025.

analysis of demand-supply balances across various scenarios indicates that by 2034, deficits could reach up to 16.4MTPA under the Higher DRI/Lower Pellet case.

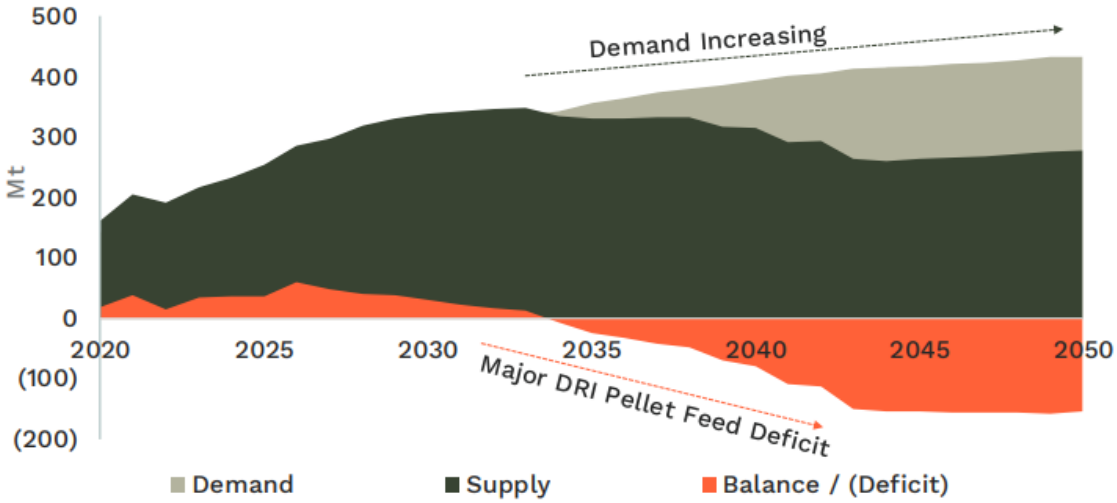
Table 1: Demand and supply of seaborne DR-grade by 2034

Case		DRI production			Pellet demand	Pellet supply	**Pellet balance**
DRI	Pellets	Existing plants	New projects	Total			
Base	Higher	34.6	37.8	72.4	104.9	110.5	**5.6**
Base	Lower	34.6	37.8	72.4	104.9	94.3	**-10.6**
Higher	Higher	34.6	41.8	76.4	110.7	110.5	**-0.2**
Higher	Lower	34.6	41.8	76.4	110.7	94.3	**-16.4**

Source: Midrex.[12]

AME Research also expects a major supply deficit in DR-grade feedstocks by the next decade, with the shortfall emerging before the mid 2030s. This is expected to create significant opportunities for new entrants to the market. The trend reflects the combined impact of declining iron ore quality and rapidly rising demand for DR-grade materials.[13]

Figure 3: DR-grade supply deficit



Source: According to AME reported by Zanaga Iron.[14]

[12] Midrex. Iron Ore for Direct Reduction: The Challenge Updated. December 2025.
[13] Zanaga Iron Ore Company. Company Presentation. December 2025.
[14] Ibid. Page 22.

S&P Global also expects a supply deficit of 70-85Mt by 2035, as demand for DR-grade ores continues to intensify.[15]

The transition to DRI technology has slowed, with several projects announcing delays or indefinite postponements, primarily due to uncertainties surrounding future hydrogen supply and production costs.[16] This accounts for the reduced supply deficit observed in more recent projections and forecasts. However, a number of projects continue to advance, particularly in the MENA region, which has historically been a key hub for DR ironmaking.[17]

Future suppliers of seaborne DR-grade materials

Established suppliers of DR-grade materials – including Brazilian miners such as Vale and Samarco, and producers in Canada such as ArcelorMittal – are expanding capacity to strengthen their position in this growing market, while new entrants are seeking to establish a foothold. Other companies – traditionally producers of lower-grade concentrates and pellets – are also seeking to shift toward higher-grade products to support low-emissions steel production.

This section focuses primarily on potential new DR-grade iron ore supply outside Australia, rather than on processing and pelletising facilities. IEEFA has compiled a dataset of current and potential Australian producers of high-grade magnetite ores in its Australian Green Iron Tracker.[18]

Brazil

As the leading global supplier of high-grade iron ore, Brazil is capitalising on its resource advantage to expand output through both major producers and new development initiatives. The country also has a great opportunity to move further downstream, transitioning from a pure iron ore exporter to a producer of iron products.[19]

Vale

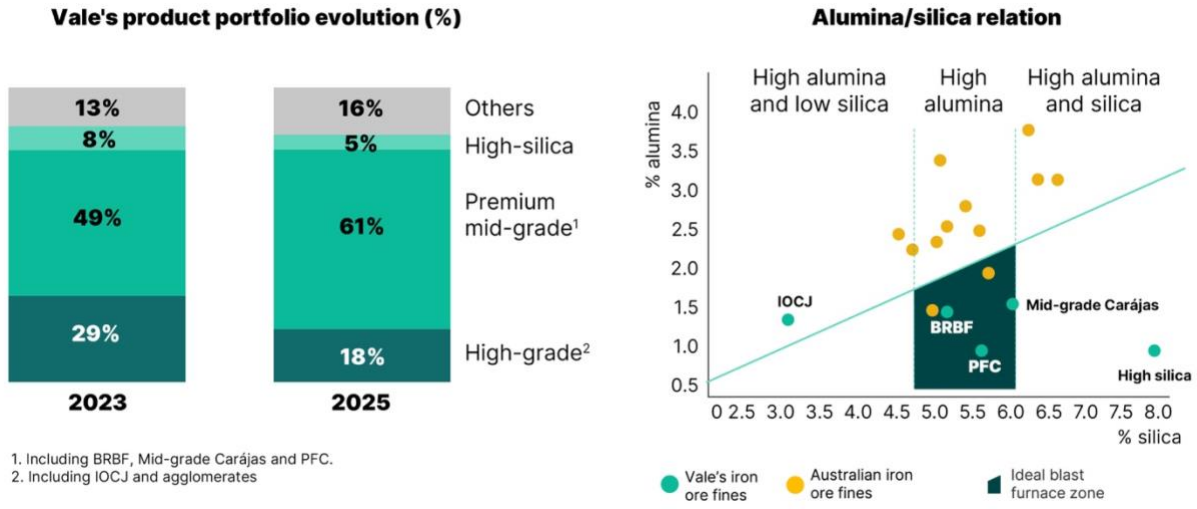
Vale is the world's largest producer of iron ore pellets. The company has also recently introduced a cold agglomeration process, branded as briquettes, which could replace conventional pelletising in the future. Vale operates 11 pelletising plants with a combined capacity of 59.3MTPA.[20] Pellet production declined by 15% in 2025, falling to 31.4Mt from 37Mt in 2024. This was mainly driven by weaker demand, increased supply from Samarco, and an overhaul at its São Luís pelletising plant.[21]

[15] GRANGEX. The future of green iron. January 2026. Reported from S&P. Page 26.
[16] SteelRadar. Green steel projects in Europe are being postponed in 2025 due to ongoing uncertainties. 14 October 2025.
[17] IEEFA. Oman at the frontline of the green steel transition. 12 November 2025.
[18] IEEFA. Australian Green Iron Tracker.
[19] Agora. Green iron trade - Brazil edition. November 2025.
[20] Vale. Institutional Presentation. March 2026. Page 17.
[21] Vale. Vale's production and sales in 4Q25 and 2025. 27 January 2026.

While Vale is increasing its production of agglomerated products, company disclosures indicate a stronger focus on mid-grade ores that are better suited to the BF–BOF (basic oxygen furnace) route rather than high-grade ores for DR pathways. The share of high-grade products declined from 29% in 2023 to 18% in 2025, alongside a strategic shift toward mid-range products such as Pellet Feed China (PFC), which typically grades about 63% iron (Fe) and has a low alumina-to-silica ratio of below 0.2.[22]

Vale's long-term plan targets iron ore production of about 360MTPA, of which 60–70MTPA is expected to be in the form of agglomerated products, with an almost even split between BF-grade and DR-grade materials.[23] Vale Oman is the major producer of DR-grade pellet with a nominal capacity of 9MTPA.[24]

Figure 4: Vale high-grade ore production potential



Source: Vale.[25]

Anglo American (Minas-Rio)

With iron ore reserves of 3.3 billion tonnes, the Minas-Rio mine is one of the world's key suppliers of high-grade ore with a nameplate capacity of 26.5MTPA. The Serra da Serpentina deposit was annexed to Minas-Rio in 2024 under an agreement between Anglo American and Vale; with total resources of 4.3 billion tonnes, it has the potential to double production capacity.[26] The Serpentina resource at Minas-Rio delivers DR-grade material, with iron content of around 67% and total gangue

[22] Vale. Institutional Presentation December 2025. Page 42.
[23] Vale. Metals, Mining and Steel Conference. 13 May 2025. Page 3.
[24] Vale. Oman.
[25] Vale. Institutional Presentation. March 2026. Pages 42-43.
[26] Vale. Vale signs partnership with Anglo American in Minas-Rio. 22 February 2024.

below 3%. The approved recleaner flotation column project will add 2.8MTPA of capacity without compromising product quality and is expected to be commissioned by 2028.[27]

CSN Mineração

Brazil's second-largest iron ore producer aims to become one of the major suppliers of DR-grade feed. With an investment of about USD2.32 billion, the company plans to increase total production to more than 68MTPA by 2028. The expansion includes a new concentration facility, Itabirito P15, with a capacity of 16.5MTPA which is expected to start by the end of 2027.[28] This new plant aims to produce iron ore concentrate with an iron content above 67.5%.

Samarco

Samarco, a joint venture between Vale and BHP, is another producer of high-grade iron ore. Following the 2015 Mariana dam collapse disaster, Samarco has since resumed operations. Under its development plan, the company is targeting iron ore pellet production of 26.4MTPA by 2028.[29] Phase 2 of the project was completed in December 2024, increasing total production capacity to more than 15MTPA.[30] Samarco is expected to deliver the majority of its pellet production into the DR-grade market, with iron content of about 67%.

Lhg Mining (formerly J&F Mineração)

High-grade lump ore is available, but it is extremely scarce. Lhg Mining, a Brazilian producer, is one of the few companies capable of supplying high-quality lump ore with an iron content of about 67%, a product often referred to as "natural pellet" because of its exceptional quality. With a production capacity of 12MTPA, the company can supply a blend of 70% lump and 30% sinter feed.[31] Its lump ore is suitable for both the BF and DR routes. Lhg plans to expand its capacity to 25MTPA by 2029.

Bahia Mineração (also known as BAMIN) (Pedra de Ferro deposit)

The miner, which currently produces about 2MTPA of direct-shipping ore (DSO), has a long-awaited expansion plan to increase capacity to 26MTPA, including high-grade concentrate and pellet. The expansion depends on significant infrastructure development, notably a port and a 537km rail line, which has been partially completed. The expansion project is estimated to cost about USD5.7 billion, and the company is seeking new investors to bring this major project to fruition.[32] The project owner, Eurasian Resources Group (ERG), has been in negotiations with major companies, including Brazil Iron and Vale. Despite its potential, the project is unlikely to come to fruition before 2030.[33] The initial

[27] Anglo American. 2025 Interim results. 31 July 2025.
[28] CPG. How Vale's rival is investing billions to increase its iron ore production. 12 June 2025
[29] Samarco. Business Plan. August 2022.
[30] Samarco. Samarco doubles installed production capacity to advance production of iron ore pellets and fines in 2025.17 December 2024.
[31] Lhg Mining. MEIS 2025 presentation. 17-19 November 2025.
[32] Bloomberg. ERG Is Mulling Offers for Brazil's Bamin Iron Ore Project. 29 October 2025.
[33] Bloomberg. Brazil Iron Said to Make $1 Billion Offer for Eurasian Resources Mine Project. 22 March 2025.

plan envisaged annual production of about 10Mt of DSO and 10–15Mt of high-grade concentrate, mainly DR-grade at 67–68% Fe.[34]

Brazil Iron

Another major project in Bahia state is an integrated ironmaking facility, spanning mining through to DRI production. The project is planned to produce 7.5MTPA of pellet feed, 7.1MTPA of DR-grade pellets, and 5MTPA of hot briquetted iron (HBI). However, the project remains at an early stage, as key infrastructure including rail and port facilities has faced significant delays.[35]

Cadence Minerals (Amapa iron ore)

Cadence Minerals updated its feasibility study in November 2024. Based on the revised study, the project is expected to produce 5.5MTPA of iron ore, confirming its ability to deliver high-purity DR-grade ore, with iron content above 67% and very low gangue. The project was previously designed to produce BF-grade feed. First production is targeted for 2026.[36]

Other projects in Brazil

Several other miners in Brazil are preparing for this transition, including Bemisa and Jambreiro.[37,38] ArcelorMittal Serra Azul is undergoing commissioning, which will increase its annual DR-grade pellet feed capacity from 1.6Mt to 4.5Mt. However, most of the additional output is expected to be consumed by ArcelorMittal's steel plants in Mexico.[39]

Canada

Canada is one of the key regions for supplying high-grade iron ore, supported by its extensive deposits and approximately 6 billion tonnes of reserves.[40] There is also significant potential to upgrade existing production through additional processing, shifting from BF-grade to DR-grade material, as demonstrated at ArcelorMittal and Champion Iron's operations. Beyond current producers, numerous deposits across the country have the potential to develop into sources of high-grade ore.[41] While most producers in Canada mine high-grade ore, only a few are capable of supplying true DR-grade material. Active mines such as Baffinland's Mary River and Tacora's Scully

[34] S&P Global. Brazilian BAMIN iron ore mine to raise output to 26 mil mt/year in 42 months: ERG CEO. 31 January 2022.
[35] Brazil Iron. Green Iron in Bahia. Accessed on 10 February 2026.
[36] Cadence Minerals. Amapa Iron Ore Project Update. 26 November 2024.
[37] Bemisa. Projects. Accessed on 10 February 2026.
[38] CentaurusMetals. Jambreiro Iron Ore Project. Accessed on 10 February 2026.
[39] ArcelorMittal. Interim Financial Report. 30 June 2025.
[40] Government of Canada. Iron ore facts. Accessed on 10 February 2026.
[41] Lund University. Strategic decarbonisation of the Canadian iron and steel industry. 2025.

produce high-grade ores that are primarily used in blast furnaces and may be amenable to further processing to produce DR-grade material.[42,43]

ArcelorMittal

ArcelorMittal produces about 26MTPA of iron ore concentrate from the Mont-Wright and Fire Lake mines, of which approximately 10MTPA is processed into pellets at the Port-Cartier facility.[44] In 2024, the company began construction of a flotation circuit at the pelletising plant to upgrade output to 100% DR-grade quality.[45]

About 30% of the plant's nominal capacity currently produces DR-grade pellets, with the remainder directed to BF-grade due to higher silica content. Once the new flotation circuit is fully operational, the facility is expected to produce DR-grade pellets at full capacity.[46]

Champion Iron (Bloom Lake)

Bloom Lake is an open-pit mine located in the Labrador Trough, operating two concentrators. Together, the concentrators have a combined nameplate capacity of 15MTPA and produce a low-impurity, high-grade iron ore concentrate averaging 66.2% Fe.[47]

In 2024, the Direct Reduction Pellet Feed (DRPF) Project was defined to upgrade approximately half of Bloom Lake's capacity to DR-grade iron ore pellet feed with 69% iron content, with shipments expected to commence in the first half of calendar year 2026.[48]

Champion Iron (Kami deposit)

Located near Champion Iron's Bloom Lake operation, the Kami project is another iron ore deposit with the potential to produce DR-grade material. A pre-feasibility study was completed in 2024.[49] With close to 1 billion tonnes of measured and indicated resources grading 29.6% Fe, the project has strong potential to expand Champion Iron's supply of high-grade products.[50] However, it is still at a very early stage of development. In September 2025, Nippon Steel and Sojitz formed a partnership with Champion Iron to advance development of the mine.[51]

[42] Baffinland. Mary River Mine. Accessed on 10 February 2026.
[43] Tacora Resources. Our products. Accessed on 10 February 2026.
[44] ArcelorMittal. Our Mines. Accessed on 10 February 2026.
[45] ArcelorMittal. ArcelorMittal begins construction of Port-Cartier flotation project, the biggest GHG emission reduction project in Quebec. 15 October 2024.
[46] ArcelorMittal. ArcelorMittal Port-Cartier, Québec plant.
[47] Champion Iron. Bloom Lake. Accessed on 10 February 2026.
[48] Champion Iron. Champion Iron reports record production in its FY2024 third quarter, approves the DRPF Project and announces the results of the Kami Project Study. 31 January 2024.
[49] Champion Iron. Pre-feasibility Study for the Kamistiatusset (Kami) Iron Ore Property. 14 March 2024.
[50] Champion Iron. Champion Iron reports record production in its FY2024 third quarter, approves the DRPF Project and announces the results of the Kami Project Study. 31 January 2024.
[51] Champion Iron. Champion iron forms a partnership for the kami project with Nippon steel and Sojitz. 29 September 2025.

Rio Tinto (IOC's Carol Lake mine)

Rio Tinto's Iron Ore Company of Canada (IOC) operates an integrated mining and processing complex in Labrador City. The operation has a nominal capacity of 23.0MTPA of high-grade iron ore concentrate fines, of which up to 12.5MTPA can be converted into a range of higher-value pellets.[52]

In 2025, IOC's total saleable production reached 15.9Mt, comprising 9.35Mt of pellets and 6.5Mt of concentrate. Production volumes in 2024 were broadly in line with these levels.[53] About 40% of production is DR-grade quality, with most of this material sold into the two main markets: MENA and the Americas.[54]

Cerrado Gold (Mont Sorcier)

The Mount Sorcier deposit in Québec province is another potential future source of high-grade iron ore. The project hosts approximately 1,226Mt of resources grading around 27% Fe and is considered capable of producing high-grade feedstocks.[55] A preliminary economic assessment was completed in 2022.[56] The project remains at an early stage of development, with first ore production tentatively targeted around 2030.

Iron Bear

The Iron Bear Project hosts more than 16.6 billion tonnes of high-grade iron ore resources. Based on the scoping study released in August 2025, Iron Bear can produce 25MTPA of iron ore, comprising 9MTPA of DR-grade pellet feed and 16MTPA of BF-grade concentrates.[57] Testwork indicates the potential to produce very high-grade material suitable for direct reduction, with iron content of up to 71.3% and silica as low as 1.1%.[58] The company is targeting a final investment decision (FID) by 2030. In 2025, Cyclone Metals Limited signed a binding agreement with Vale to develop the project, under which Vale committed USD138 million in development funding in exchange for a 75% interest in the project.[59]

Baffinland Iron Mines (Mary River)

This mine has been producing very high-grade DSO since 2014 and is now progressing a capacity expansion. All necessary approvals are in place for the development of a 146km rail line and a deep-water port to support the expansion. Upon completion of the logistics infrastructure, production capacity is expected to increase from 4.2MTPA to 22MTPA. Construction is scheduled to commence

[52] Rio Tinto. IOC. Accessed on 10 February 2026.
[53] Rio Tinto. Rio Tinto releases fourth quarter 2025 production results. 21 January 2026.
[54] Rio Tinto. Iron Ore Company of Canada Presentation. September 2024.
[55] Cerrado Gold. Mount Sorcier. Accessed on 10 February 2026.
[56] Cerrado Gold. Preliminary Economic Assessment (PEA) for the Mont Sorcier Project. 8 September 2022.
[57] Cyclone Metals. Iron Bear Project Scoping Study. 11 August 2025. Page 4.
[58] Cyclone Metals. Pilot plant delivers iron ore concentrate grading 71,3% Fe and 1,1% SiO_2 with high yields. 23 April 2024.
[59] Cyclone Metals. Cyclone Metals and Vale execute Development Agreement for the Iron Bear Project. 17 February 2025.

in 2026, subject to funding, and is expected to take approximately three years.[60] It is reported that a portion of the lump iron ore output can achieve grades of up to 67.7% Fe.[61]

Strategic Resources

Canadian company Strategic Resources aims to produce 4MTPA of DR-grade pellets at the Port of Saguenay, using merchant concentrate.[62] In November 2024, the company signed an offtake agreement with Javelin Global Commodities for the final product, along with the supply of high-grade concentrate.[63] In January 2025, it signed an additional agreement with Tacora Resources for concentrate supply.[64]

Other deposits in Canada

Additional deposits with future potential for high-grade feedstock production include Lake St Joseph, Iron Hills, Hopes Advance, Lac Otelunk, Full Moon (Rainy Lake deposit), Lac Virot, and Labrador West. For more details, refer to IEEFA's Australian Green Iron Tracker.[65]

Africa (excluding North African nations)

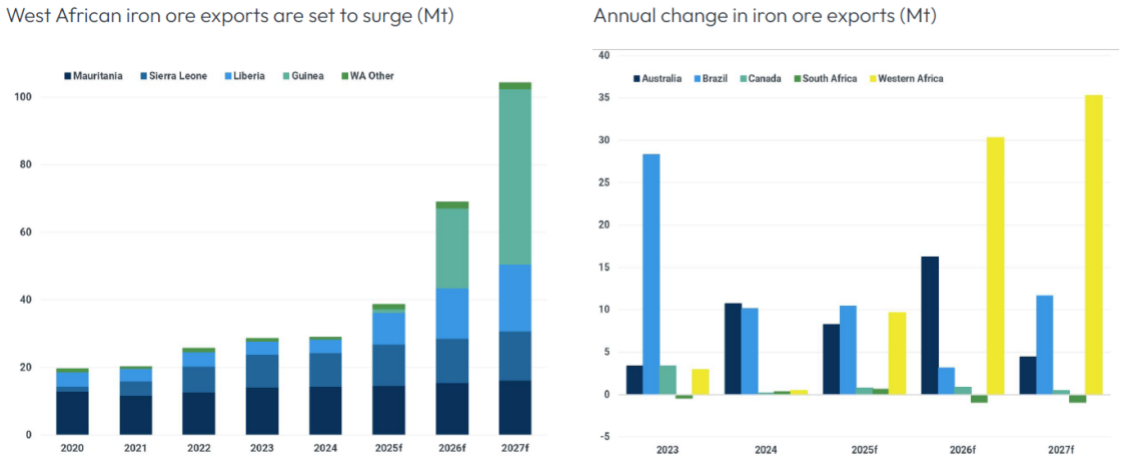
Africa is emerging as a key region for future high-grade iron ore supply. New market entrants with exceptional scale and quality are coming online, positioning the continent as a major supplier of high-grade feedstock for low-emissions iron and steelmakers in the coming decades.

In 2023, African nations had 198 exploration projects, of which 66 were active, with only a limited number expected to reach FID in the coming years.[66] However, the scale of projects such as Simandou in Guinea is substantial and could significantly disrupt the balance of global supply in the iron ore market.

Kpler analysis suggests Africa will be the region contributing the most to the growth of the global iron ore export market in the coming years, and part of that would be a high-grade ore from West Africa.

[60] Baffinland. Baffinland Moves Forward with Steensby Component of the Mary River Project – Cleared to Begin Construction. 29 January 2026.
[61] Midrex. Iron Ore for Direct Reduction: The Challenge Updated. December 2025.
[62] Strategic Resources. Corporate Presentation. September 2025.
[63] Strategic Resources. Strategic Resources Signs High Purity Iron Ore Supply and Offtake Agreements with Javelin Global Commodities along with a US$150 Million Working Capital Facility. 25 November 2024.
[64] Strategic Resources. Strategic Resources Announces Collaboration Agreement with Tacora Resources. 29 January 2025.
[65] IEEFA. Australian Green Iron Tracker.
[66] African Development Bank Group. Critical mineral insights - Iron. 17 November 2025.

Figure 4: West African iron ore export outlook



Source: Kpler.[67]

Simandou

While the Simandou project in Guinea has commenced production, it remains unclear what proportion of its iron ore can be processed into DR-grade feed in the future.[68] With a total iron ore capacity of 120MTPA (all four blocks), a portion of this output is expected to be directed towards high-grade markets for DRI production over time.

Winning Consortium Simandou (WCS) operates Blocks 1 and 2 of the Simandou project and is primarily focused on supplying iron ore to China. In early 2026, China Baowu Resources, one of the consortium partners, officially increased its stake in WCS from 49% to 51%.[69] As the world's largest steelmaker, the company is also moving towards DRI production.[70] However, it remains unclear whether WCS will become a major supplier of high-grade iron ore in the future.

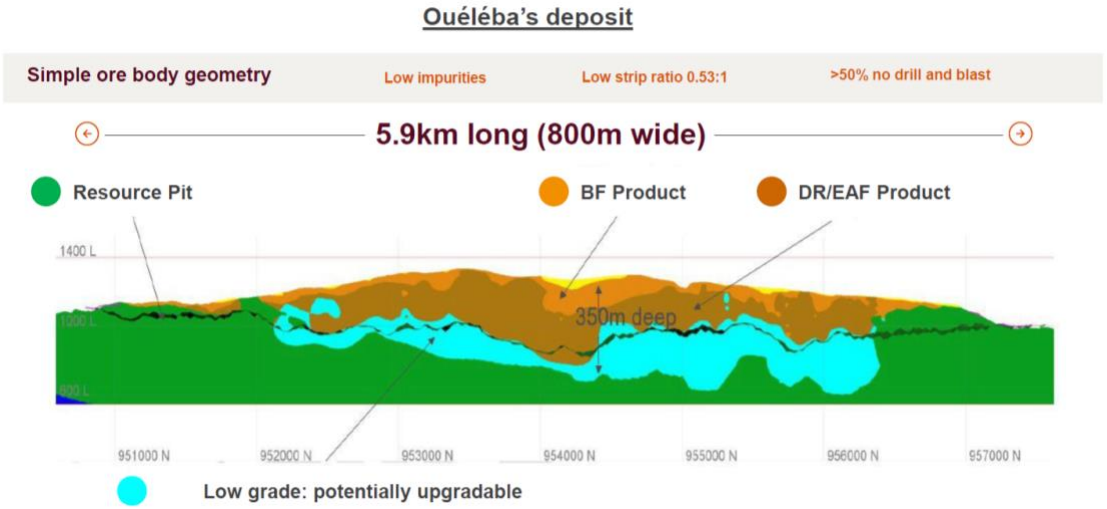
Blocks 3 and 4 are mined by SimFer, a joint venture between Rio Tinto and Chalco Iron Ore Holdings. SimFer's resources fall into two main categories: Ouéléba (hematite and goethite); and Pic de Fon (hematite and martite). Figure 5 illustrates the Ouéléba deposit, a significant portion of which has the potential to be upgraded to DR-grade products. This deposit holds 273Mt in reserves and 1,226Mt in resources.[71]

In its 2022 Climate Action Report, Rio Tinto disclosed that nearly 40% of the deposit is suitable for DR-grade production.[72] Currently, iron ore from the mine is shipped to China for tertiary crushing

[67] Kpler. Kpler Sydney Commodities Briefing. 13 November 2025.
[68] Rio Tinto. Simandou partners celebrate start of operations. 11 November 2025.
[69] Reuters. China's Baowu takes control of Simandou iron ore operator. 31 January 2026.
[70] Tenova. First-ever DRI production for Baowu in China. 9 January 2024.
[71] Rio Tinto. Simandou iron ore project update. 6 December 2023.
[72] Rio Tinto. Climate Change Report 2022. Page 25.

and subsequent use in blast furnaces.[73] Rio Tinto is also considering the development of a pelletising facility in Guinea.[74]

Figure 5: Simandou SimFer's product quality



Source: Rio Tinto's MEIS presentation 2025.

Belinga

The Belinga project remains in the early stages of exploration and technical studies and is planned as an integrated development comprising a mine, rail infrastructure, and port facilities.[75] Although Fortescue produced a single shipment of iron ore in 2023, the project has yet to be fully developed. The cost of developing the mine, including all required infrastructure, is estimated at about USD10 billion, and as with many African mining projects, its remote location presents a significant challenge.[76] Despite these issues, the project is expected to progress toward commencement around 2030.[77]

Zanaga

Zanaga is one of the largest untapped high-grade iron ore projects in Africa. Located in the north of the Republic of Congo, the project hosts approximately 6.9 billion tonnes of resources grading 32% Fe, including about 2.1 billion tonnes of reserves at 33.9% Fe. The deposit contains both magnetite and hematite ores.[78]

[73] Rio Tinto. 2025 full year results. 19 February 2026. Page 15.
[74] AFR. Rio faces pressure from Guinea to build refinery for Simandou ore. 8 September 2025.
[75] Fortescue. Half Year Results. 25 February 2026.
[76] AFR. What the world's biggest mine means for Australia's iron ore empire.
[77] AFR. Fortescue aims for 2030 debut in African iron ore. 23 December 2025.
[78] Zanaga Iron. Company Presentation. December 2025.

According to the company's updated 2024 feasibility study, Zanaga has the potential to produce up to 30MTPA at full capacity, delivering a concentrate grading 68.5% Fe.[79] The project is capable of producing DR-grade iron ore with very low impurity levels (combined silica and alumina below 2.5%). However, it remains at an early stage of development, with FID targeted for around 2027.

ArcelorMittal's Liberia production

ArcelorMittal has completed its USD1.8 billion expansion project in Liberia, including a concentration plant enabling production of 20MTPA of iron ore, of which approximately 75% will be sinter feed (>62% Fe) and 25% high-grade concentrate.[80] ArcelorMittal Liberia is targeting a further expansion to 30MTPA, with the potential to produce DR-grade products as well.[81]

Kon Kweni

The Kon Kweni deposit is located in the Nimba Range in Guinea. According to Ivanhoe Atlantic, it has the potential to produce iron ore concentrate with an iron content of around 67.8%. In the first phase, the project is expected to produce 2–5MTPA.[82] As with many African iron ore projects, infrastructure remains the main challenge, as the ore would need to be transported through neighbouring Liberia via the route commonly known as the Liberty Corridor.

Baniaka

The Baniaka iron ore deposit is located in Gabon. Based on the preliminary feasibility study by Australian-listed company Genmin, the first phase of the project is expected to produce 5MTPA of iron ore, of which only 20% qualifies as pellet feed with an iron content of 66.4%. It remains unclear what proportion of the deposit could ultimately be allocated to DR-grade pellet feed.[83]

Arrow Minerals

The Simandou North Iron Project is located north of the Simandou iron ore project. Exploration to date has been insufficient to estimate a mineral resource, but Arrow Minerals has announced an exploration target of approximately 281–716Mt with iron content of 33–46%.[84] Beneficiation (waste removal) testwork indicates that the ore can produce a high-grade concentrate with an iron content of 66.8% and combined silica and alumina levels below 3.5%.[85] However, the company's tenements have since been cancelled, and it is unclear how the project will progress in the future.[86]

[79] Zanaga Iron. Feasibility study. April 2024.
[80] ArcelorMittal. Interim Financial Report. 30 June 2025. Page 22.
[81] ArcelorMittal. Government of Liberia and ArcelorMittal sign new long-term Mineral Development Agreement. 30 January 2026
[82] Ivanhoe Atlantic. Key Environmental Approvals Secured – Liberia. 10 June 2025.
[83] Genmin. An emerging high quality iron ore producer. June 2025.
[84] Arrow Minerals. Annual Report. 31 December 2024.
[85] Arrow Minerals. Testwork achieves extremely high quality hematite fines at Simandou North Project. 15 January 2025.
[86] Arrow Minerals. Long Term Suspended Entities. 22 January 2026.

Kumba Iron Ore (Sishen mine)

Kumba Iron Ore, a subsidiary of Anglo American, has announced an investment in ultra-high-dense media separation (UHDMS) processing technology for its Sishen mine operation in South Africa.[87] The move is expected to increase production capacity by 15MTPA and more than triple the share of premium lump ore, from 18% to 55%. The company produces about 26MTPA of iron ore from Sishen, with lump products accounting for approximately 70% of output. The project is scheduled to come online in 2028. The average iron ore grade is about 64% Fe, while the premium product reaches 65.1% iron content.[88]

However, deleterious elements, particularly silica and alumina (cumulatively about 7%), remain relatively high, meaning not all products are expected to be suitable for DRI production.[89] Some test results suggest optimal usage of 20% and up to 30% of Kumba premium lump in DRI production.[90]

Ukraine

GMK Center estimates potential demand growth for DR-grade feed at 180MTPA by 2030, of which Ukraine could supply approximately 20–25Mt.[91] About 60Mt of this incremental demand is linked to projects currently announced in the European pipeline. The GMK report also emphasised Ukraine's 5 billion tonnes of magnetite reserves, which could make it a major supplier of high-grade materials.

Despite Ukraine's strong potential to become a major producer of these materials, significant changes are unlikely in the near term due to the ongoing war with Russia. Ukraine's primary focus is on maintaining current operations and avoiding plant closures, as observed in early 2026.[92]

Table 2: Potential production capacities for DRI raw materials in Ukraine

Company	Product	Capacity (Mt)
Metinvest	Pellets	7.5
Metinvest	Concentrate (68–70%)	19.3
Ferrexpo	Pellets	3.0–5.0
ArcelorMittal Kryvyi Rih	Pellets	5.0
Black Iron	Concentrate (68%)	4.0–8.0
Southern GOK	Concentrate (68%)	3.0

Source: GMK Center.[93]

[87] Anglo American. Kumba to invest in margin-enhancing UHDMS processing technology at Sishen mine. 29 August 2024.
[88] Anglo American. Iron ore. Accessed on 10 February 2026.
[89] Anglo American. 2025 Interim results. 31 July 2025.
[90] Fastmarkets. International Iron Ore and Green Steel Summit 2025. Conference Summary. 17-19 June 2025.
[91] GMK Center. Green Steel Supply 2025-2035.
[92] Reuters. ArcelorMittal to close unit at Ukraine plant amid green rules, Russian attacks. 26 January 2026.
[93] GMK Center. Green Transformation of the EU Steel Industry in 2025-2035 and Prospects for Ukrainian Steel Industry. January 2025. Page 14. Note: This table is only available in the Ukrainian version of the document.

Metinvest

Despite its high nominal capacity, Metinvest lacks the capability to produce DR-grade material at scale, as the silica content of its ore generally exceeds DR-grade specifications.[94] According to the company's nine-month operational results for 2025, the production of iron ore concentrate with an iron content of 67% or higher has declined sharply, falling 76% from the previous year.[95] In the same period, pellet production with iron content greater than or equal to 65% rose by 11%.

Dmytro Nikolayenko, chief commercial officer of Metinvest, stated that the company had been working on projects to increase DR-grade pellet production to 20MTPA, from approximately 2MTPA prior to the war.[96]

Black Iron (Shymanivske deposit)

Black Iron has significant potential to produce high-grade magnetite pellet feed with a total iron content exceeding 68%. The project will be developed in two phases: the first is expected to deliver 4MTPA; while the second phase will increase capacity to 8MTPA.[97] To renew its extraction permit, the company must mine at least 1% of the ore body. It plans to meet this requirement by utilising spare capacity at a nearby concentration plant.[98]

Ferrexpo

Historical data shows Ferrexpo can produce less than 500,000 tonnes of DR-grade pellet. In 2024, DR-grade production reached 490,000 tonnes, but this fell to 80,000 tonnes in the following year. That year, the company shifted its focus toward producing higher-grade iron ore concentrate (67% Fe) rather than mid-range pellets with about 65% Fe.[99] As with other plants in Ukraine, the long-term outlook remains highly uncertain. It is reported that the facility can switch between BF-grade and DR-grade production depending on market demand.[100]

Russia

Traditionally, Russia has been one of the major players in the global seaborne iron ore pellet and agglomerates market. Despite its substantial pellet production capacity, Russia is unlikely to supply significant volumes of DR-grade material to the seaborne market in the coming years, as meeting domestic DRI and HBI demand may consume all of its production. There remains potential to

[94] Metinvest. Iron ore. Accessed on 10 February 2026.
[95] Metinvest. Metinvest announces 3Q and 9m 2025 operational results. 11 November 2025.
[96] Metinvest. Metinvest pursues a strategy for the transition to green steel via by boosting output of DRI pellets – CCO. 14 June 2024.
[97] Black iron. Compelling Investment in Support of Rebuilding Ukraine. 2025
[98] Black Iron. Black iron provides year-end update. 25 November 2025
[99] Ferrexpo. Production Report for 4Q 2025.
[100] GMK. FERREXPO 2022 Production Results: benefits from flexibility. 15 March 2023.

upgrade a portion of BF-grade pellets to DR-grade through additional processing, an approach some producers are currently pursuing.

Metalloinvest

Metalloinvest, Russia's largest pellet producer, primarily supplies its captive DRI and HBI facilities, leaving little genuine DR-grade material available to the market.[101] Additional DR-grade supply in large quantities would only be possible if the company's announced flotation project comes to fruition, potentially supporting future capacity expansion or limited market sales. It is said that this new processing may be able to add 10MTPA of pellet with 71% iron and less than 1.23% silica.[102]

NLMK

In 2021 NLMK, which operates integrated mining and steelmaking facilities, announced plans to build its own HBI unit with 2.5MTPA capacity, alongside expansions in concentration and pelletising to capacities of 10MTPA and 9MTPA respectively.[103] The progress of the plan and the availability of DR-grade material in excess of HBI plant's demand remain unclear.

Servestal

Severstal sells more than 1Mt of pellets per annum, and is expanding pelletising capacity at its Cherepovets facility to around 10MTPA.[104,105] However, the company remains focused on internal supply rather than exporting high-grade material.

Other developments in Russia

There are more DR capacities developing in Russia, such as Ecolant's DRI-EAF (electric arc furnace) project, which increases the need for high-grade ore for the domestic market.[106] This makes the supply side more challenging.

While Russia's ability to contribute to global demand for high-grade ores remains uncertain due to its ongoing war with Ukraine, the country retains significant potential to become a supplier of these materials in the future.

[101] S&P Global. Feature: Russia's hot-briquetted, direct-reduced iron capacity set to double.18 February 2022.
[102] Metalloinvest. Lebedinsky GOK begins using flotation technology for concentrate enrichment. 6 February 2024.
[103] NLMK. NLMK Group, Belgorod Region administration and Russian Ministry of Industry and Trade sign MOI for new metals and mining project. 3 June 2021.
[104] Severstal. Severstal reports Q1 2023 operational results. 20 April 2023.
[105] SteelOrbis. Servestal to begin low-carbon steel production. 10 June 2024.
[106] Ecolant. Ecolant has started construction of the first green metallurgy complex in Russia. 9 February 2022.

Middle East and North Africa

In the MENA region, the world's largest consumer of DR-grade pellets, most pelletising capacity is captive and used within the region. Many DRI producers are expanding downstream to achieve greater self-sufficiency, and significant new capacity has been added in recent years, particularly in 2025. This includes Jindal Steel's 6MTPA pelletising plant in Oman, Tosyali's new 4MTPA pellet plant supported by concentration plant (total capacity of 8MTPA pellet and concentrate , and Suez Steel's 5MTPA pellet facility integrated with a concentrator.[107,108,109] In addition, new facilities in Iran have created surplus pellet supply, some of which is now being exported to international markets, particularly China.

Further announcements have followed, including Foulath Arabia's plans to establish a 7.5MTPA pelletising facility, and Vale's proposed 4MTPA pellet plant in Ras Al khair, Saudi Arabia.[110,111] DRI capacity is expanding across the region, driving up demand for pellets. In the near term, an additional 30–40MTPA of DR-grade pellet is expected to be needed to support \ capacity growth.[112]

Vale's Mega Hub in Oman is also expected to reach FID in 2026, which would increase the supply of high-grade feedstocks in the region.[113]

The two main pellet suppliers in the MENA region are largely dependent on high-grade concentrate, primarily sourced from Brazil. Bahrain Steel receives 8Mt of high-grade concentrate from Anglo American's Minas-Rio mine, with the remainder supplied from Canada and Chile.[114] Oman also sources its iron ore concentrate from Brazil.

While only a limited number of MENA countries have sufficient iron ore resources to produce pellet feed, and many remain reliant on imports, additional regional supply is gradually coming online.

Algeria (Gara Djebilet)

After a long wait, the Gara Djebilet mine has officially begun operations, shipping its first cargo of 1,450 tonnes. The ore was initially transported to Bechar for primary processing before being sent to Tosyali's steelmaking complex in Bethioua.[115] Tosyali Algerie operates an integrated DRI–EAF complex in Oran Province, supported by concentration and pelletising plants.

[107] Jindal Steel. Jindal Pelletising. Accessed on 10 February 2026.
[108] Tosyali Algerie. Pelletising Units. Accessed on 10 February 2026.
[109] AISU. Suez Steel Promotes Self-Sufficiency by Launching New Factories with Leading Technologies in the Middle East. 6 May 2025.
[110] Foulath. Investment Projects. Accessed on 10 February 2026.
[111] S&P Global. Brazil's Vale, Saudi Arabia's NIDC sign MOU for iron ore pellet plant. 1 November 2022.
[112] GMK Center. MENA will need an additional 30-40 million tons of DR pellets in the near future. 24 November 2025.
[113] ZAWYA. $5bln low-carbon steel Mega Hub in Oman set for Final Investment Decision this year. 12 January 2026.
[114] Anglo American. Celebrating 10 years of Minas-Rio: Partnership with Bahrain Steel for Sustainable Steelmaking. 11 September 2024.
[115] SteelOrbis. Algeria ships first iron ore from Gara Djebilet mine to be processed for Tosyali Algerie. 29 January 2026.

Algeria has long-term plans to expand its domestic concentration and pelletising capacity, with proposed developments of 40MTPA in Tindouf and Bechar.[116] The initial phase is expected to begin with a 4MTPA concentrator in Tindouf.[117]

However, the ore from Gara Djebilet is known to have high phosphorus content and may require additional processing to reduce impurities. According to SteelRadar, the first-phase 4MTPA facility is expected to reduce phosphorus levels and produce iron ore concentrate with an iron content of around 63%, which remains well below DR-grade quality.[118] The ability to produce DR-grade feedstock is still not clear.

SNIM (including joint ventures)

Mauritania is one of Africa's largest iron ore producers, and its state-owned mining company, SNIM, is frequently mentioned as a potential future participant in the DR-grade iron ore market. However, its current 14MTPA iron ore production does not yet meet DR-grade specifications. With about 7% silica in the final magnetite concentrate, additional processing would be required to achieve DR-grade standards. The company anticipates significant capacity growth in the coming years through production expansions and joint ventures. SNIM is actively pursuing various collaborations to become a pellet producer.[119] It also envisions producing green DRI/HBI.[120] Nonetheless, its primary focus remains on expanding production capacity.

While SNIM's main mining operations are estimated to hold more than 10 billion tonnes of iron ore resources, two other deposits also show strong potential to produce high-grade iron ore: El Aouj, with approximately 4.4 billion tonnes; and Takamul, with about 560Mt. The company envisions huge capacity growth in the coming years via production expansion as well as joint ventures.[121] Studies indicate that the El Aouj deposit may also be unable to produce DR-grade material due to the high silica content in the final product, and additional processing may be required to reduce silica to acceptable levels.[122]

Iranian producers

Iran is also a major supplier of iron ore concentrate and pellets to the global market, though most of its exports go to China and India. In the first nine months of the current Iranian calendar year (which began on 21 March 2025), the country exported more than 10.1Mt of pellets and 9.2Mt of iron ore concentrate, representing year-on-year increases of 33% and 79% respectively.[123] While the recent

[116] Muslim Network TV. Algeria advances mega-project with major processing and infrastructure plans. 14 July 2025.
[117] AISU. Algeria : First Iron Ore Pre-Processing Unit to Be Launched by End of April 2026. 10 October 2025.
[118] SteelRadar. Algeria prepares to open iron ore plant with an annual capacity of 4 million tons. 17 October 2025.
[119] AISU. SNIM on the Journey to Green Steel Production. 17th Arab Steel Summit presentation.
[120] CWP. SNIM and CWP Global agree to explore opportunities to decarbonise Mauritania's iron ore production. 10 June 2024.
[121] SNIM. Annual Report 2023. Page17.
[122] Sphere Minerals Limited. Completion of the El Aouj East feasibility study and updates to the ore reserves at the El Aouj East and ore reserves at Askaf North. 26 November 2015.
[123] Iranian Steel Producers Association. The export value of the steel chain exceeded $6 billion. 20 January 2026.

outbreak of conflict means the current outlook is highly uncertain, it is possible Iran's products will reach other markets in future, particularly in the MENA region, as has occurred in previous years.

Nordic countries

With large-scale producers such as LKAB, Sweden is one of the world's largest suppliers of DR-grade pellet. Most production comes from LKAB, on which the MENA region has relied for many years. LKAB delivered 25.9Mt of iron ore products in 2025, of which 87% were pellets, with a portion supplied to the market as DR-grade. The company also plans to produce 1.35MTPA of hydrogen-based DRI in Gällivare under the HYBRIT project, which will reduce the volume of material available to the market.[124]

Backed by substantial premium-grade resources, new companies are preparing to introduce additional material to the market, albeit on a smaller scale compared with LKAB and other major competitors. A new wave of iron ore developers is emerging with the objective of supplying high-grade material to support the low-carbon transition.

GRANGEX (Sydvaranger Mine)

The Sydvaranger mine is the third-largest iron ore operation in Europe. Although it is currently dormant, the mine is scheduled to restart operations by the end of 2026. Previously capable of producing iron ore concentrate with 68% iron content, the mine will adopt new technologies to lower silica levels and deliver 3.5MTPA of very high-grade iron ore. GRANGEX has targeted the MENA region as a key market for its super high-grade concentrate.[125] The company has secured a strategic commercial partnership with Anglo American to support the Sydvaranger restart.[126]

GRANGEX (Dannemora)

Dannemora is another brownfield project by GRANGEX, targeting the production of 1.1MTPA of DR-grade magnetite concentrate with an iron content of 68%. The Definitive Feasibility Study was completed in 2024, and all required permits have been secured. However, the company appears to be prioritising development of its Sydvaranger mine over this project.[127]

[124] Tenova. LKAB selects ENERGIRON® for its demonstration plant in northern Sweden. 12 February 2024
[125] GRANGEX. The Future of Green Iron Ore. January 2026.
[126] GRANGEX. GRANGEX secures strategic commercial partnership with Anglo American to support the restart of operations at Sydvaranger. 23 December 2025.
[127] GRANGEX. The Future of Green Iron Ore. January 2026.

Rana Gruber

Rana Gruber, Norway's only iron ore producer, has announced plans to upgrade its product to a high-quality iron ore concentrate, grading 67% Fe, by 2029. The company currently produces about 1.8MTPA of concentrate with an iron content of 65%.[128]

In December 2025, Champion Iron launched a cash tender offer to acquire Rana Gruber. It remains uncertain whether Champion Iron will proceed with the planned transition to DR-grade production or maintain its current operating configuration.[129]

Other developments in the Nordic region

Several other projects remain in the early stages of development, including: the Blötberget deposit (Nordic Iron); the Kaunis Iron expansion project; Grängesberg Iron (Anglesey Mining); and Jokkmokk Iron's Kallak deposit (Beowulf Mining).[130,131,132]

Other suppliers

While other miners, such as the Chilean iron ore and pellet producer CMP, also contribute to the global seaborne supply, the main focus of this report is on projects that can introduce new capacity to the market.[133] Details of other potential producers can be found in IEEFA's Australian Green Iron Tracker.[134]

[128] Rana Gruber. Capital Markets Day 2025.
[129] Champion Iron. Champion Iron to launch cash tender offer to acquire Rana Gruber, receives financial support from La Caisse and a term loan commitment from Scotiabank. 21 December 2025.
[130] Nordic Iron. Update on the Development of the Blötberget project. 29 January 2026.
[131] Kaunis Iron. Annual and Sustainability Report 2024.
[132] Anglesey Mining. Grängesberg Iron AB – Grängesberg Iron Mine. Accessed on 10 February 2026.
[133] CWP. The mining business.
[134] IEEFA. Australian Green Iron Tracker.

Table 3: Promising mining projects for producing DR-grade concentrate and pellet

	Company	Product	Current supply 2025 (MTPA)	Future expansion (MTPA)	Scheduled development
Brazil	Vale	Pellet	≈ 18 (including 9Mt at Vale Oman plant)	30-35 (50% of 60-70Mt)	Gradual increase
	Samarco	Pellet	≈ 15 (97% pellet)	26.4 (DR-grade share is unknown)	Gradual increase
	CSN Mineração	Concentrate	-	16.5 (Itabirito P15) (DR-grade share is unknown)	2027
	Anglo American	Concentrate	8 (30% of 26.5 total capacity) *	2.8 (Recleaner flotation columns)	2028
	Lhg Mining	Lump	8.4 Lump**	17.5 (70% of 25) (DR-grade share is unknown)	2029
	Cadence Minerals	Concentrate	-	5.5	2026
	Bahia Mineração (BAMIN)	Concentrate	2 (DSO lump; No pellet feed)	10-15 (DR-grade share is unknown)	2030s
	Brazil Iron	Concentrate, Pellet, HBI	-	7.5 pellet feed, 7.1 DR-grade pellet and 5 HBI	2030s
Canada	ArcelorMittal (AMMC)	Pellet	3	10	Awaiting flotation plant construction
	Rio Tinto (IOC's Carol Lake mine)	Pellet	≈ 5 (About 40% of 12.5 total capacity)	-	-
	Iron Bear	Pellet	-	9 DR Pellet +16 BF concentrate	Expected FID by 2030
	Cerrado Gold (Mont Sorcier)	Concentrate	-	5 (FS report)	2030
	Champion Iron (Bloom Lake)	Concentrate	7.5 DR-grade	-	DRPF project commenced
	Champion Iron (Kami Deposit)	Concentrate	-	8.5 (FS report)	DFS by 2026
	Baffinland Iron Mines (Mary River)	Lump ore	-	Unknown	2030s
	Strategic Resources	Pellet	-	4	2028
Africa	Kon Kweni	Concentrate	-	Phase 1: 2 → 5 Phase 2: 25-30	2030s
	Simandou (Blocks 3&4)	Concentrate	-	60 (DR-grade share is unknown)	Operation started in 2025
	Belinga	Concentrate	-	unknown	2030s
	Zanaga	Concentrate	-	30 (full capacity)	FID by 2027
	ArcelorMittal (Liberia)***	Concentrate	-	5 (25% of 20 new capacity)	2025
	Baniaka	Concentrate	-	1(DR-grade share is unknown)	Early stages
Nordics	GRANGEX (Sydvaranger)	Concentrate	-	3.5	Q4 2026
	GRANGEX (Dannemora)	Concentrate	-	1.1	2030s
	Rana Gruber	Concentrate	1.8	unknown	2029

Sources: Company reports. Notes: Russian and Ukrainian producers are omitted from this table due to conflict uncertainty, but their long-term plans should be continually monitored to assess the plants' progress. New deposits in MENA are omitted as they are still in early development and it remains uncertain whether they can produce iron ore with controlled impurity levels.
** In 2019, Anglo American signed a 20-year agreement to supply Bahrain Steel 8MTPA of ultra high-grade DRPF from Minas-Rio.[135]*
*** About 70% of total production is in lump form; however, the proportion that meets DR-grade quality remains unclear. Total production in 2025 was 12Mt, of which about 8.4Mt was lump[136].*
**** ArcelorMittal has concluded its USD1.8 billion expansion project in Liberia, enabling it to produce 20Mt of iron ore, of which 75% will be sinter feed >62% Fe, and 25% will be high-grade concentrate. ArcelorMittal Liberia is expanding capacity to 30Mt, envisioning producing DR-grade product as well.*

[135] Anglo American. Celebrating 10 years of Minas-Rio: Partnership with Bahrain Steel for Sustainable Steelmaking. 11 September 2024.
[136] Fastmarkets. Brazilian miners bet on high-grade iron metallics in race for Scope 3 carbon neutrality. 30 November 2023.

Australia's competitiveness in the global green iron transition

With global competition in high grade ore supply intensifying, it is worthwhile to take a closer look at the implications for Australia and examine how the country is responding to these market changes. This analysis covers several aspects, including cost, quality, and time to market.

Cost analysis

Iron ore miners are increasingly moving towards more challenging and remote deposits as in-situ ore quality declines, a shift that requires significant capital investment. Simandou is a prime example of this new generation of projects, requiring billions of dollars in direct investment to reach production.[137]

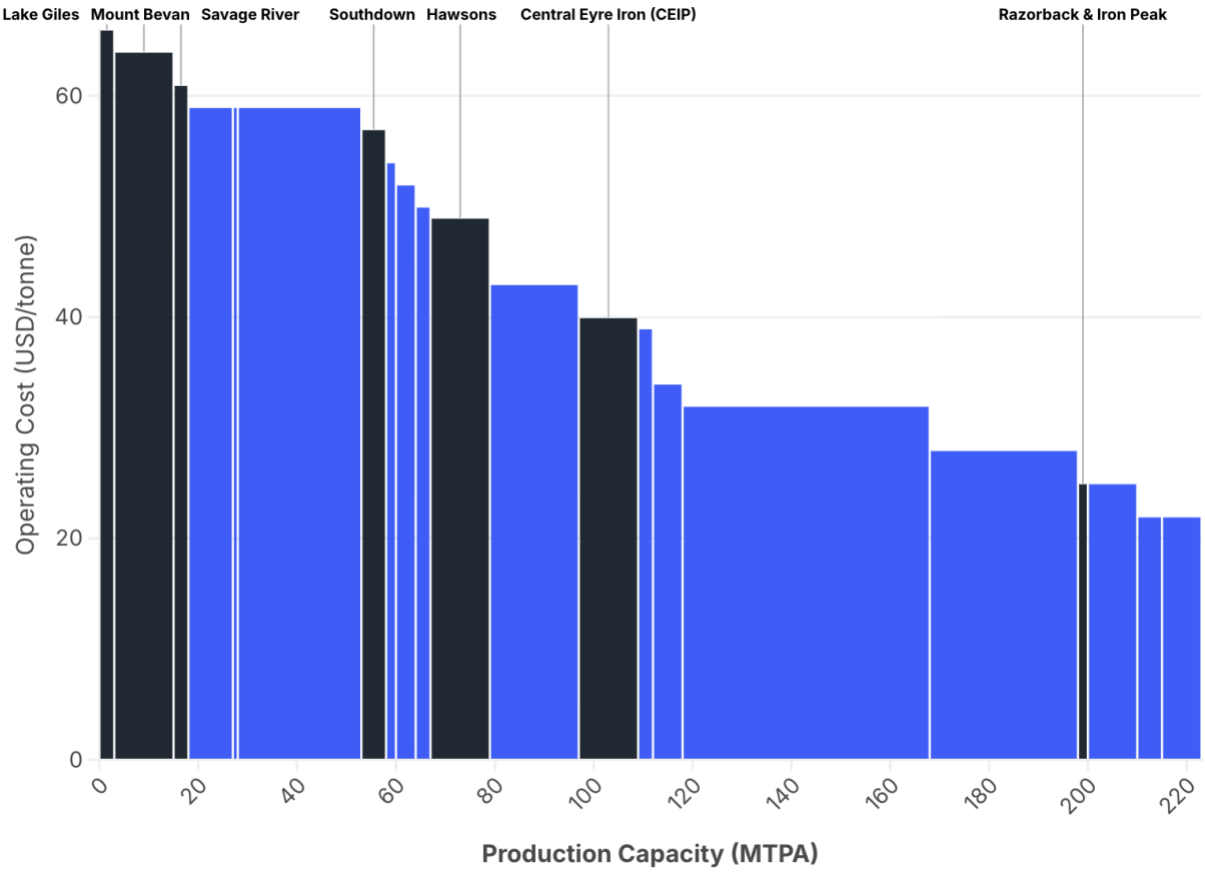
While Australia is now the cheapest low-grade iron ore producer, with a cash cost of about USD20 per tonne, higher-grade iron ore production in Australia will not be the cheapest.

IEEFA's analysis indicates that, compared with global projects currently in the pipeline, Australian iron ore deposits with the potential to produce DR-grade material generally exhibit higher production costs, typically in the range of USD40–60 per tonne. This is further supported by benchmarking against existing concentrate producers, which shows a similar cost profile. In comparison, Anglo American's Minas-Rio mine, which produces high-grade concentrate, recorded an FOB (free on board) cost of approximately USD30 per tonne in 2024, and USD32 per tonne in 2025.[138]

Despite the higher cost base, DR-grade pellet and pellet feed (concentrate) producers continue to maintain attractive margins, benefiting from the premium commanded by lower impurities and higher iron content. Combined with the expected demand growth for high-grade material, this positions DR-grade iron ore production as a viable and strategically attractive investment opportunity for Australia.

[137] S&P Global. Simandou iron ore project: A game changer for global supply. 4 September 2025.
[138] Anglo American. 2025 results. 20 February 2026.

Figure 6: Operating costs of iron ore projects with potential to produce high-grade ore



Source: Company reports, IEEFA.[139]
Note: Black bars represent Australian projects. All figures are in US dollars. Data was collected from FS reports mostly after 2020 and the data is not adjusted.

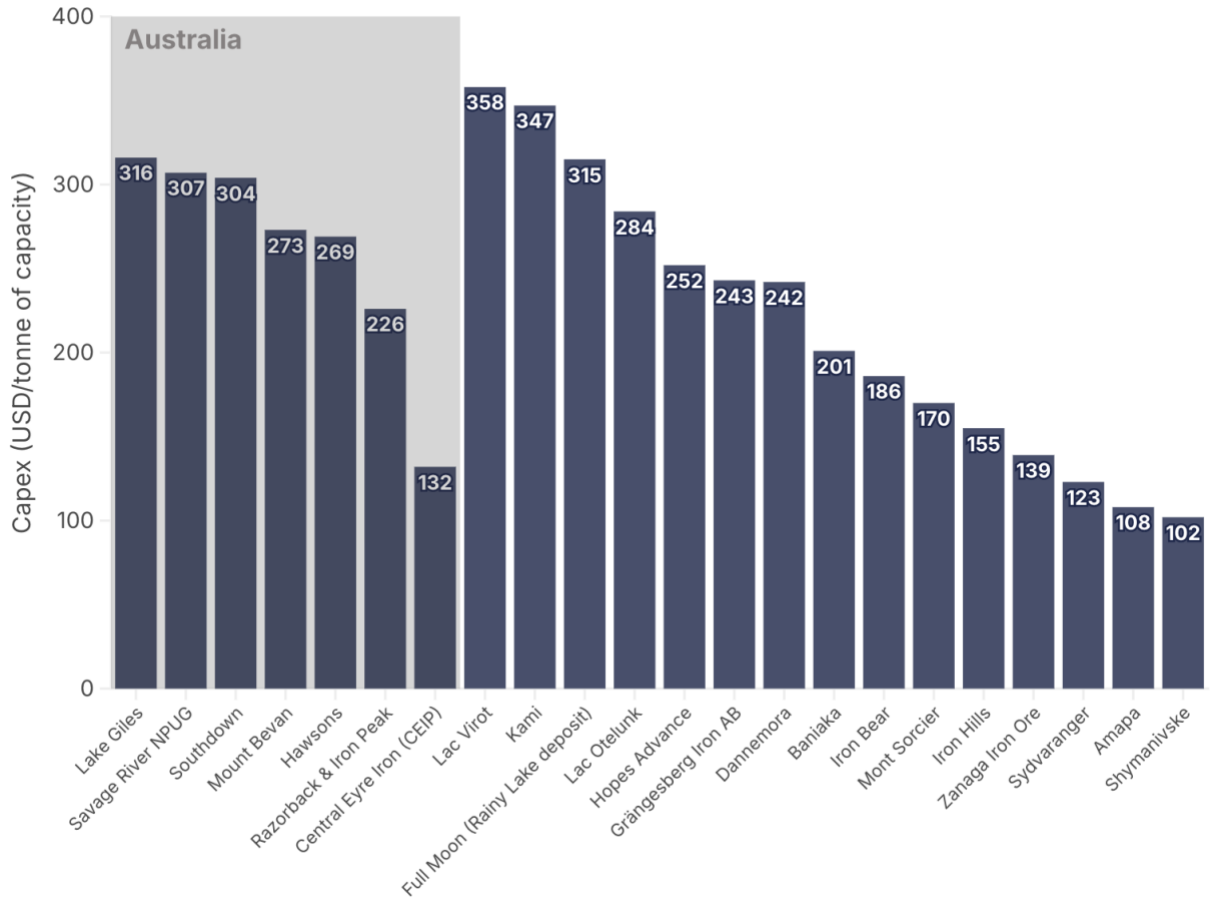
Brazil remains the world's largest pellet supplier, and the cost structures of its leading producers demonstrate a clear advantage in overall production costs. Vale reported C1 pellet costs (covering the direct production costs) of USD76.2 per tonne in 2024 and USD76.7 per tonne in 2025.[140] Samarco also reported a pellet cash cost of USD42 per tonne for the third quarter of 2025.[141]

Expanding capacity is cheaper for existing pellet and concentrate suppliers, allowing them to maintain their positions as the lowest-cost producers. Brownfield projects are expected to require significantly lower capital expenditure (capex) compared with greenfield projects, particularly where substantial new infrastructure would otherwise be required. Capex analysis of greenfield projects shows that capex per tonne of final product for the selected projects is about USD230. In this

[139] IEEFA. Australian Green Iron Tracker.
[140] Vale. Vale's performance in 4Q25 and 2025. 12 February 2026.
[141] Samarco. 3Q25 Performance. 10 November 2025.

comparison, the capex of Australia's projects in the pipeline is broadly similar to that of other projects.

Figure 7: Capex of iron ore projects with potential to produce high-grade ore



Source: Company reports, IEEFA.[142]
Note: Data was collected from FS reports mostly after 2020 and the data is not adjusted.

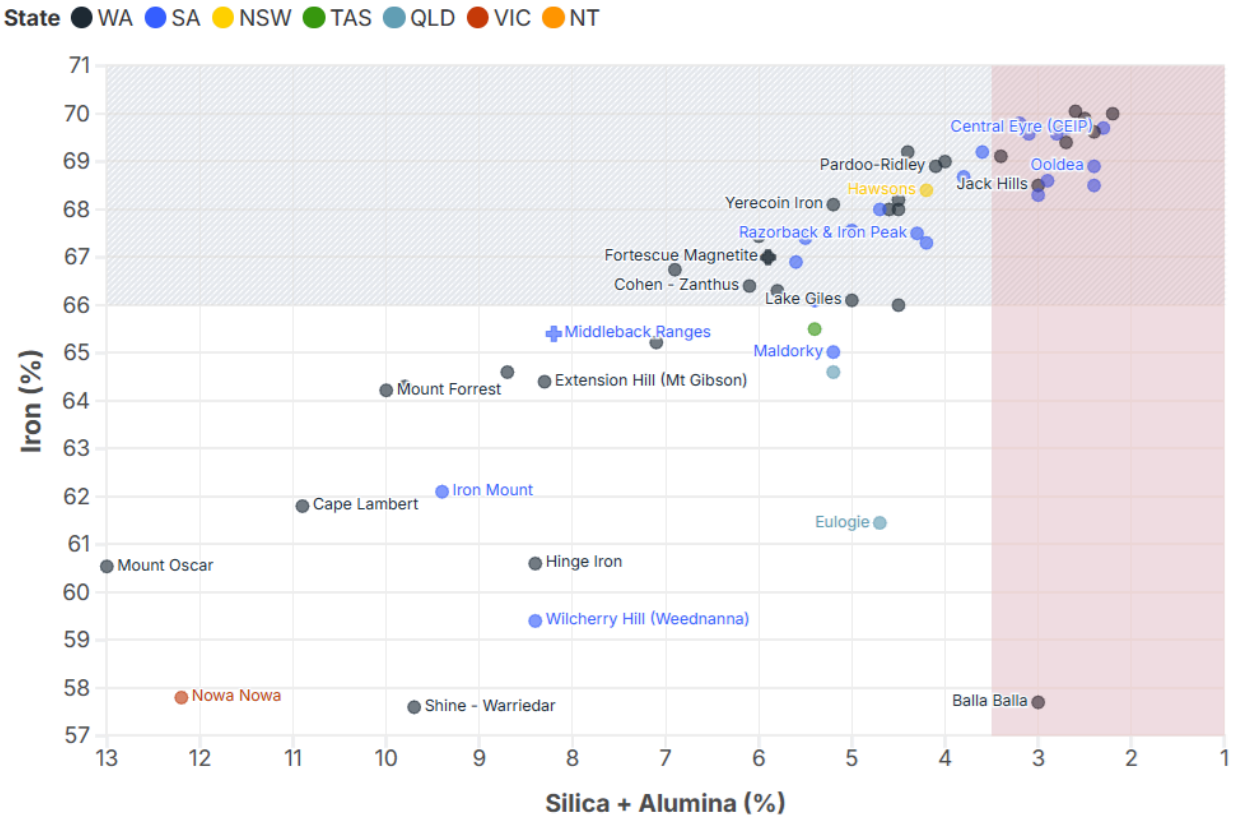
Iron ore quality

Australia holds significant potential in magnetite mining, which is key to producing high-grade ore. In July 2025, Amira delivered a study for the South Australian government assessing the competitiveness of the state's magnetite deposits compared with similar projects globally. The results indicate South Australia has the potential to be competitive on a global scale. However, most Australian magnetite deposits have lower iron content and higher impurity levels, requiring additional processing. The amenability to upgrading varies from one deposit to another. In many cases more

[142] IEEFA. Australian Green Iron Tracker.

complex processing circuits, including flotation, are required to improve product quality and produce DR-grade iron ore.[143]

Figure 8: Australian magnetite deposits with potential for high-grade ore concentrates – Iron content vs impurities (silica + alumina)



Source: IEEFA.[144]
Note: Acceptable DR-grade limits = >66% Fe; <3.5% silica + alumina.

It should be noted that some iron ore mineralisations exhibit limited responsiveness to beneficiation. Efforts to reduce deleterious elements to acceptable thresholds can lead to substantial iron losses, reduced recovery rates, and increased unit production costs.[145]

Ore processing varies depending on the characteristics of the iron ore. Each ore requires a specific and often unique processing circuit, as the degree of liberation needed to separate iron minerals from gangue differs by deposit. Ores that achieve sufficient liberation at coarser sizes allow for simpler processing flowsheets, reduced grinding requirements, and lower operating costs. For example, the Bloom Lake hematite deposit in Canada can produce iron ore at a relatively coarse

[143] SARIG. South Australian magnetite global comparison study. 22 July 2025.
[144] IEEFA. Australian Green Iron Tracker.
[145] RMI. Green Iron Corridors: Transforming Steel Supply Chains for a Sustainable Future. September 2024.

grind size of approximately 425 micrometres, resulting in lower grinding intensity and reduced energy consumption. The operation is able to achieve a total iron content of 66.2% without the need for flotation.[146]

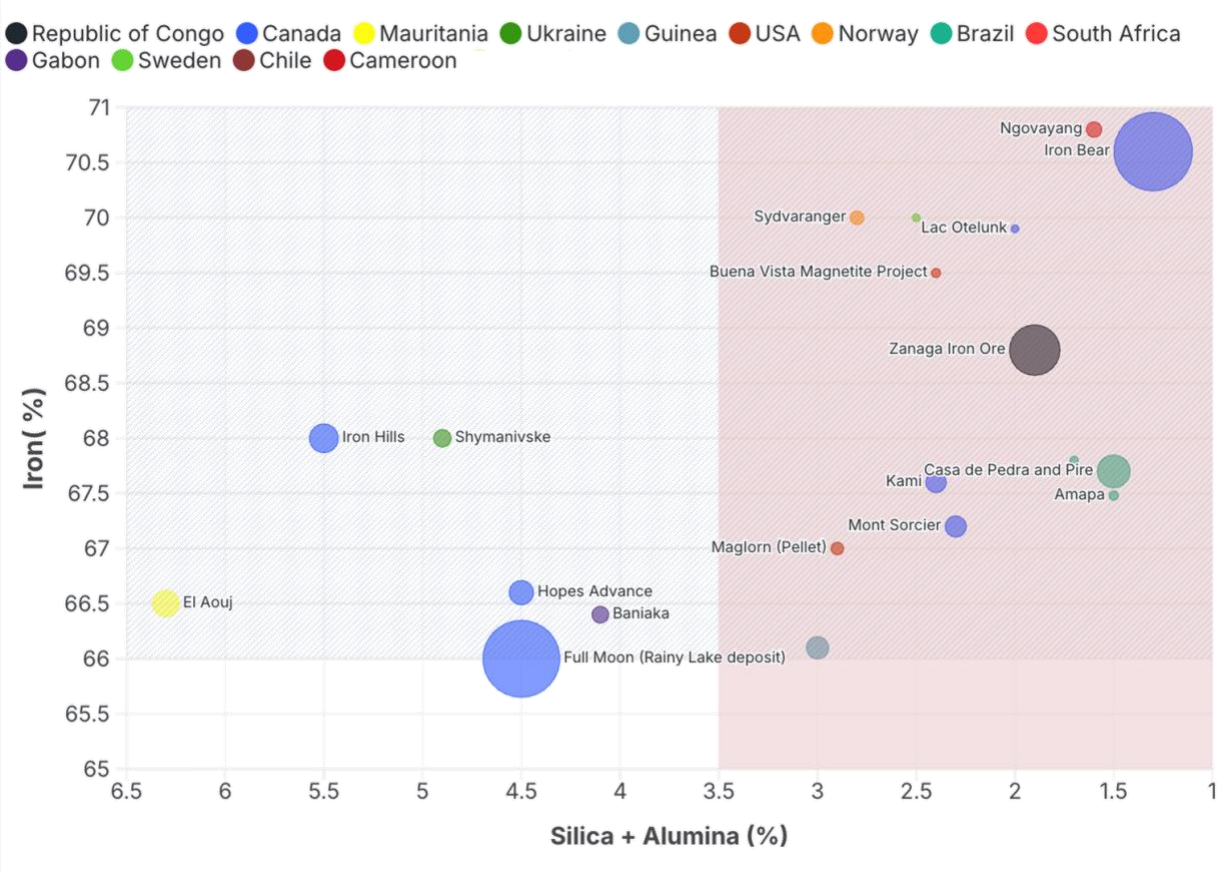
One solution for some mid-grade ores is to add additional processing stages to existing facilities (primarily flotation-based), enabling them to upgrade the quality of iron ore concentrates that are currently within the BF-grade range. In 2024, total pellet production reached nearly 600Mt, of which only about a quarter was DR-grade, with the remainder used in blast furnaces.[147] While not all iron ores respond equally to these technologies, many plants are retrofitting their operations to convert BF-grade ores into material suitable for DR-grade production. Notable examples include Champion Iron's DRPF, which has upgraded half of its capacity to DR-grade, and ArcelorMittal Canada, as well as other BF-grade pellet producers, including certain Ukrainian and Russian operations (see the *Future suppliers of seaborne DR-grade materials* section).

IEEFA has also examined the available technologies designed to enable the use of mid-grade iron ore in the DR process when coupled with electric smelters.[148] These technologies, which focus on removing impurities from molten iron after ore reduction, are primarily developed for BF-grade iron ore and follow two main pathways: those based on agglomerated iron ore, such as conventional shaft furnaces; and those that process fines. Both pathways have projects in the pipeline and are progressing. However, there are two key concerns. First is the timeline required to fully develop and deploy these technologies. Second, most pathways still rely on agglomerated products such as pellets rather than fine iron ore, meaning the production of mid-grade iron ore remains essential.

In summary, while not all of Australia's magnetite iron ore deposits meet DR-grade specifications, some do, and others require more detailed studies to determine how processing can make them suitable for DRI production. Even at the global level, only a limited number of deposits can meet DR-grade specifications after processing. By focusing on high-potential mines, Australia will be well positioned to supply DR-grade material to the market. Figure 9 shows global iron ore producers trying to develop a new feedstock to the DR-grade iron ore market.

[146] SARIG. South Australian magnetite global comparison study. 22 July 2025.
[147] Midrex. Iron Ore for Direct Reduction: The Challenge Updated. December 2025. Reported from IIMA trade statistics.
[148] IEEFA. Australia's path to green iron. 25 September 2025.

Figure 9: Selected deposits with potential for high-grade ore concentrates – Iron content vs impurities (silica + alumina)



Source: IEEFA.[149]
Note: Acceptable DR-grade limits = >66% Fe; <3.5% silica + alumina.

Time to market

Most Australian iron ore projects aimed at producing high-grade ore are greenfield developments, positioning the country to compete directly with other new market entrants. In contrast, several competing regions benefit from lower-risk, quicker-to-market options, such as brownfield expansions, plant revamps, and product quality upgrades.

Typical development timelines are as follows:

- Greenfield projects: 15–20+ years
- Brownfield expansions: 5–10 years
- Quality upgrades: < 5 years

[149] IEEFA. Australian Green Iron Tracker.

Developing a new mine requires many years of exploration, technical studies, and approvals before reaching the construction and operational phases. Recent studies estimate that, on average, it takes approximately 15.5 years from discovery to production for major minerals such as gold and copper. Australia sits close to the global average, with an estimated development timeline of 14 years.[150]

At the global level, project development timelines are broadly comparable, suggesting that a strategic window of opportunity remains open for Australian iron ore miners, provided it acts decisively.

Other than new greenfield projects, producers of magnetite concentrate in Australia have the opportunity to consider quality upgrade options where possible. Australia produces magnetite concentrate primarily within BF-grade specifications. While testwork, such as Liberty's trials at the Middleback Ranges, has explored potential quality upgrades, no existing producer has announced concrete development plans to pursue this improvement at scale.[151]

Fortunately, Australia has several iron ore projects that have already completed a significant portion of the exploration and resource definition stages, which could shorten the pathway to development.

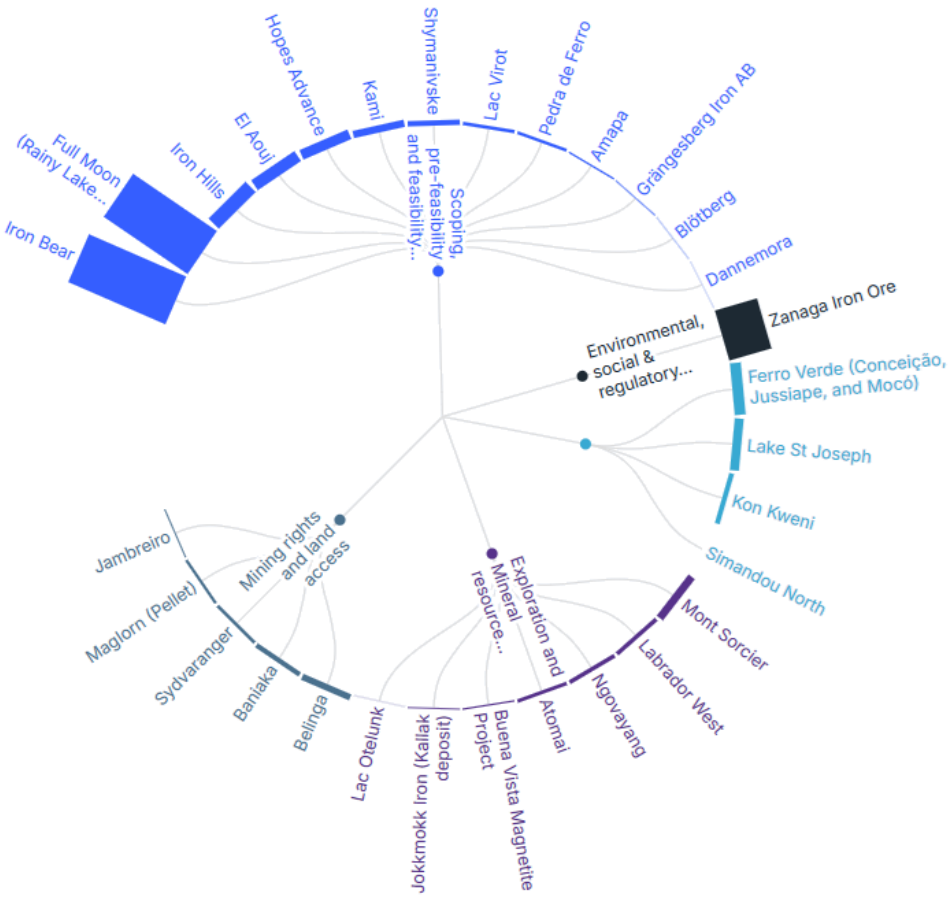
Out of 75 magnetite iron ore deposits, only six projects have been granted mining leases, 18 are in the approvals process, and the remainder are at mineral resource definition or feasibility study stages. Among the more advanced projects globally, Australia has a few – including Hawsons Iron, Magnetite Mines' Razorback, and Central Eyre Iron Project (CEIP) – which could supply iron ore by the 2030s if all approvals are finalised and construction proceeds.[152]

In February 2026, the Razorback project was awarded Major Project Status by the Australian government, which is expected to help accelerate the approvals process and support the commencement of production.[153]

Figure 10 highlights the most advanced projects globally and their latest development progress. Few of these new projects have reached FID, but Australia's flagship projects have the potential to compete effectively and deliver iron ore to the market by the early 2030s.

[150] S&P Global. From 6 years to 18 years: The increasing trend of mine lead times. 11 April 2025.
[151] Liberty. LIBERTY Successfully Completes Magnetite Testing for Hydrogen DRI-EAF Production in Whyalla. 15 May 2024.
[152] IEEFA. Australian Green Iron Tracker. Accessed on 10 February 2026.
[153] Magnetite Mines. Razorback Project awarded major project status by Australian government. 17 February 2026.

Figure 10: Development stage of pellet feed projects



Source: IEEFA.[154]

[154] IEEFA. Australian Green Iron Tracker.

Australia at a crossroads in next phase of ironmaking

Based on the maturity of various technologies in the pipeline, and considering that moving to a green economy is imperative, becoming a green iron superpower is unlikely without producing high-grade iron ore for DRI production. Even if Australia chooses not to export high-grade iron ore at scale, supplying suitable material for low-emissions ironmaking domestically will still require the production of high-grade ores in the short-to-medium term.

Some analysts believe Australia's low-cost strategy will remain sustainable for many years, given that Pilbara iron ore maintains one of the lowest cost profiles globally and is unlikely to be significantly affected by new entrants such as Simandou.[155] Nonetheless, the high-grade iron ore market represents a distinct emerging opportunity that should not be overlooked.

BloombergNEF estimates that total DR-grade production capacity will reach 210MTPA by 2030 and 252MTPA by 2040. However, Australia's projected share of this capacity is only 1.5MTPA (less than 1% of total DR-grade pellet capacity), just 1.4% of the projected growth between 2024 and 2040. With such a limited share, Australia is unlikely to play a significant role in this market, including in supporting domestic green iron production.[156]

China is moving toward low-emission iron production, largely based on DRI technology, and its capacity could expand at an unprecedented pace that could change the seaborne DR-grade pellet trading flows. Therefore it is important for Australia to be prepared to support the next generation of low-emissions initiatives among its traditional trading partners in Asia.[157]

Despite the associated challenges, Australia must remain actively engaged in this segment. Without participating in the supply of higher-grade materials, the country risks losing strategic relevance in a market increasingly shaped by decarbonisation and demand for premium iron ore products.

Australia has missed the first wave of the transition to green iron and steel.[158] However, the door remains open for countries willing to position themselves for the long term. Demand is expected to remain strong, and importantly, there is a projected shortage of high-grade iron ore materials.[159]

Australian magnetite producers, in particular, have the potential to supply high-grade feedstock. With most forecasts pointing to supply deficits emerging after 2030, taking swift action now to secure future supply and meet anticipated demand should be a matter of priority.

[155] S&P Global. Iron ore industry challenges Simandou's 'Pilbara killer' status. 5 January 2026.
[156] BloombergNEF. Direct Reduction Grade Iron Ore: A Green Steel Bottleneck. 18 April 2024. [Subscription required].
[157] IEEFA. Momentum shifts east in green steel transition. 20 February 2026
[158] IEEFA. Australia's path to green iron. 25 September 2025.
[159] IEEFA. Any takers for Australia's green iron? 12 March 2026.

Establishing new production capacity involves long development timelines, and decisive action is required if Australia is to secure and sustain its position in the evolving high-grade iron ore market.[160]

While revamp and expansion projects are easier and cheaper in most cases, greenfield mining projects, regardless of location, typically involve long lead times and require multi-billion-dollar investments. Australia has the potential to compete in the greenfield projects.

With stronger support from governments, investors, and iron and steel producers, the ambitious objective of supplying high-grade materials for low-emissions ironmaking, both domestically and internationally, remains achievable for Australia.

[160] S&P Global. Australia faces tight timeline for green iron investments. 8 April 2025.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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