

JFE AGM 2025 INFORMATION PACK

June 2025

As highlighted in our previous [analysis of JFE's Sustainability Report](#), visible progress in the company's decarbonisation efforts remains limited.¹ As the upcoming AGM approaches, this briefing aims to provide investors with high-level engagement points, summarised here and elaborated on below to support informed engagement.

HIGH-LEVEL ENGAGEMENT POINTS:

- ◆ The carbon recycling approach that JFE is prioritising remains technologically unproven at scale and may delay the transition to more established low-emission pathways.
- ◆ Despite some encouraging steps related to HBI imports, JFE's overseas competitors have demonstrated more momentum towards commercial-scale deployment of H₂-DRI and green HBI imports.
- ◆ Shifting towards large-scale EAF production positions the company well for future green steel demand, and continued investment is welcome in order to fully capitalise on available policy incentives and meet decarbonisation targets.
- ◆ Recent investment in coking coal in Australia appears to conflict with its decarbonisation ambitions and raises questions about the coherence of its long-term strategy.

¹ <https://transitionasia.org/2024-sustainability-report-updates-jfe-holdings/>

PROGRESS ON DECARBONISATION SINCE THE LAST AGM

PROGRESS AND CHALLENGES IN DECARBONISATION TECHNOLOGY

JFE Steel has achieved its target of reducing CO₂ emissions by 18% equivalent to 11 million tonnes from FY2013 levels by the end of FY2024.² Building on this, the newly announced 8th Medium-Term Business Plan disclosed in May 2025, has seen the company set a new target aiming for a 24% reduction by FY2027 through capital investments such as the installation of a new electric arc furnace (EAF) for stainless-steel manufacturing in Chiba and the renewal of coke ovens in Fukuyama.³ However, note, the driving force of its decarbonisation was production cuts which brought 8 million tonne emission reduction, while the volume of reduced emissions brought by decarbonisation programmes was only 3 million tonnes according to the latest disclosure.⁴ It further aims to achieve a 30% reduction by FY2030, including through the planned conversion to EAF in Kurashiki and ultimately to reach carbon neutrality by FY2050 using the following three core technologies:⁵

1. Carbon Recycling

Within its blast furnace-basic oxygen furnace (BF-BOF) production route, JFE aims to recycle CO₂ emissions into methane, which can be reused as a reducing agent—ultimately lowering coke consumption. Although few technological updates were publicly available, the company targets a 30% emissions reduction through this process, with a further 20% cut via carbon capture and storage (CCS).⁶ A 150m³ pilot furnace commenced operations in May 2025, with demonstration trials planned through to FY2026.⁴ A demonstration trial using a mid-scale test furnace of approximately 700 m³ is anticipated around 2030, followed by full commercial deployment around 2040. As illustrated in the company's latest disclosures in May 2025, this pathway is still stagnant and at a very initial stage.⁴

2. Direct Reduced Iron (DRI)

JFE is developing a hydrogen-based DRI (H₂-DRI) process that utilises low-grade iron ore, which is generally unsuitable for direct reduction.⁴ In December 2024, JFE launched trials using a small pilot shaft furnace (15 kg/h) and successfully achieved continuous production of DRI with 100% hydrogen and low-grade pellets.^{4,7} Unlike Nippon Steel's pure hydrogen-based approach, JFE's process uses methane derived from CO₂ emitted during shaft furnace operations, alongside externally sourced hydrogen.

In addition, JFE has signed an MoU to import low-carbon hot briquetted iron (HBI) from the UAE, with the project expected to launch in the second half of FY2025.⁸ The HBI will be used at the new electric arc furnace set to begin operations in the Q1 of FY2028 (April-June 2028) at Kurashiki, as well as at Chiba No. 6 blast furnace.⁴ Since Japan's lack of natural resources and high renewable energy costs mean that the production of green iron will be most efficient located overseas, JFE's plan to import HBI produced using natural gas is a step in the right direction. If, in the future, natural gas is replaced with green hydrogen in the production process, it could enable the manufacture of higher-quality, lower-carbon steel. However, in

² <https://www.jfe-holdings.co.jp/uploads/2024-chuukie.pdf>

³ https://www.jfe-holdings.co.jp/en/common/pdf/sustainability/data/2024/sustainability2024e_A3.pdf

⁴ <https://www.jfe-holdings.co.jp/common/pdf/investor/climate/environmental-management-strategy250529-01.pdf>

⁵ https://www.jfe-holdings.co.jp/common/pdf/sustainability/data/2024/sustainability_2024_j-A3.pdf

⁶ <https://www.jfe-holdings.co.jp/en/common/pdf/investor/climate/2021-210525-release01.pdf>

⁷ <https://www.greins.jp/en/technology/technology04/>

⁸ The project is set to commence with gas-based HBI, with the potential to transition to a hydrogen-based version in the future.
<https://www.itochu.co.jp/en/news/press/2022/220901.html>

contrast to some international steelmakers already operating commercial-scale H₂-DRI plants or planning to import green hydrogen-based HBI from low-cost regions, JFE will likely need to secure green HBI imports at an earlier stage to remain competitive.^{9 10 11 12} The use of HBI in blast furnaces also forms part of a government-backed initiative, under which JFE has secured a subsidy of approximately JPY 1.6 billion (around USD 11 million) as an energy-saving measure.⁵ ¹³ The company is considering expanding HBI use to other blast furnace sites and estimates that this could lead to annual CO₂ emissions reductions of around 2 million tonnes. However, as this approach does not reduce reliance on blast furnaces, it could be seen as inconsistent with the global shift away from blast furnace-based steelmaking towards EAFs.

3. EAF

It is a welcome signal that JFE has decided to convert its BF-BOF at Kurashiki to an EAF with annual production capacity of 2 million tonnes and operations due to begin in Q1 FY2028. This will bring 2.6 million tonnes of emission reductions annually, according to the company. DRI produced in the UAE, which reaches 2.5 million tonnes per year, will be supplied to the new EAF in Kurashiki under a longer-term off-take contract, as well as to other steel business operators. Using imported HBI from the UAE, the company aims to become the world's first to establish a mass production system for high-grade, high-performance steel products—such as electrical steel and high-tensile steel—that could not previously be manufactured using conventional large-scale EAFs. In October 2024, the company applied for government funding under the GX Promotion Act's "Energy and Manufacturing Process Transformation Support Business (Business I (Steel))" and was selected for the programme.^{14 15} As a result, the government will provide funding of up to JPY 104.5 billion (around USD 690 million) towards the EAF-related capital investment, which totals JPY 329.4 billion (around USD 2.2 billion). Moreover, while formal completion has not yet been confirmed, JFE's investment to expand EAF capacity at its Sendai site is expected to conclude by the end of March 2025, enabling a projected annual reduction of around 100,000 tonnes of CO₂. The company has also decided to introduce EAFs for stainless steel production at its Chiba plant, which is expected to cut CO₂ emissions by up to 450,000 tonnes per year.

In response to declining steel demand both in Japan and overseas, JFE announced that it would temporarily suspend operations at Kurashiki Blast Furnace No.3 from May 2025 through FY2027 or FY2028, and permanently shut down Fukuyama Blast Furnace No.4 in FY2027, effectively reducing its future production capacity.^{2 16}

⁹ <https://stegra.com/news-and-stories/h2-green-steel-has-pre-sold-over-15-million-tonnes-of-green-steel-to-customers>

¹⁰ <https://www.bbc.com.cn/EN/NewsEN/CNewsEN/3099.html>

¹¹ <https://www.prnewswire.com/apac/news-releases/posco-holdings-takes-first-step-in-developing-40-000-tons-of-green-hydrogen-production-in-western-australia-301959009.html>

¹² https://sustainability.posco.co.kr/S91/S91F10/eng/UI-PK_W009.do

¹³ https://sii.or.jp/koujou05r/uploads/r5h_kj_koufuketteiaken_2.pdf

¹⁴ <https://www.jfe-steel.co.jp/release/2024/12/24/220-4.html>

¹⁵ <https://www.jfe-steel.co.jp/en/release/2025/04/250410.html>

¹⁶ <https://www.jfe-steel.co.jp/release/2025/04/250402.html>

INVESTMENT IN METALLURGICAL COAL- POTENTIALLY CONTRADICTORY TO DECARBONISATION

In August 2024, JFE announced an investment in the Blackwater coal mine in Australia, aiming to secure a stable supply of high-quality metallurgical coal, and also indicated in its 8th Medium-Term Business Plan that it will continue to consider acquiring raw material interests.^{2 17} The company explained that coal from this site contains fewer impurities and emits less CO₂ during steel production, in addition to that global demand for coke was expected to rise. This suggests that JFE anticipates continued BF-BOF operations over the long term. Although this type of coal is said to be essential for carbon recycling, commercialisation of the technology remains distant.¹⁸ Without timely implementation, JFE risks falling short of its climate targets. Our analysis indicates that this investment carries a notably high carbon footprint: annual emissions per dollar invested exceed JFE's FY2023 portfolio emissions intensity by over 1.6 times.¹ This highlights the lack of strategic clarity in the company's overall decarbonisation plan and even it may be contradictory to their own targets.

JFE'S DECARBONISATION STRATEGY: GAPS IN TRANSPARENCY AND EFFECTIVENESS

An assessment of JFE's decarbonisation efforts shows that while the company has disclosed some emission targets and policy engagement activities, details regarding the total amount of investment and its timelines in key technologies and how the company intends to ensure the meeting of its GHG targets remain unclear. Greater transparency and accountability are needed.

TARGET SETTING AND INVESTMENT DISCLOSURE (SCOPE 1-3)

JFE Steel has published targets for Scope 1 and 2 emissions, as outlined above.² While some Scope 3 categories have been disclosed, no specific reduction targets have been set. The company has yet to present a clear emissions reduction target for the group as a whole, including its subsidiaries and affiliates.² Moreover, JFE plans to establish a technological outlook for the three core decarbonisation technologies—carbon recycling, H₂-DRI, and EAF— by around 2035. While the company has provided an indicative timeline for converting the remaining blast furnaces at each site, it has not released detailed estimates of the investment costs per unit.⁵ The number of units to be deployed for each technology remains undecided, as this will depend on factors such as the price, reliability, and infrastructure of hydrogen and electricity, as well as future demand for green steel.

REMUNERATION LINKED TO GHG REDUCTION

Executive remuneration at JFE has been linked to the company's climate change indicators.¹⁹ At JFE Steel, these currently include the degree of "achievement of the CO₂ reduction target" (75%) and "achievement of target on the market launch or use of environmentally sound products

17 <https://www.jfe-steel.co.jp/en/release/2025/03/250331.html>

18 <https://www.jfe-steel.co.jp/en/release/2024/08/240822.html>

19 <https://www.jfe-holdings.co.jp/en/release/2023/0329/000274/>

and technologies” (25%).²⁰ At the JFE Holdings level, the degree of achievement at JFE Steel accounts for 70% of the overall assessment. However, as JFE Steel accounts for over 90% of the group’s total CO₂ emissions, the impact of the steel business on climate change is not adequately reflected in JFE Holdings’ indicators.²¹ To ensure this linkage drives meaningful progress towards decarbonisation, it is important that KPIs become more ambitious.

CLIMATE POLICY ENGAGEMENT

JFE has disclosed involvement in government advisory councils focused on GX (Green Transformation) and energy policy, along with the outcomes of these engagements.² The company has also revealed its collaboration with JISF and World Steel Association to promote market creation for “green” steel, including efforts to establish international standards and rules for mass balance approaches through ISO, the GHG Protocol, etc.²² Although the disclosure of some details is a welcome step, the company has not provided any information relating to renewable energy for the Japanese industry, which is integral to the decarbonisation of the steel sector.

KEY ACTIONS REQUIRED FOR FUTURE DECARBONISATION

FURTHER DECARBONISATION OF THE STEEL/IRONMAKING PROCESS

JFE has announced plans to transition from its current configuration of seven BF’s to a system of five BF’s and one EAF by FY2028. Emissions from BF’s have a significant impact on the company’s overall emissions, and further expansion of EAF use is expected to play a key role in ensuring that its decarbonisation targets are met.

In addition, with regard to the import of HBI, giving priority to the use of HBI produced using green hydrogen at the earliest possible stage would not only help reduce emissions but also facilitate the production of high-quality, low-carbon steel.

PROACTIVE PROCUREMENT OF RENEWABLE ENERGY

While JFE has recognised the need for affordable and reliable supplies of decarbonised electricity and hydrogen in policy discussions, it has yet to present a concrete strategy for procuring renewable energy (RE) and has instead focused its efforts towards nuclear energy.

Our analysis shows that the carbon intensity of EAF steel using grid electricity is approximately 0.33 tCO₂ per tonne, but this figure falls to 0.1–0.05 tCO₂ per tonne when powered by 100% RE.²³ To unlock the full decarbonisation potential of EAFs, JFE must proactively secure RE, such as through Power Purchase Agreements (PPAs). Importantly, JFE is already engaged in the offshore wind supply chain—including steel supply and operations and maintenance services—which represents a strategic advantage that could be leveraged to reduce its own emissions footprint.²

PRODUCTION AND SALES OF INTERNATIONALLY RECOGNISED GREEN STEEL

JFE currently markets a low-carbon steel product under the brand name “JGreeX”, using a mass

²⁰ <https://www.jfe-holdings.co.jp/en/sustainability/governance/governance/#reward>

²¹ https://www.jfe-holdings.co.jp/en/common/pdf/sustainability/data/2024/2024_07_01.pdf

²² <https://www.jfe-holdings.co.jp/uploads/2024-setumei250508-01e.pdf>

²³ <https://transitionasia.org/japanese-eaf-steel/>

balance approach to allocate emission reductions achieved through increased scrap use.²⁴ While the mass balance method is recognised domestically under Japan's GX framework, it has faced international criticism for potential greenwashing and is not accepted under the EU's Carbon Border Adjustment Mechanism (CBAM), as acknowledged even in Japanese government discussions.²⁵ As scrap becomes an increasingly important feedstock for EAF production, diverting it for use in the BF-BOF route could ultimately constrain the full decarbonisation potential of EAFs. It is therefore essential that JFE promotes the production and global distribution of internationally recognised green steel—using scrap, DRI, and HBI via EAF processes—instead of remaining relied on the carbon-intensive BF-BOF pathway which is at risk of being stranded assets and on accounting approaches that lack international credibility.

²⁴ <https://www.jfe-steel.co.jp/en/products/jgreex/index.html>

²⁵ https://www.meti.go.jp/shingikai/energy_environment/gx_carbon_footprint/pdf/001_04_00.pdf

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