TransitionAsia
ACCELERATING ASIAN CORPORATE CLIMATE ACTION

NIPPON STEEL AGM 2025 INFORMATION PACK

June 2025

At last year's Annual General Meeting (AGM), three climate-related shareholder proposals were submitted, including a climate lobbying resolution that received the highest level of support ever recorded for such an initiative in Japan. Despite this strong signal from investors, to date, there has been no meaningful progress in the company's decarbonisation efforts.[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:

- **Hydrogen injection into BFs, used in COURSE50 technology, is a risky and unproven method that is likely to have high cost implications and limited emission reduction impact, yet it remains a core element of the company's strategy.**
- **Nippon Steel's competitors have demonstrated momentum towards commercial-scale deployment of HBI imports, raising questions on the company's long-term capital expenditure plans and future market competitiveness.**
- **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.**
- **Continued investment in overseas BFs risks undermining global decarbonisation efforts and raises concerns on the alignment of the company's international operations with its climate targets, in addition to prolonging its inability to compete on low-carbon steel.**

1 https://transitionasia.org/2024-integrated-report-updates-nippon-steel/

PROGRESS ON DECARBONISATION SINCE THE LAST AGM

PROGRESS AND CHALLENGES IN DECARBONISATION TECHNOLOGY

Nippon Steel aims to reduce emissions by 30% from FY2013 levels by FY2030 and achieve carbon neutrality by FY2050. To meet these targets, the company is focusing on three key technologies.[2]

1. COURSE50

In the blast furnace-basic oxygen furnace (BF-BOF) process, hydrogen injection using hydrogen-rich coke oven gas is expected to reduce emissions by 10%, while carbon capture and storage (CCS) will contribute a further 20% reduction. Following technological development and research using small-scale test furnaces since 2008, full-scale demonstration will begin in Kimitsu in 2026, with commercial implementation expected around 2030, in line with initial plans. Additionally, SuperCOURSE50, which utilises externally sourced heated hydrogen to increase the reduction rate beyond 30%, is planned to be fully deployed by around 2040. However, in Transition Asia's analysis (upcoming), this method requires a greater volume of hydrogen than hydrogen-based direct reduced iron (H_2-DRI), making it more sensitive to hydrogen cost fluctuations. There are also technical concerns that remain unresolved.[3] [4] Conventional furnaces were not designed with hydrogen in mind, and the refractory brick linings are susceptible to hydrogen embrittlement—a phenomenon whereby hydrogen atoms infiltrate and accumulate in the material, diminishing its mechanical strength, shortening its lifespan, and increasing the risk of structural failure. While Nippon Steel has achieved a co-firing ratio of 43% in a 12 m^3 test furnace, this is a far cry from the scale of commercial blast furnaces, which can exceed 4000 m^3. In addition, hydrogen's endothermic properties mean it contributes relatively little thermal energy to the process. Higher hydrogen ratios increase overall energy demand and may actually require more coke to maintain the necessary temperatures. The gas's high permeability also complicates process control and undermines thermal efficiency. Crucially, hydrogen co-firing alone cannot deliver near-zero emissions, and any remaining emissions may become an increasing economic liability as carbon pricing becomes more stringent.

2. H_2-DRI

Development is underway for hydrogen-based direct reduced iron (H_2-DRI) using low-grade iron ore, which has traditionally been considered unsuitable for direct reduction. A small test reduction furnace (1t/h) is set to be installed in 2025 to commence trials. Nippon Steel aims to establish full-scale industrial implementation of H_2-DRI around 2040. However, progress appears to be lagging behind other countries. In comparison, some foreign companies have already made advancements in commercial-scale plants or are pursuing the import of hot briquetted iron (HBI) from other countries where green hydrogen can be procured at lower costs.[5] [6] Notably, POSCO plans to procure HBI from Australia and aims to commercialise its use by 2028.[7] [8] Furthermore, JFE and Kobe Steel are either planning to source or have already begun

2 https://www.nipponsteel.com/en/ir/library/pdf/20250313_100.pdf
3 https://www.ramboll.com/en-us/insights/decarbonise-for-net-zero/exploring-hydrogen-s-potential-to-decarbonise-steel-from-blast-furnaces
4 https://link.springer.com/article/10.1007/s11663-023-02822-4#Sec14
5 https://stegra.com/news-and-stories/h2-green-steel-has-pre-sold-over-15-million-tonnes-of-green-steel-to-customers
6 https://www.bbac.com.cn/EN/NewsEN/CNewsEN/3099.html
7 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
8 https://sustainability.posco.co.kr/S91/S91F10/eng/UI-PK_W009.do

procuring HBI from the Middle East, albeit using an natural gas-based approach.[9] [10] Given these developments, Nippon Steel is falling behind its domestic competitors in this area.

3. EAF

A small (10t) test electric arc furnace (EAF) was installed in 2024, and trial operations are already underway. Looking ahead to 2030, the company has stated that transitioning from BF-BOF to EAF will be a key strategic option; however, it has yet to move past the planning stage it has remained in for numerous years. As part of this shift, it plans to expand EAF capacity at Hirohata, convert operations from BF-BOF to EAF at Yawata, and restart an EAF at Shunan, all in FY2028 or FY2029.[11] 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.[12] As a result, the government will provide funding of up to JPY 251.4 billion (around USD 1.7 billion) towards the EAF-related capital investment, which totals JPY 868.7 billion (around USD 6.0 billion).[13] JFE will convert one of its seven blast furnaces to an EAF, whereas Nippon Steel plans to convert only one out of ten blast furnaces, highlighting the need for further progress on its part.

Under the Strategic Field Domestic Production Promotion Tax System, which provides a ten-year tax credit for green steel producers, companies that transition from BF-BOF to EAF to produce steel of comparable quality to BF-BOF steel are also eligible.[14] Given that JFE's EAF, set to commence operations in FY2028, could qualify under this scheme, Nippon Steel should seek to accelerate its transition to EAFs by making use of this incentive.

RAW MATERIALS INVESTMENT THAT COULD COMPLICATE THE ACHIEVEMENT OF DECARBONISATION TARGETS

In August 2024, Nippon Steel announced an investment in Blackwater coal mine in Australia to secure a stable supply of coking coal.[15] Later, in December 2024, it announced an investment in the Kami iron ore project in Canada to secure high-grade iron ore.[16] The latter is considered suitable for direct reduced iron (DRI) production, which could support the transition away from the BF-BOF method. However, the investment in the Blackwater coal mine is reportedly intended to reduce costs and produce high-quality coke, suggesting that the company plans to continue BF-BOF-based steel production for the long term. Furthermore, our analysis indicates that, as of the end of FY2023, the annual carbon intensity per USD 1 invested in this coal project is more than double that of the company's equity investments.[1]

Investment in coking coal fundamentally contradicts investment in low-carbon solutions, raising concerns about how Nippon Steel intends to advance its decarbonisation strategy.

9 https://www.kobelco.co.jp/english/releases/1211747_15581.html
10 https://www.itochu.co.jp/en/news/press/2022/220901.html
11 https://www.nipponsteel.com/en/ir/library/pdf/20250509_300.pdf
12 https://www.nipponsteel.com/en/news/20241011_100.html
13 https://www.nipponsteel.com/common/secure/en/news/20250530_200.pdf
14 https://www.meti.go.jp/policy/economy/kyosoryoku_kyoka/250090.pdf
15 https://www.nipponsteel.com/en/news/20240822_100.html
16 https://www.nipponsteel.com/en/news/20241219_100.html

INVESTMENT IN BLAST FURNACES IN OVERSEAS OPERATIONS

In March 2025, ArcelorMittal Nippon Steel India Private Limited (AM/NS India) announced its decision to acquire land in Andhra Pradesh, southern India, for the construction of an integrated steel plant with an annual crude steel production capacity of 7 million tonnes.[17] This is in addition to the Hazira steel mill, where blast furnace capacity is currently being expanded from approximately 9 million tonnes to 15 million tonnes per annum.[18] In August 2024, in connection with its proposed acquisition of U.S. Steel, the company committed to relining a BF.[19] Additionally, it was reported that the company had increased its total planned investment to $14 billion—including a $4 billion investment in a new steel plant.[20]

While the number of BFs in Japan is on the decline, contributing to emissions reductions, the same trend is not evident in the company's overseas operations. This not only runs counter to the global shift from BFs to EAFs, but may also make it more difficult to achieve emissions reduction targets for its international business.

FOLLOW-UP ON SHAREHOLDER PROPOSALS FROM LAST YEAR'S AGM

At the 2024 Annual General Meeting, three shareholder proposals were submitted to Nippon Steel, urging a review of its decarbonisation strategy to protect long-term shareholder value. Although all three proposals were rejected, they each received between 21% and 27.5% support.[21] While Nippon Steel has taken some steps in response, progress on certain aspects remains unclear.

Proposal on GHG Targets and Decarbonisation Investment (Last year's Proposal 1):

This proposal requested the establishment and disclosure of short- and medium-term greenhouse gas (GHG) emissions reduction targets for Scope 1, 2, and 3, in line with the Paris Agreement, as well as the disclosure of capital investment plans for decarbonisation. In response, Nippon Steel has set emissions reduction targets for 2030, 2040, or 2050 on a consolidated basis across its group companies for Scope 1 and 2.[2] [22] Regarding Scope 3, the company is considering disclosing primary data for the most significant emission categories—Category 1 and 4—and is also reviewing potential reduction targets. Additionally, it has outlined rough cost estimates and investment timelines for three key decarbonisation technologies. However, no concrete action has been taken or publicly announced regarding further details.

Proposal to Link Executive Remuneration with GHG Reduction Targets (Last year's Proposal 2):

Despite receiving the second-highest level of support (22.5%), no tangible progress has been made or announced to date.

17 https://www.nipponsteel.com/en/news/20250328_100.html
18 https://www.nipponsteel.com/en/news/20220928_200.html
19 https://www.nipponsteel.com/en/news/20240829_100.html
20 https://www.reuters.com/business/nippon-steel-invest-14-billion-us-steel-including-4-billion-new-mill-document-2025-05-19/
21 https://corporateactionjapan.org/news/notice/ja-nsc-agm2024-voting-results/
22 The CO_2 reduction targets for each company within the Nippon Steel Group are as follows:
- Nippon Steel & Domestic Subsidiaries: A 30% reduction by 2030 (compared to 2013 levels), with the goal of achieving carbon neutrality by 2050.
- OVAKO: An 80% reduction by 2030 (compared to 2015 levels) and a 90% reduction by 2040.
- SSMI: A 40% reduction by 2030 (compared to 2016 levels), aiming for carbon neutrality by 2050.
- AM/NS INDIA: A 20% reduction in unit consumption by 2030 (compared to 2021 levels).
- USIMINAS: A 15% reduction in unit consumption by 2030 (compared to 2019 levels).

Proposal for Greater Transparency in Climate-Related Lobbying (Last year's Proposal 3):

In response, Nippon Steel has disclosed details of its engagement with government councils on GX (Green Transformation) and energy policies, as well as how these efforts have influenced policy decisions.[2] The company has also revealed that it is actively working to gain recognition for its low-carbon steel, produced using the mass balance approach, under frameworks such as ISO and the GHG Protocol or is in the process of preparing for such efforts.

KEY ACTIONS REQUIRED FOR FUTURE DECARBONISATION

FURTHER REDUCTION OF SCOPE 1 EMISSIONS

The company currently operates ten BFs—more than any other domestic steelmaker—making a significant contribution to its Scope 1 emissions. Transitioning to EAFs and thereby reducing the number of BFs would help make its decarbonisation targets more achievable. In addition, using HBI produced with green hydrogen in EAFs could enable the earlier-than-planned production of high-quality steel via DRI. Moreover, the continued operation and expansion of BFs in the company's overseas businesses currently hinders group-wide decarbonisation efforts. Similar measures to those described above will therefore be necessary across its international operations as well.

PROACTIVE PROCUREMENT OF RENEWABLE ENERGY

Nippon Steel recognises the transition from BF-BOF to EAF as the primary short-term pathway for decarbonisation. In government discussions, it has stressed the importance of securing an affordable and stable supply of green hydrogen and renewable electricity (RE). However, it has not disclosed specific procurement strategies for renewable energy. Our analysis indicates that the emissions intensity per tonne of scrap-based EAF steel stands at 0.33 tCO_2 when using grid electricity but drops significantly to 0.1- 0.05 tCO_2 with 100% RE.[23] Since maximising the decarbonisation potential of EAF conversion is contingent on access to renewable energy, investment in renewable power sources—such as through PPA agreements—will be just as vital as investment in raw materials.

PRODUCTION AND SALES OF INTERNATIONALLY RECOGNISED GREEN STEEL

At present, Nippon Steel produces and sells low-carbon steel under the NSCarbolex Neutral brand, based on the mass balance approach. The government has included this steel in various support measures to stimulate demand under the "Green Steel for GX" initiative. However, the mass balance approach has faced criticism for greenwashing and is not currently recognised under regulations such as the EU CBAM, as acknowledged in Japanese government discussions.[24] Whether it will gain international recognition as truly "green" steel remains uncertain. Further highlighting the risks associated with this product, recent reports indicate that some EU countries are seeking to extend CBAM to include manufactured goods that incorporate materials already covered by the mechanism, such as steel.[25] Given that such policy changes could directly impact industries using

23 https://transitionasia.org/japanese-eaf-steel/
24 https://www.meti.go.jp/shingikai/energy_environment/gx_carbon_footprint/pdf/001_04_00.pdf
25 https://www.bloomberg.com/news/articles/2025-03-27/italy-and-france-call-for-changes-to-europe-s-carbon-border-levy

this steel, including the automotive sector, concerns over its long-term viability and regulatory risks are growing. It is therefore essential to actively produce and supply EAF steel using scrap, DRI, or HBI to promote unquestionably green steel globally and secure its widespread recognition.

DATA AND DISCLAIMER

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ABOUT TRANSITION ASIA

Founded in 2021, Transition Asia is a non-profit think tank dedicated to accelerating decarbonisation in Asia's materials and heavy industries to achieve the 1.5°C climate goal. Our multidisciplinary team combines diverse perspectives, experience and expertise, underpinned by a strong research foundation in Asia and a nuanced understanding of the region. Using analytical models and in-depth assessments, we evaluate and monitor corporations' decarbonisation efforts and actions. By engaging with stakeholders across sectors—including corporates, investors, policymakers and civil society organisations—we facilitate informed and impactful discussions that drive sustainable, low-carbon transitions aligned with a 1.5°C future.

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