

2024 INTEGRATED REPORT UPDATES: NIPPON STEEL

Sep 2024

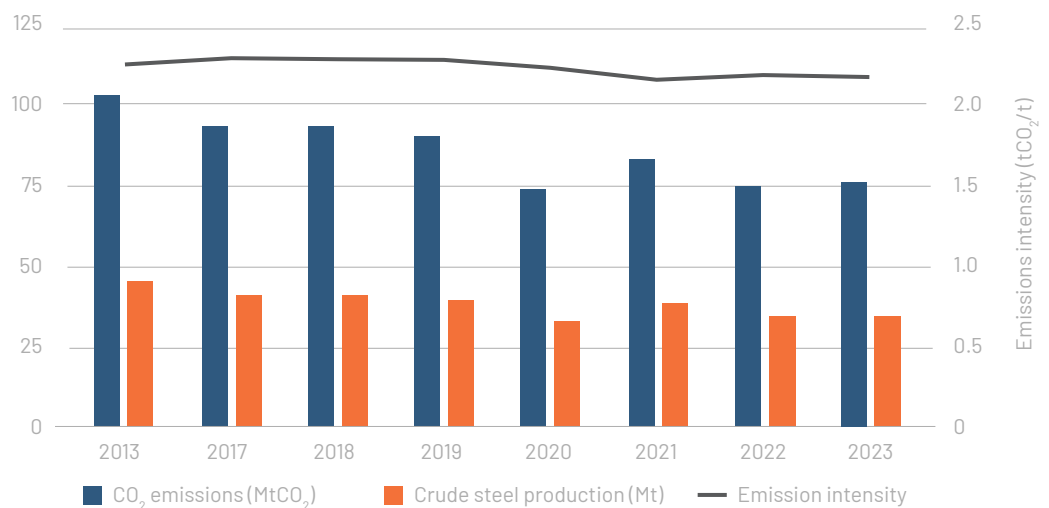
INTRODUCTION

Nippon Steel has released its latest integrated report following a tumultuous year in which shareholders filed three climate-related resolutions at the annual general meeting (AGM), with shareholders delivering the largest-ever vote in support of a climate lobbying resolution in Japan. None of these three resolutions have been explicitly addressed in the integrated report. Nippon Steel's latest emissions disclosure shows that its emissions have increased YoY by 1 million tonnes. Historical decarbonisation is mainly due to reduced production volumes, and there has been little significant advancement in transitioning to electric arc furnace (EAF) or hydrogen direct reduction iron (H₂-DRI) based steel, indicating that the company is not yet fully committed to decarbonisation. Additionally, Nippon Steel has actively invested in continuing the use of blast furnaces (BFs) over the past year, evidenced by the continued expansion of its metallurgical coal portfolio.

NIPPON STEEL'S DECARBONISATION TARGET: PROGRESS AND CHALLENGES

Nippon Steel is gradually approaching its 2030 target of reducing emissions to 72.4 MtCO₂, a 30% decrease from 2013 levels, driven by a decrease in production volume rather than effective emission reduction strategies. Furthermore, CO₂ emissions increased by 1MtCO₂, rising to 76 MtCO₂ between 2022 and 2023. According to our analysis, from 2013 to 2023, 88% of the emission reductions were attributed to the decrease in production, while only 12% was due to improvements in emission intensity. This indicates that efforts towards effectively decarbonising steel related operations have not yet been implemented.

Figure 1: Nippon Steel's Annual Steel Production and Emissions Trends



Source: Transition Asia, Nippon Steel^{1,2,3,4}
Note: All figures are non-consolidated

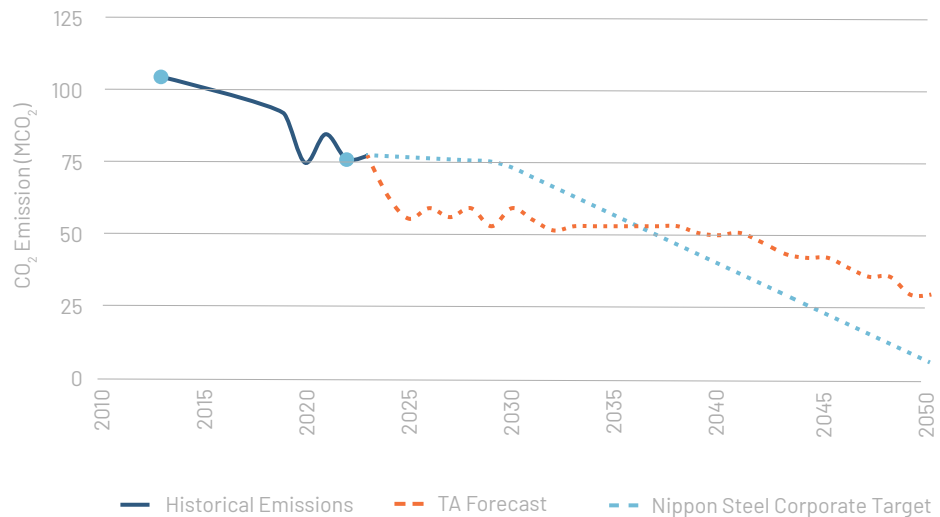
1 [Nippon Steel 2024 Integrated Report](#)
2 [Nippon Steel 2022 Sustainability Report](#)
3 [Nippon Steel 2023 Factbook](#)
4 [Nippon Steel 2023 Flash Report](#)

The company's sustainability report outlines three key initiatives for reducing emissions from domestic steel production:

1. **COURSE50:** This project incorporates carbon capture and hydrogen injection into BFs, with a theoretical CO₂ reduction potential of 30%. In February 2023, Nippon Steel decided to conduct a demonstration test using a large operational BF in Kimitsu, which is approximately 400 times the scale of the test furnace. They are progressing with the installation of equipment to start the test in FY2026, with full installation planned by 2030. However, it remains unclear whether this signifies the full commercialisation of the project. Additionally, regarding Super COURSE50, which aims to further reduce CO₂ emissions using heated hydrogen, they confirmed a 33% reduction in CO₂ emissions with a 12m³ test furnace in November-December 2023. They are advancing demonstration tests with a goal of over 40% reduction in FY2024, and they aim to establish the technology for large BFs by around 2040.
2. **H₂-DRI:** Nippon Steel plans to install a small, R&D-scale (1t/hr), experimental DRI shaft in 2025, with demonstration tests scheduled to begin in 2027. They aim to establish the technology for commercial adoption by around 2040, which is far behind global peers in technology adoption.
3. **EAF:** A small experimental EAF (10t) is scheduled for installation in 2024. Considering that major domestic EAF companies typically operate EAFs with capacities of 50t or more, and some even reaching 300t, this 10t EAF is small. They have also started seriously considering a switch from BF to EAF, with Yawata and Hirohata as potential sites.

Our analysis indicates that if these measures are implemented as planned, the company can indeed achieve its emission reduction targets by around 2035, albeit predominantly reached through the planned closures of BFs. Emissions are expected to remain largely unchanged for the following decade. Although reductions will resume with the introduction of Super COURSE50 around 2040, achieving net zero emissions is predicted to be impossible.

Figure 2: Comparative CO₂ Emission Scenarios for Nippon Steel (Non-consolidated): Nippon Steel Corporate Targets and Transition Asia Model Projection to 2050



Source: Transition Asia, Nippon Steel¹²³⁴

ENVIRONMENTAL IMPACT OF RECENT OVERSEAS INVESTMENTS IN METALLURGICAL COAL

Nippon Steel announced investments in metallurgical coal in Canada in November 2023 and in Australia in August 2024, indicating its intention to continue steel production using coal-based BF's for the long term.^{5 6} Our analysis shows that the annual emission intensity per USD 1 of investment is 10.18 kgCO₂ for the Canadian case and 7.36 kgCO₂ for the Australian case. Considering that the company's annual emission intensity per USD 1 of stock investment at the end of FY2023 was 3.43 kgCO₂, it is clear how significant the carbon footprints of these investments is.

Furthermore, the company announced additional investments in September 2022 in ArcelorMittal Nippon Steel India Limited (AM/NS India), including the construction of new BF's, and in August 2024 promised the relining of U.S. Steel's BF's in its bid to acquire the company.^{7 8} This suggests that the company will continue steel production using BF's in its key regions, potentially going against the global trend of transitioning from BF's to EAF's. Our analysis indicates that the annual emission intensity per USD 1 of investment is currently 2.14-2.71 kgCO₂ for the AM/NS India investment and 34.71 kgCO₂ for the additional investment in U.S. Steel. The particularly high value for U.S. Steel raises concerns about the environmental impact, especially given the company's plans for further relining investments. Therefore, unless investments and acquisitions are based on a solid decarbonisation plan, such as promoting the transition to EAF's, the risks remain high.

5 https://www.nipponsteel.com/en/news/20231114_100.html

6 https://www.nipponsteel.com/en/news/20240822_100.html

7 https://www.nipponsteel.com/en/news/20220928_200.html

8 https://www.nipponsteel.com/en/news/20240829_100.html

CONCLUSION

Nippon Steel needs to accelerate its decarbonisation efforts, particularly by shifting investments from those that continue the use of BF's to tried and tested decarbonised technologies, particularly leveraging EAFs for their ability to utilise scrap and low carbon iron. Without these changes, their progress towards reducing emissions for the 1.5°C goal will remain limited, posing significant risks to their climate goals and investor confidence.

DATA AND DISCLAIMER

This analysis is for informational purposes only and does not constitute investment advice, and should not be relied upon to make any investment decision. The briefing represents the authors' views and interpretations of publicly available information that is self-reported by the companies assessed. References are provided for company reporting but the authors did not seek to validate the public self-reported information provided by those companies. Therefore, the authors cannot guarantee the factual accuracy of all information presented in this briefing. The authors and Transition Asia expressly assume no liability for information used or published by third parties with reference to this report.

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ABOUT TRANSITION ASIA

Founded in 2021, Transition Asia is a Hong Kong-based non-profit think tank that focuses on driving 1.5°C-aligned corporate climate action in East Asia through in-depth sectoral and policy analysis, investor insights, and strategic engagement. Transition Asia works with corporate, finance, and policy stakeholders across the globe to achieve transformative change for a net-zero, resilient future. Visit transitionasia.org to learn more.