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JAPANESE FINANCIAL INSTITUTIONS INTENSIFY SCRUTINY ON STEEL

Financed emissions in steel investments - a Nippon Steel case study

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KEY TAKEAWAYS

- The project financing of blast furnace - basic oxygen furnace (BF-BOF) mills carries the highest financed emissions of all current greenfield steel investment choices.
- The financed emission of financing BF-BOF mills is comparable to coal power finance - which is now excluded by Japanese financial institutions.
- BF relinings have more serious implications for debt and equity holders and dollar for dollar are more carbon-intensive than unabated coal-fired power plants (CFPP).
- International trends away from coal-intensive industries and developments in low carbon steel make investment in alternative and cleaner production routes a "when not if" challenge for Nippon Steel as investors and banks put financed emissions under the spotlight.

INTRODUCTION

Japanese banks are turning their attention to the steel industry as the next high-emitting clients in their debt and equity portfolios. Our recent interactions with both analysts and ESG teams have highlighted a dissatisfaction with Japanese iron and steel makers as being too slow to respond to global trends in new technology and green steel investment, which is in turn stunting decarbonisation potential in downstream industries.

In this brief we look at the "financed emissions" of potential investments from project finance to debt and equity, using Nippon Steel as a case study. A basic financed emissions calculation is the amount of CO_2 per US$1 million of investment (per annum). This is a calculation both banks and investors are becoming increasingly familiar with as they themselves seek to decarbonise their own portfolios and offer low carbon products to clients.

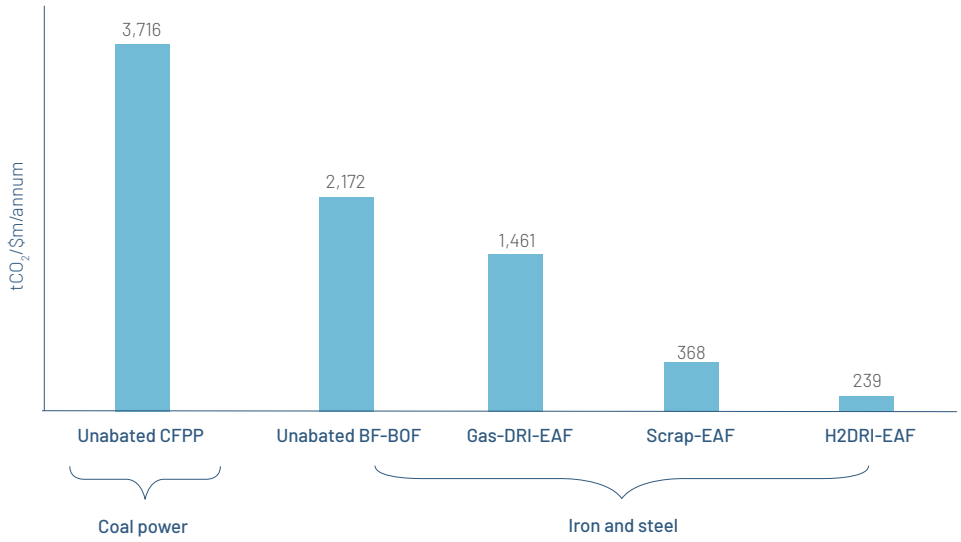
Investment in Nippon Steel already carries high financed emissions, due primarily to the company's reliance on coal-based steel production processes

More broadly, investment in Nippon steel already carries high financed emissions, due primarily to the company's reliance on coal-based steel production processes. What banks are scrutinising is whether Nippon Steel should be accelerating meaningful efforts to invest in newer and cleaner technology. They are not doing so in a vacuum. They are also responding to the global banking trend away from coal investments, particularly coal fired power plants in recent memory, and the likelihood that this puts the steel industry under the spotlight.

WITH PROJECT FINANCE, DECARBONISATION IS AN OPTION

Project finance is funding regularly used for long-term industrial projects, such as CFPP and steel technologies such as BF-BOF mills. Financed emissions in this context refers to the emissions stemming from a specific project that receives financing, generally in the form of debt or long term equity.

Figure 1. Financed emissions for project finance of coal power versus greenfield iron and steel mills



Source: TA analysis

The chart above shows the financed emissions of greenfield iron and steel production pathways and compares them to that of an unabated CFPP. While CFPP remains highest, BF-BOF is not far behind, and is significantly higher than low carbon alternatives supported by EAF and H2-DRI.[1 2 3]

In May 2021, the G7, with reluctant support from Japan, decided to "commit to take concrete steps towards an absolute end to new direct government support for unabated international thermal coal power generation by the end of 2021, including through Official Development Assistance, export finance, investment and financial and trade promotion support". [4] As a results, unabated thermal coal power generation is no longer an investment option.

Compared to this benchmark, a very similar structure of investment was made in March 2023 of US$5 billion by JBIC, Sumitomo Mitsui Banking Corporation, Sumitomo Mitsui Trust Bank, Mizuho Bank, Mizuho Bank Europe and MUFG Bank. It funded the expansion of Nippon Steel and its joint venture with ArcelorMittal at the Hazira mill in India.[5] Although there was a nod to future-proofing the investment for clean tech pathways, the investment is in the most carbon intensive, coal based process. Project financing provided the funds for two blast furnaces, two sintering facilities, three coke ovens, three basic oxygen furnaces, two continuous casting machines and one hot strip mill, which generates 6m

tonnes of steel production per annum.[6] As Figure 1 shows, this investment results in simply one of the highest rate of financed emissions a Japanese bank can make now that coal-fired power plant finance is excluded. We estimate the amount of tCO_2 per US$1 million of investment (per annum) is over 2,100tCO_2. But the scale is also extraordinary - to put this into perspective, as a single project, it is 1% of Japan's total annual CO_2 emissions per year, financed with public money and co-financed by Japanese banks.

A single [unabated BF-BOF] project, is 1% of Japan's total annual CO_2 emissions per year

We compare this to lower carbon production routes which we model internally (for an explainer of technology pathways see here) that are commercially available but underutilised and underfunded. We believe banks will increasingly demand more evidence of strategic investment and public and private finance options for low carbon steel. Here, we are not concerned with the economics of production, but rather our conversations with selected banks suggest they are increasingly looking at the lower carbon steel processes of Figure 1 and wondering when this offering will be available via Nippon Steel, both in Japan and overseas.

DEBT AND EQUITY ALSO PLAY A ROLE IN DECARBONISATION DELAY

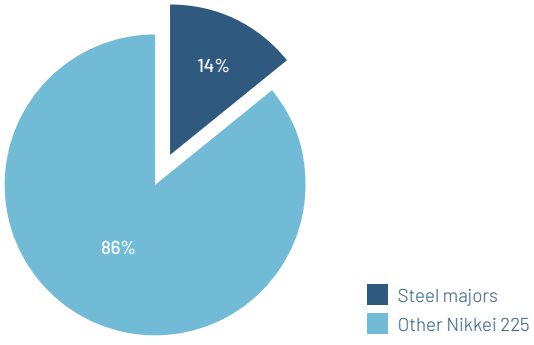
Whatever the carbon accounting used, financed emissions are accumulated by debt and equity owners. For Nippon Steel, these remain significant at 1,435 tCO_2/$m/annum for any investment in debt or equity. Moreover, joint ventures with greenfield build of high carbon solutions like BF-BOF steel mills will be on the balance sheet.

The technological pathway for investors to reduce financed emissions is to direct Nippon Steel's investment away from greenfield BF-BOF

Both debt and equity investments are well above the specific financed emissions from the project finance of Scrap-EAF or H2-DRI-EAF. This means the technological pathway for investors to reduce financed emissions is to direct Nippon Steel's investment away from greenfield BF-BOF, especially for banks that are underwriting debt issuance as well as for debt and equity owners.

In fact, despite a lack of disclosure in Japan and the challenge of carbon accounting, we estimate that the Japanese steel majors (Nippon Steel, JFE and Kobe Steel) account for over 14% of the financed emissions of the Nikkei 225 and are all in the top 6 corporates when listed by highest financed emissions.

Figure 2. Financed emissions of Japanese steel majors in the Nikkei 225



Source: TA analysis

However, what is more significant is that debt and equity owners are exposed to the highest financed emissions of all - that of blast furnace relining. Relining an operating blast furnace to extend its life (as opposed to the project finance of greenfield BF-BOF mill described above) is the most toxic finance of all in the steel industry and the major investment for the BF-BOF route. We estimate that this is a staggering 15,509 tCO_2/$m/annum. Dollar for dollar, this is over 4 times more emission intensive than financing an unabated coal-fired power plant.

AN OPPORTUNITY FOR ASSESSMENT AND ENGAGEMENT

In short, shareholder action of investors in the steel sector and the increasing sensitivity of Japanese financiers to financed emissions all increase the spotlight on the two most high carbon financed emissions exposures: greenfield BF-BOF and its project finance and BF relinings and its implications for debt and equity holders. Both are unsustainable and toxic investments when compared to the now "deceased" coal finance.

In this context for banks and investors, the need for Nippon Steel and other Japanese steel majors to develop low carbon production capabilities is paramount. We explore this in several other papers as well as in our analysis of green steel economics in China and beyond. As AGM season approaches we will also be adding more perspectives for banks and investors on stranded asset risks, the industrial decarbonisation agenda of the G7 and what both bank and investor stakeholders can do to drive change at Nippon Steel and lower their own financed emissions.

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.

ENDNOTES

1. To compare project finance and debt and equity we are using a simple average of financed emissions: Financed Emissions = (CAPEX / Lifetime emissions) / Number of years of project. Financed Emissions calculations, boundary definitions and carbon accounting treatments may vary.

2. Additional key assumptions: Unabated CFPP (660MW Supercritical, 70% Capacity Factor, 780gCO2/kWh); Unabated BF-BOF (100% debt provided by JBIC and Japanese banks, Carbon Intensity of 2.03 tCO2/tcs); Gas-DRI-EAF (95% gas based DRI in Japan using our Green Steel Economics model); Scrap-EAF (100% scrap, 100% RE); H2DRI-EAF (100% H2 substitution and 100% RE).

3. The benchmark we use here is the development of a hypothetical 660 MW supercritical coal fired power plant (Unabated CFPP) - modelled on Japanese finance into Cirebon in Indonesia which was financed by Japan Bank of International Cooperation (JBIC), Sumitomo Mitsui Banking Corporation, Mizuho Financial Group, and MUFG Bank amongst others). https://www.gem.wiki/Cirebon_power_station

4. https://www.reuters.com/business/energy/g7-countries-agree-stop-funding-coal-fired-power-2021-05-21/

5. https://www.jbic.go.jp/en/information/press/press-2022/0331-017626.html

6. https://www.nipponsteel.com/en/ir/library/pdf/nsc_en_ir_2023_a3.pdf

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