TransitionAsia
ACCELERATING EAST ASIAN CORPORATE CLIMATE ACTION

JAPANESE STEEL PRODUCERS:
A comparison of climate ambition and action following the publication of the 2022 sustainability reports of Nippon Steel and JFE Holdings

Steel producers are slowly warming up to green solutions, but they need to double down on their near term strategies for decarbonisation

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INTRODUCTION

Transition Asia is actively working on steel decarbonisation In Japan. Since shareholder activism is focusing on JFE Holdings, Inc. and Nippon Steel as the two major steel producers in Japan, we provide this one-stop guide to their climate ambition and climate action following the publication of their 2022 sustainability reports.

GREEN SHOOTS NEED TO GROW FASTER

We have previously modelled Nippon Steel's trajectory to 2030 and provide an investor brief.[1] In the comparison table below we have developed the same framework for JFE and note that JFE Holdings / JFE Steel are also a significant climate risk to investors and are moving further away from a 1.5°C pathway, faster than Nippon Steel.

Table 1 - 2030 Emissions Pathway Comparison[2]

	Nippon Steel Corporation	JFE Holdings, Inc.
Emissions Pathway Analysis		
Modelling hybrid EAFs / COURSE 50 by 2030	Yes / Yes	Yes / No
Estimated EAF Market Share in 2030	8%	15%
Estimated Carbon Intensity in 2030 (tCO2 per tSteel)	1.77	1.92
Estimated emissions reduction in 2030 based on 2013 base year and Stated Policies	37%	23%
Estimated emissions reduction in 2030 based on 2010 base year and Stated Policies	10%	19%

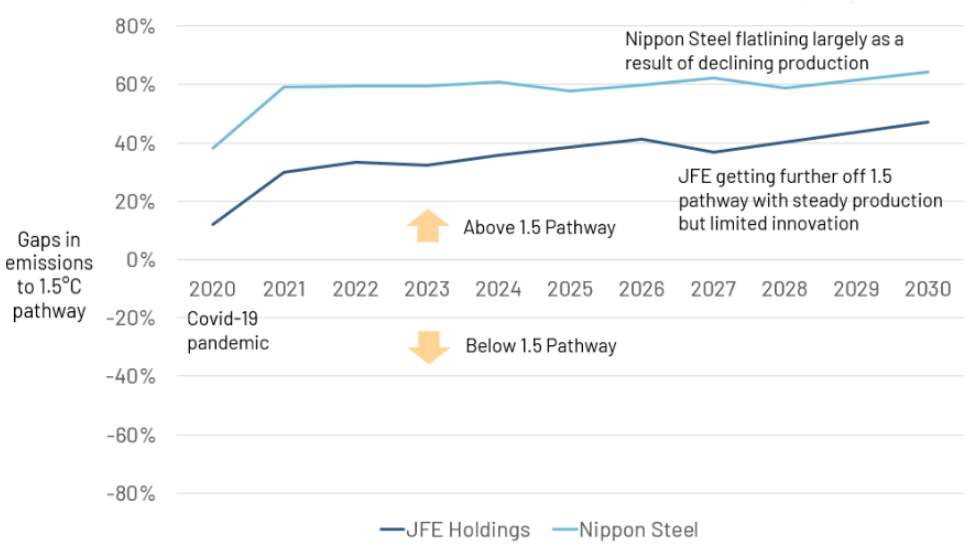
Both corporations need to raise climate ambition and action towards 2030. Crucially this pathway is based on emissions reduction from a 2010 base year. Both of these companies use a base year of 2013 which only results in higher emissions reductions because it was an abnormally high year for steel production. When measured against 2010 emissions forecast emissions reduction by 2030 is highly insufficient.

1 https://transitionasia.org/wp-content/uploads/2022/09/Nippon-Steel-Emissions-Pathway-Analysis_EN.pdf
2 From Transition Asia analysis

The prospect of investment in greenfield BF-BOF by Japanese steel producers is a clear signal about lack of climate ambition

Figure 1 shows that neither company is aligned to a 1.5°C pathway. Here we show the relative gap in emissions to a 1.5°C pathway from 2020 to 2030 using a 2010 base year.

Figure 1 - Ambition Gap to 1.5°C Pathway by 2030 (2010 base year)



Source: TA analysis

Our analysis suggests that without this they will both fail to revert to a 1.5°C pathway by the end of this decade, resulting in increased climate-related commercial risk and financed emissions for investors.

This points to the absence of near term solutions for decarbonisation (which are explored in Table 2). These should be driven by increasing investment and production in EAFs using RE feedstocks. For EAF steel production, scrap inventories are an opportunity in Japan while the other key feedstock, RE will have to be delivered at speed and scale from government and utilities.

This is the easiest and quickest way to move away from coal intensive BF-BOF routes where efficiencies have flat lined, meaning switches in production methods from BF-BOF to EAF. As a consequence, the prospect of investment in greenfield BF-BOF by Japanese steel producers, either in Japan or overseas, is a clear signal about lack of climate ambition in general, not least because greenfield plant lifetimes would stretch beyond any net zero target date.

To reduce emissions as fast as possible, both companies need the procurement of renewable electricity and green hydrogen - either from PPAs or from the grid - and to "double down" on lower carbon EAF production, without which progress on decarbonisation by 2030 will be limited.

CLIMATE AMBITION AND ACTION, COMPARED

We present an overview of Nippon Steel and JFE Holdings following the release of Nippon Steel's Sustainability Report 2022 (Sep 2022). Data is taken from key sources given at the end unless otherwise stated:

Table 2 - Comparison of Climate Commitments of Nippon Steel and JFE

	Nippon Steel Corporation	JFE Holdings, Inc.
Steel production[3]		
Total steel production in 2021 (Mt)	49.46	26.85
World ranking	4th	13th
Climate ambition		
Emissions reduction target	30%	30% or more[4]
Scopes	1 and 2[5]	Not specified
Target year	2030	2030
Base year	2013	2013
Target year for reaching net zero	2050	2050
Science-based targets / SBTi membership[6]	No / No	No / No
Current carbon intensity		
Carbon Intensity (tCO2 per tSteel)	1.88[7] (2021) (Nippon Steel Group)	2.03[8] (2021) (JFE Steel)
Technology pathways to decarbonisation		
Switching existing EAFs to RE	Supply volume in fiscal 2023 is expected to be about 300,000 tons per year of "reduced CO2 emissions" steel (in Setouchi Works)[9]	Expansion of EAF (in Sendai Works)[10]
New (hybrid) EAFs[11]	1 large scale (hybrid) EAF planned, 2020s	1 new (hybrid) EAF planned in 2027-2030[12]
H_2-DRI	Technology partnership with JFE planned (no official announcement)[13]	Technology partnership with Nippon Steel planned (no official announcement)
Other	COURSE 50 (hydrogen injection into Blast Furnace and CCUS) pilot[14]	COURSE 50 without planned dates

3 https://worldsteel.org/wp-content/uploads/2020_2021-top-steel-producers_tonnage.pdf is used for comparison. Company reporing has different values.
4 https://www.jfe-holdings.co.jp/en/release/2022/02/220208.html
5 https://www.nipponsteel.com/en/csr/env/warming/zerocarbon.html
6 https://sciencebasedtargets.org/companies-taking-action
7 https://www.nipponsteel.com/csr/report/pdf/report2022.pdf
8 https://www.jfe-holdings.co.jp/csr/pdf/csr_2022_j.pdf (Japanese)
9 https://www.nipponsteel.com/en/news/20220914_100.html
10 https://www.jfe-steel.co.jp/en/company/pdf/carbon-neutral-strategy_220901_1.pdf
11 Above and beyond EAF upgrades
12 https://www.asiafinancial.com/japans-jfe-may-build-electric-arc-furnace-to-slash-emissions
13 https://www.nikkei.com/article/DGXZQOUC158N50V10C22A8000000/
14 https://www.nipponsteel.com/en/news/20220214_100.html

	Nippon Steel Corporation	JFE Holdings, Inc.
Climate metrics		
MSCI Implied Temperature Rise[15]	3.0°C	Over 3.6°C
CDP Disclosure Score on Climate Change[16]	A- (2021)	A- (2021)
Key resources		
	Nippon Steel Sustainability Report (Sep, 2022)[17] Nippon Steel Carbon Neutral Vision (Mar, 2021)[18]	JFE Group CSR REPORT 2022 (Oct, 2022)[19] JFE Group Environmental Vision for 2050 (May, 2021)[20]

H_2-DRI-EAF is a medium term solution. Given the vast emissions reduction needed, an unofficial announcement of a possible joint venture between Nippon Steel and JFE Holdings on H_2-DRI-EAF technology is welcome news from the Japan steel sector, but will not impact either of the 2030 emissions pathways significantly.[21] Indeed a target of "pre 2050" for commercial H_2-DRI is underwhelming compared to the European pilots of the same technology including steel leader ArcelorMittal which has trialled part hydrogen use in DRI[22] or SSAB which has produced 100% green steel in a pilot, from the same method.[23]

15 https://www.msci.com/our-solutions/esg-investing/esg-ratings-climate-search-tool
16 https://www.cdp.net/en/scores
17 https://www.nipponsteel.com/csr/report/pdf/report2022.pdf
18 https://www.nipponsteel.com/en/ir/library/pdf/20210330_ZC.pdf
19 https://www.jfe-holdings.co.jp/csr/pdf/csr_2022_j.pdf
20 https://www.jfe-holdings.co.jp/en/investor/zaimu/g-data/2020/May2021-210525-release01.pdf
21 https://www.nikkei.com/article/DGXZQOUC158N50V10C22A8000000/
22 https://corporate.arcelormittal.com/media/news-articles/arcelormittal-successfully-tests-partial-replacement-of-natural-gas-with-green-hydrogen-to-produce-dri
23 https://www.ssab.com/en-gb/news/2021/08/the-worlds-first-fossilfree-steel-ready-for-delivery

Below we compare the roadmaps of the two corporations:[24] [25]

Figure 2a - Nippon Steel's Decarbonisation Roadmap

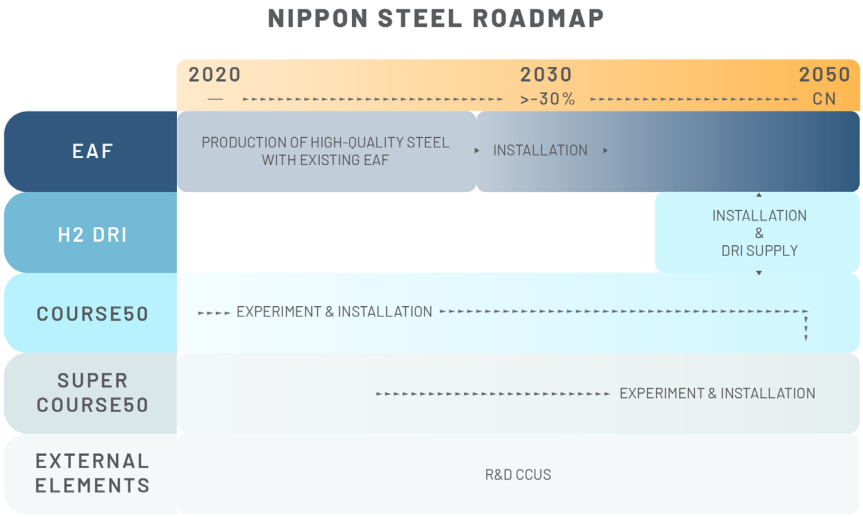
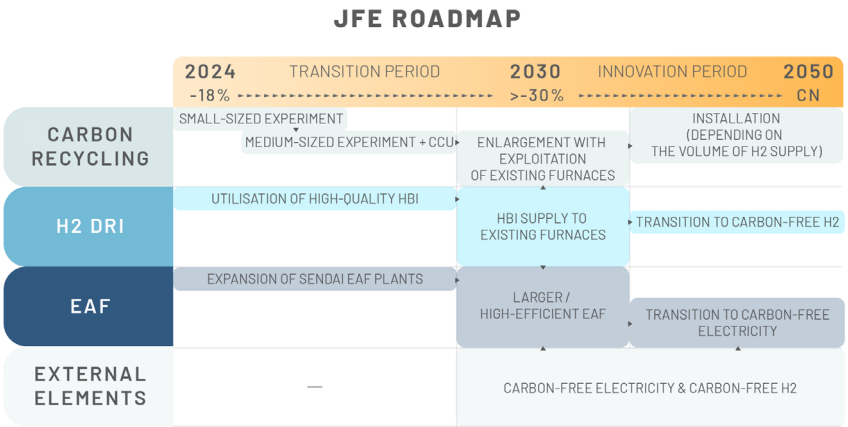


Figure 2b - JFE Holdings' Decarbonisation Roadmap



24 https://www.nipponsteel.com/en/csr/report/pdf/report2022en.pdf
25 https://www.jfe-steel.co.jp/en/company/pdf/carbon-neutral-strategy_220901_1.pdf

GLOSSARY

H_2-DRI	Direct Reduced Iron from Hydrogen
EAF	Electric Arc Furnace
DRI	Direct Reduced Iron
IPCC	Intergovernmental Panel on Climate Change
PPA	Power Purchase Agreement

DATA AND DISCLAIMER

The analysis is developed using Nippon Steel and JFE sustainability report data. 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 or follow us @transitionasia to learn more.