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ACCELERATING EAST ASIAN CORPORATE CLIMATE ACTION

NIPPON STEEL'S U.S. STEEL ACQUISITION: STAY THE COURSE OR PIVOT TO GREENER-FIELDS

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Due to former U.S. President Biden's decision to block Nippon Steel's acquisition of U.S. Steel, the deal faces another setback and a significant delay from its original schedule. Whilst the former administration has delayed the decision of the block until June where Nippon Steel seems set on challenging the decision, Transition Asia believes that a focus towards greenfield investment in North America could provide futureproofed investments and better investor value.

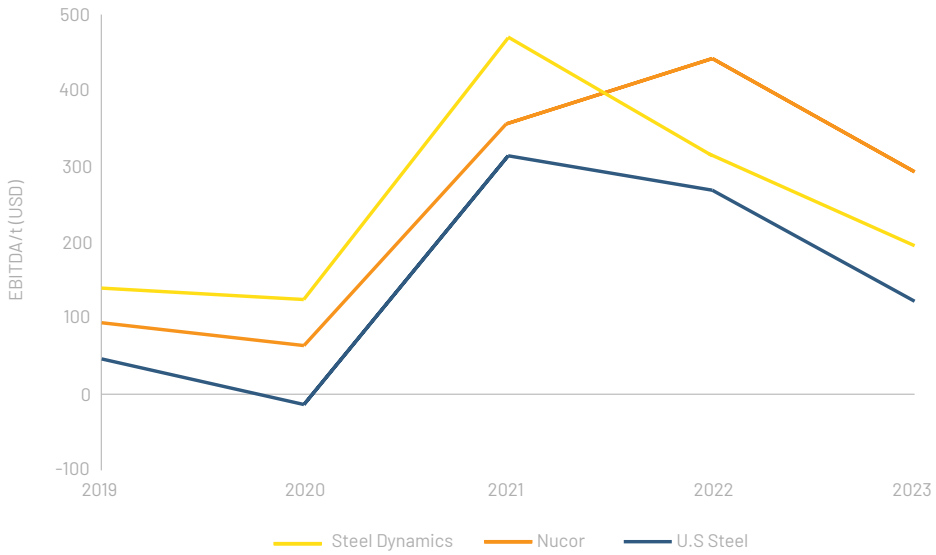
Nippon Steel's proposed acquisition of U.S. Steel amounts to USD 979 per tonne of U.S. Steel's crude steel production—a price about 1.4 to 1.5 times higher than the market capitalisation per tonne for both U.S. Steel (USD 689) and Nippon Steel (USD 638) as of the end of FY2023, when the deal was first proposed, suggesting a substantial M&A premium. [1] [2] By contrast, market capitalisations per tonne for comparable U.S.-based electric arc furnace (EAF) companies are significantly higher, with Nucor Corporation at USD 2,018 and Steel Dynamics at USD 1,852 at the end of FY2023.[1] [2] While Nippon Steel's willingness to pay such a premium demonstrates its high expectations for U.S. Steel, which operates using blast furnace-basic oxygen furnaces (BF-BOF), the market currently places a much higher valuation on EAF companies. This raises a critical question: could U.S. Steel reliance on BFs make it less attractive investment when stacked against EAF based competitors? This commentary explores the missed opportunities and potential strategic gaps in Nippon Steel's approach.

Nippon Steel's Continued Focus on BF-BOF Overlooks EAF's Profitability Advantage

The two EAF operators, Nucor and Steel Dynamics, have better margins; over the past five years, they have consistently achieved superior EBITDA levels. In 2023, U.S. Steel's EBITDA per tonne was USD 124, compared to USD 295 for Nucor and USD 195 for Steel Dynamics—both more than 1.5 times higher than U.S. Steel's figure.[3] [4] [5] In other words, these EAF mills are maintaining higher profitability than a BF-BOF-based competitor.

1 https://worldsteel.org/data/top-producers/
2 https://companiesmarketcap.com/
3 https://d1io3yog0oux5.cloudfront.net/_871a703ad34e43f8f0477a06ba2d66bd/ussteel/db/3222/30221/segment_and_financial_operational_data/U.+S.+Steel+-+Segment+and+Financial+Operational+Data+-+Q4+2023+20240201.pdf
4 https://icrm.indigotools.com/IR/IAC/?Ticker=NUE&Exchange=NYSE#
5 https://ir.steeldynamics.com/annual-reports/

Figure 1: North American Steel Major's EBITDA per tonne in the past 5 years



Source: Company annual reports, TA analyis

One key factor driving these margins is the flexible cost structure of EAF mills, characterised by a smaller share of fixed costs. This allows them to quickly adjust production to meet demand and maintain more stable margins over time—unlike BFs, which must operate continuously for prolonged periods.[6][7][8] This highlights the potential profitability advantage of EAF producers over traditional BF-BOF producers like U.S. Steel - also implying that BF-BOF producers face greater sensitivity to price fluctuations.

In particular, we feel that the risk of carbon pricing and other decarbonisation measures in the medium to long-term is likely to significantly impact U.S. Steel's BF-BOF steel production. The company - with already low industry margins - faces greater sensitivity to commodity price fluctuations, an additional financial headwind would be unwelcome to its new owners.

The high market caps of U.S.Steel's domestic competitors likely rules out an M&A strategy for American EAF mills, but perhaps M&A is a strategy that doesn't need to be pursued where there is greenfield opportunity in the country.[9] It is true that the US market is to some extent saturated; however there is still demand and opportunity to produce steel with fair margins. Building EAF-based steel mills could navigate the challenges associated with U.S. Steels BF-BOF technology, remaining flexible, resilient and able to produce the low carbon products demanded by customers.

Nippon Steel has already partnered with ArcelorMittal to build a new EAF in Calvert, Alabama. For Nippon Steel, greenfield investments in the U.S. are not unfamiliar territory.

6 https://www.fitchratings.com/research/corporate-finance/fitch-affirms-nucor-idr-at-a-outlook-stable-26-02-2024

7 https://www.forbes.com/sites/greatspeculations/2023/10/17/nucor-steel-titan-rising/

8 https://rtpatterson.com/revitalizing-the-steel-industry-the-transformative-role-of-electric-arc-furnaces-in-sustainable-steelmaking/?form=MG0AV3

9 If Nucor and Steel Dynamics were each acquired at the same percentage premium as U.S. Steel, their acquisition costs would be $60.8 billion for Nucor and $27.2 billion for Steel Dynamics. Nucor's cost would be about 3.9 times that of acquiring U.S. Steel, while Steel Dynamics, despite producing only 65% as much crude steel as U.S. Steel, would still cost 1.7 times more.

EAFs are the most cost effective investment to decarbonise steel production and the average investment per tonne for newly constructed or planned EAFs in the U.S. in recent years stands at USD 676, a significant discount to the U.S. Steel acquisition price.[10][11][12]

Should Nippon steel seek to pursue a strategy based on primary iron production there is the opportunity to build hydrogen-direct reduced iron (H_2-DRI) facilities. Admittedly, these facilities will cost substantial amounts. The total investment that Swedish start-up Stegra, formerly known as H_2 Green Steel, has allocated for their H_2-DRI-EAF green steel plant is approximately $6 billion. However, through the Industrial Demonstrations Program, funded by the Bipartisan Infrastructure Law and the Inflation Reduction Act, up to USD 500 million in funding can be secured for the construction of H_2-DRI-EAF facilities in the U.S., helping to mitigate initial investment risks.[13] [14] Attractive tax relief is also available to green hydrogen producers, further de-risking green investments. Production from green steel projects can additionally be hedged through take or pay contracts as seen in the Swedish green steel projects.

Greenfield EAF as a Smarter Investment for Nippon Steel

Nippon Steel has already publicly expressed its intentions to make large-scale investments in U.S. Steel post-2027, and given that the last BF relining at the Edgar Thomson Plant took place in 2001, there are indications that large CAPEX investments will be required soon.[15] Instead of investing heavily in renewing the U.S. Steel's aging plants, the construction of greenfield H_2-DRI-EAF or EAF facilities in the U.S. could prove beneficial for the company, disruptive to the market and attractive to shareholders.

Despite the current extension of the deal to June 2025, the new Trump administration has signalled the deal will be blocked. Given the high premiums for pure-play EAF mills, Nippon Steel should remain open to greenfield investments within the US. Investing in EAF steel processes rather than maintaining and re-investing into BF-BOF technology would not only contribute to reducing corporate emissions but also support the company in strengthening its presence in the strategically important U.S. market. Through maintaining exposure to BF-BOF technologies and the challenges they attract, Nippon Steel risks missing a critical opportunity to invest in the rapidly expanding green steel market.

10 https://www.nipponsteel.com/en/news/20201222_100.html
11 https://buildsteel.org/news/steel-dynamics-sinton-texas/
12 https://www.recyclingtoday.com/news/big-river-steel-expansion-arkansas-ferrous-scrap/
13 https://www.energy.gov/oced/industrial-demonstrations-program-selections-award-negotiations-iron-and-steel
14 On January 21, 2025, President Trump paused funding for these programs, but the funds may be available in the future depending on full congressional approval.
15 https://rmi.org/wp-content/uploads/dlm_uploads/2024/02/PA_steel_memo.pdf