

JFE TAKES A DECISIVE STEP TOWARDS GREEN STEEL WITH NEW EAF

The Investment Highlights Role of Government Support in Accelerating Japan's Steel Transition

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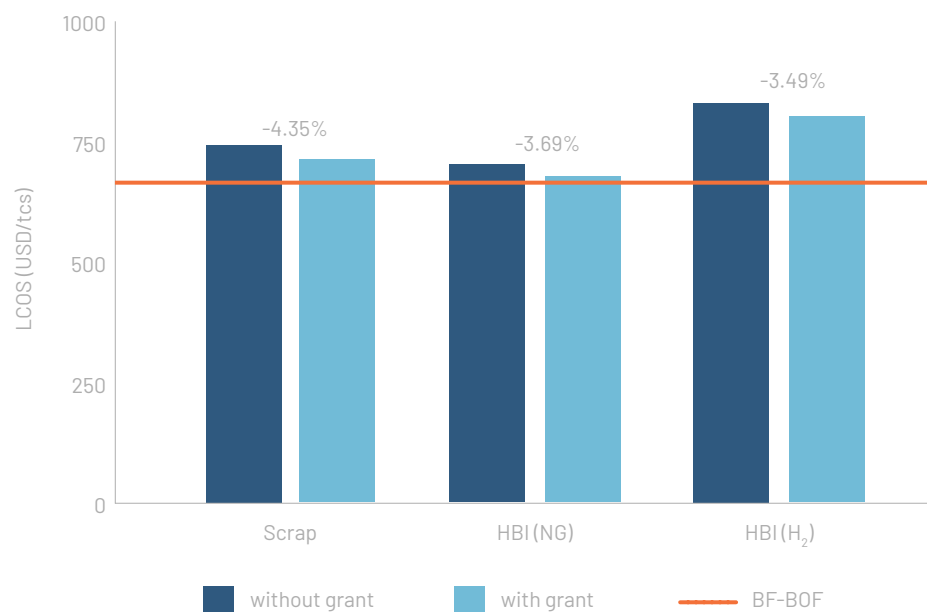
THE ANNOUNCEMENT

Following the release of its initial plan in 2022, JFE has confirmed it will proceed with the construction and operation of an electric arc furnace at its Kurashiki plant.¹ The project will involve building several facilities, including a state-of-the-art electric arc furnace, off-site refining units, infrastructure for cold iron distribution, and enhancements to the existing quay. The total investment is projected at JPY 329.4 billion (approximately USD 2.2 billion), with up to JPY 104.5 billion potentially funded through a government subsidy. The new furnace is designed to produce around two million tons of steel annually and is scheduled to begin operations in the first quarter of the fiscal year commencing April 2028.

JFE TAKES ADVANTAGE OF A GENEROUS GOVERNMENT GRANT FOR DECARBONISATION

In Japan, subsidies from the Japan Climate Transition Bond can support a transition from the BF-BOF process to EAF steel production. Up to one-third of the capital investment can be subsidised by the government.

Figure 1: Effect of Government Grant on the Levelised Cost of Steel with Various Inputs²



Source: TA analysis

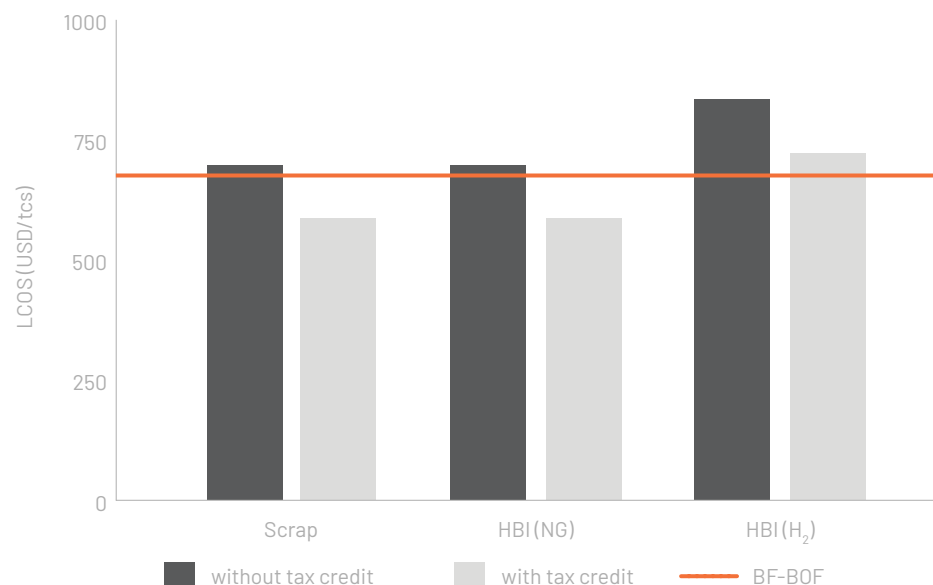
¹ <https://www.jfe-steel.co.jp/en/release/2025/04/250410.html>
² Carbon price = USD 0/tCO₂. Hydrogen price = USD 3/kg

While CAPEX is not the largest driver of steel costs, the additional grant has a positive impact on the levelised costs of steel. The average decrease is just under 4 % of steel costs, for which a sector that operates on tight margins is significant.

TRANSITION ASIA: GOVERNMENT SUPPORT COULD MAKE JFE'S GREEN STEEL PROJECT A COST-COMPETITIVE MODEL FOR THE INDUSTRY

The Strategic Field Domestic Production Promotion Tax System, established as part of the FY2024 tax reforms, offers a deduction of JPY 20,000 per tonne for the production and sale of green steel.³ At around a ten year average of USD 112 this is extremely generous, however it comes with stringent conditions in being able to qualify for the credit. Currently, there are four conditions: 1. Convert from BF-BOF to EAF 2. Produce steel of the same quality as BF-BOF steel (defined as; Ordinary steel [other than stainless steel]: Nitrogen concentration 0.004% or less and phosphorus concentration 0.015% or less Stainless steel: Nitrogen concentration 0.015% or less and phosphorus concentration 0.04% or less) 3. CAPEX is JPY12 billion or more 4. Maximum production volume is 200,000 tons or more. Criteria 1, 3, and 4 are already met, as the project involves the retirement of Blast Furnace No.2 at the Kurashiki site by 2028. JFE has also communicated its plan to produce electromagnetic high tensile steel sheets at the site implying the company is aiming to meet this criteria.

Figure 2: Effect of Tax Credit on the Levelised Cost of Steel with Various Inputs⁴



Source : TA analysis

JFE has three strategies to produce steel in EAFs, utilising scrap, importing gas based hot briquetted iron (HBI) from the Middle East and using hydrogen-based direct reduced iron (DRI) as a longer-term option, as a means which may be implemented after a fair

³ https://www.meti.go.jp/policy/economy/kyosoryoku_kyoka/250090.pdf

⁴ Costs calculated over a ten year period. Carbon price = USD 0/tCO₂. Hydrogen price = USD 3/kg

length of time in which gas-based DRI use is to be promoted first.¹⁵ Scrap steel is unlikely to play a major role in JFE's production of high operation and grade steel and natural gas based HBI has material emissions associated with production and methane emission from natural gas's extraction and processing. With these tax credits, H₂-HBI becomes an attractive proposition as an input to the new EAF at the Kurashiki plant and could provide the pathway for JFE to produce high function, high quality steel with near zero emissions. With carbon prices expected to increase from 2032 onwards, the delta between H₂-HBI and BF-BOF processes will decrease further, coupled with the Japanese steel sector experiencing healthy demand for premium low carbon steel, the outlook is positive for the project, as it could set a precedent for other Japanese steelmakers to follow.^{6 7}

5 <https://www.jfe-steel.co.jp/en/release/2022/220901.html>

6 <https://icapcarbonaction.com/en/ets/japan-gx-ets>

7 [https://www.mri.co.jp/en/knowledge/article/20250411.html#:~:text=The%20newly%20introduced%20carbon%20pricing,\(FIT\)%20program's%20FY2032%20figures](https://www.mri.co.jp/en/knowledge/article/20250411.html#:~:text=The%20newly%20introduced%20carbon%20pricing,(FIT)%20program's%20FY2032%20figures)

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