

Transition Finance | Case Study 4: JFE Holdings, Inc.

Overview

■ Corporate Profile

Industry	Iron and steel
Location	Japan
Business	One of Japan's two largest iron and steel groups. A holding company with JFE Steel Corporation, JFE Engineering Corporation, and JFE Shoji Corporation as wholly owned subsidiaries.

■ Bond Outline

Planned Issue Date	• 2022 FY
Structuring Agency	• Nomura Securities Co.,Ltd.
Planned Issue Amount	• About 30 billion yen
Evaluation Agency	• Japan Credit Rating Agency, Ltd.

3rd Party Evaluation

- The JFE Group formulated the JFE Group Environmental Vision for 2050 in May 2021. In this vision, the Group states the goal of achieving carbon neutrality by 2050, and presents initiatives to achieve this goal. The vision has been evaluated that a strategy based on the importance and role of iron and steel in society and the need to reduce its environmental impact.
- The JFE Group's decarbonization plan is also aligned with the Technology Roadmap for "Transition Finance" in the Iron and Steel Sector established by the Ministry of Economy, Trade and Industry (METI), and is recognized as a significant contribution to the steel industry's transition strategy toward carbon neutrality by 2050.
- In addition, use of proceeds category 3 (production of eco-friendly products) and use of proceeds category 4 (initiatives related to renewable energy) are projects that contribute to the reduction of CO₂ emissions in other industries through the company's business activities.
- It was confirmed that all four elements required by the Basic Guidelines were appropriately established and disclosed (or are scheduled for disclosure).

Candidate for Use of Proceeds

Use of Proceeds Category	Project	
Development of super innovative iron and steelmaking processes	• Development of super innovative iron and steelmaking processes	• Expenditures related to the development of carbon recycling blast furnaces, CCU, hydrogen-based iron and steelmaking, and production of high-grade steel in electric arc furnaces (R&D funds)
Energy saving and increased efficiency	• Use of AI and IoT, etc. in blast furnaces	• Expenditures related to deployment of technologies to reduce CO ₂ emissions by stabilizing operations, etc. (capital investment, etc.)
	• Expansion of scrap steel use	• R&D funds to increase scrap steel use
	• Renovation of coke ovens	• Cost of renovating coke ovens to improve efficiency that contributes to CO ₂ reduction
	• Recovery and effective use of waste heat and byproduct gas	• Expenditures for effective utilization of waste heat, byproduct gas, etc. generated at steel mills (capital investment, etc.)
Manufacture of eco-friendly products	• Resource conservation	• Expenditures aimed at reducing the amount of reducing materials used in blast furnaces (capital investment)
	Production of high value-added electrical steel sheets	• Expenditures related to the manufacture of electrical steel sheets (capital investment, R&D funds, working capital, etc.)
Initiatives related to renewable energy	Initiatives related to renewable energy (biomass, etc.)	• Expenditures related to renewable energy business (EPC, operations) (capital investment, working capital, etc.)

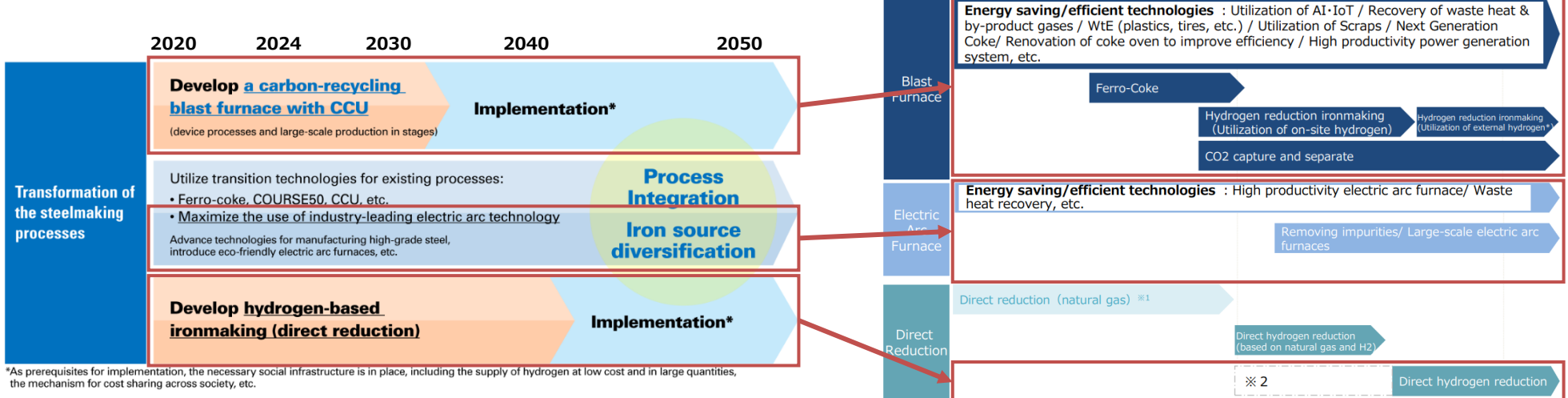
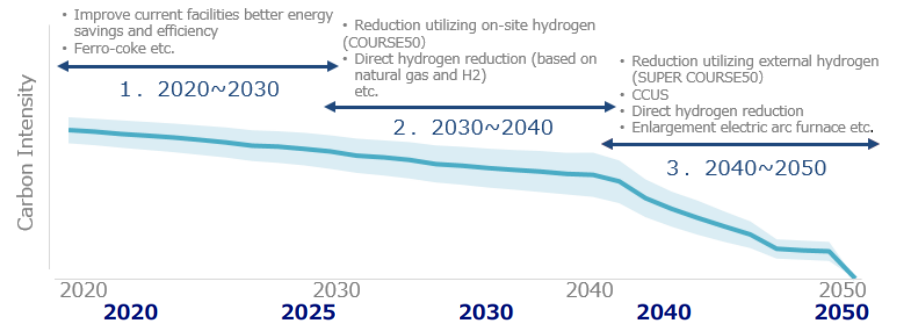
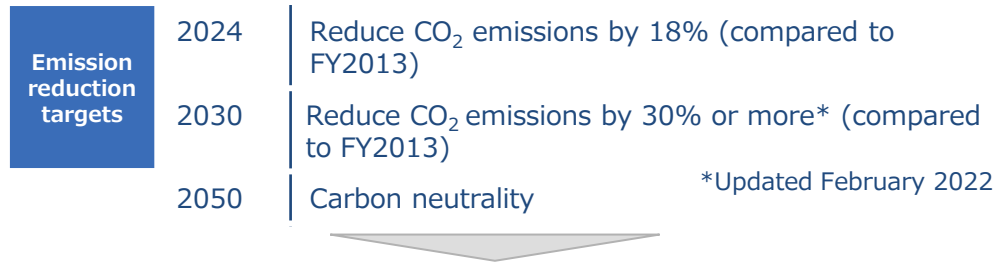
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Alignment with the Four Elements in Basic Guidelines on Climate Transition Finance

<p>Element 1 (Transition Strategy and Governance)</p>	<ul style="list-style-type: none"> Transition Strategy: The Group formulated the JFE Group Environmental Vision for 2050 in May 2021 and announced the goal of achieving carbon neutrality by 2050. Measures have also been established including the challenge of super innovative technology aimed at achieving the goal. Governance: A framework to promote carbon neutrality has been established. 	<p>Element 3 (Science based Targets & Pathways)</p>	<ul style="list-style-type: none"> The JFE Group has established the carbon neutrality goal for 2050 and medium-term targets, and has formulated a roadmap for transformation of iron and steelmaking processes. The company's roadmap also aligns with the Technology Roadmap for Transition Finance in the Iron and Steel Sector
<p>Element 2 (Materiality)</p>	<ul style="list-style-type: none"> Contributing to reduction of CO₂ emissions of the JFE Group as well as its customers, and across society are first on the list of the JFE Group's material issues of corporate management. 	<p>Element 4 (Transparency)</p>	<ul style="list-style-type: none"> The investment plan (340 billion yen GX investment) for green transformation and achieving carbon neutrality has been announced in the Seventh Medium-term Business Plan.

Transition Strategy and Science-based Targets (Elements 1 · 3) | JFE Group Roadmap and Steel Sector Roadmap

- ✓ Establishment of midterm targets that can be achieved with maximum introduction of technology



*As prerequisites for implementation, the necessary social infrastructure is in place, including the supply of hydrogen at low cost and in large quantities, the mechanism for cost sharing across society, etc.

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Key Points in the Case Study (Element 1: Transition strategy and governance, use of proceeds)

JFE transition strategy (part)

(1)

Reduction of CO₂ emissions in the iron and steel business

- Challenge of developing super-innovative technology with a focus on carbon-recycling blast furnace + CCU
- Development of hydrogen-based iron and steelmaking technology (direct reduction)
- Development of technology for high-grade steel manufacturing that makes maximum use of industry-leading electric arc furnace technology and promotion of higher efficiency, etc.
- Promotion of multi-track development of transition technology (expand use of ferro-coke and converter scrap, low-carbon energy transformation, etc.)

(2)

Expansion of contribution to reducing CO₂ emissions across society

- Engineering Business: Renewable energy power generation, expansion and development of carbon recycling technology targets for contribution to reducing CO₂ emissions
FY2024 12 million tons
FY2030 25 million tons
- Iron and steel business: Development and provision of eco-friendly products and solutions
- Trading business: Expansion of biomass fuel and scrap steel transactions, strengthening of SCM for eco-friendly products, etc.

Candidate for Use of Proceeds

Development of super-innovative processes

- ✓ Development of super innovative iron and steelmaking processes

Energy saving and greater efficiency

- ✓ Use of AI/IoT, etc. in blast furnaces
- ✓ Expansion of scrap steel use
- ✓ Renovation of coke oven for greater efficiency
- ✓ Recovery and effective use of waste heat and byproduct gas
- ✓ Resource conservation

Manufacture of eco-friendly products

- ✓ Production of high value-added electrical steel sheets

Initiatives related to renewable energy

- ✓ Initiatives related to renewable energy (biomass, etc.)

Key Points

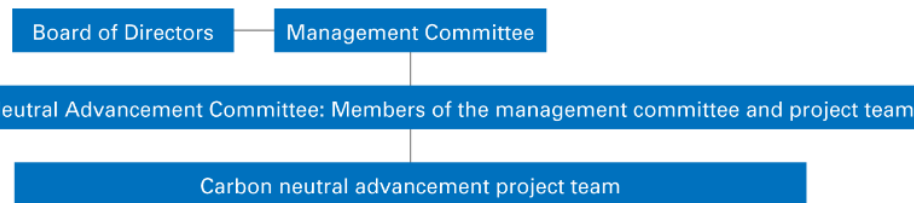
- The JFE Group has clearly stated its medium- and long-term targets and the strategies for achieving them.
- Targets and strategies incorporate the maximum technically feasible reductions, including energy saving, greater efficiency, and technological development in the iron and steel business, and are also aligned with the iron and steel roadmap.
- In addition to reducing its own CO₂ emissions, the company has established strategies and targets for contributing to reducing CO₂ emissions across society, such as eco-friendly products and renewable energy.
- The use of proceeds is also consistent with the transition strategy (mainly (1) and (2) on the left), and in particular, in addition to the current steady efforts, initiatives that contribute to future reductions, such as technology development with a view to carbon neutrality in 2050, are also candidates for use of proceeds. It has also been adopted by the Green Innovation (GI) Fund.
- While there is some uncertainty about the implementation of a long-term transition strategy, JFE Holdings has established a governance structure for group-wide management and promotion of the strategy.

Transition Finance | Case Study 4: JFE Holdings, Inc.

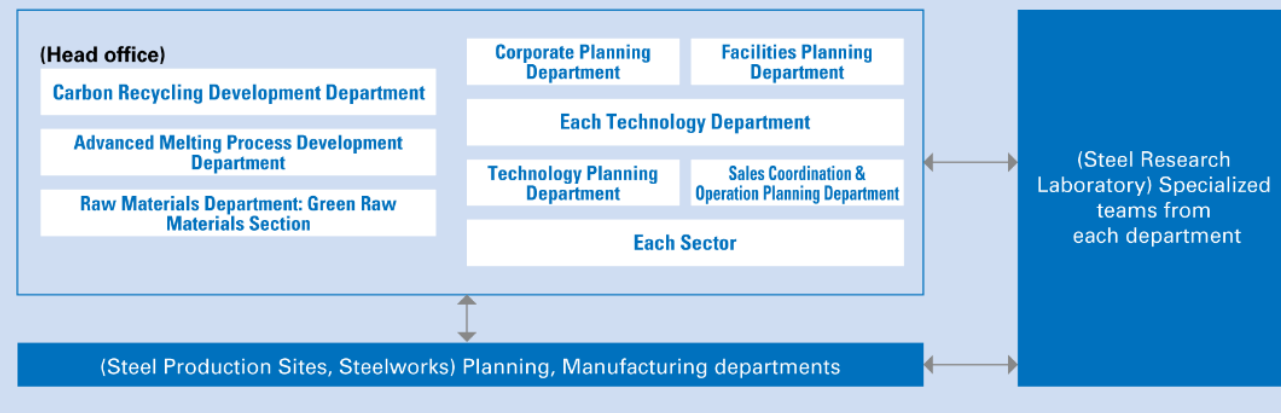
Key Points in the Case Study (Element 1: Governance)

- The JFE Group established a company-wide project team under the direct control of the president in October 2020. The team promotes development and commercialization of super-innovative technologies to realize carbon neutrality in 2050
- The JFE Group, together with other steelmakers, has been selected in all four items of the GI Fund adopted project for the development of innovative technologies related to iron and steelmaking processes.

Framework for promoting carbon neutrality



Project Leader: Executive Vice President Responsible for the Corporate Planning Department



GI Fund adopted projects

7 years **200** billion yen

Research and development 1 Development of hydrogen reduction technology using a blast furnace

- (1) Development of hydrogen reduction technology, etc using hydrogen in steel mills

- (2) Development of low carbon technology, etc. using external hydrogen and CO₂ contained in blast furnace exhaust gas

Research and development 2 Development of direct hydrogen reduction technology that reduces low-grade iron ore with hydrogen alone

- (1) Development of direct hydrogen reduction technology

- (2) Development of impurity removal technology for electric arc furnaces using directly reduced iron

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Transition Finance | Case Study: JFE Holdings, Inc. Transition Bond

Modelability Review Results: Approval

This is the first transition bond in the iron and steel sector, and is appropriate as a model case that is consistent with the roadmap for the iron and steel sector.

Main opinions

Transition strategy

- In the iron and steel sector, the current energy saving and efficiency improvements are necessary to reduce current emissions, but the development of innovative technologies in the future is also essential, and the use of proceeds is also consistent with the strategy.
- Iron and steel can also be a source of CO₂, so it is hoped that this transition finance will successfully promote CCU and carbon recycling blast furnaces.
- Diversification of the business portfolio and contributing to reducing CO₂ emissions across society is one way to achieve the transition, and JFE has drawn up a comprehensive strategy for achieving carbon neutrality in 2050.

Scientific basis

- JFE's medium-term targets are the maximum targets within the range of available technologies, and the path toward carbon neutrality in 2050, including such targets, does not deviate from the roadmap for the iron and steel sector.
- While it is understood that this is the most technically feasible target, the COP26 agreement has increased the importance of efforts towards 2030 goal, and investors are focusing on the 2030 target*. It is hoped that more ambitious targets will be established in the future.

*The target value for FY2030 was updated to 30% or more in February 2022.

Other elements/ others

- Steady progress in the transition in the iron and steel sector is important from the perspective of promoting transition in high-emission industries.
- As a hard-to-abate sector, efforts are being made to promote the governance structure within the corporate.
- The transition pathway must be linked with the investment plan of the corporate.
- It is hoped that the positive impact on environment this financing has in achieving the 2030 target will be more clarified.
- The fact that the use of proceeds includes not only current initiatives, but also future initiatives such as the development of super innovative iron and steelmaking processes is also important from the perspective of promoting the transition to decarbonization.

This document focuses on the contribution of transition finance to the realization of Japan's carbon neutrality by 2050 and the Paris Agreement, and does not cover any of the risks associated with transition finance as a financial instrument. It should be noted that even in the model case of this project, there are credit risks and other risks (in the case of bonds, price fluctuation risks, liquidity risks, etc.) as in ordinary financing.