JFE Holdings Co., Ltd.

JFE Holdings JFE Group Environmental Management Strategy Briefing 2025

Summary of questions and answers held on May 29, 2025

Q. In P.8 of the presentation material (Strengths of Japanese Steel Industry (Steel Products Attractiveness)), I believe that electrical steel sheets and high-tensile steel are representative applications of products for EVs. Are there any other products that JFE Steel and JFE Engineering are focusing on or that have growth potential for use in EVs, such as in-vehicle batteries?

A. (Steel Business) Non-oriented electrical steel sheets are used in EVs, while high-tensile steel is widely utilized in automobiles beyond just EVs. The use of high-tensile steel is increasing due to the need for weight reduction, as the body of an EV becomes heavier when the battery is installed. In addition to high-tensile steel, our products, such as pipes, also contribute to weight reduction. Our group companies are engaged in various technological developments and the supply of components for batteries.

(Engineering Business) Although the contribution to sales and profits is not substantial so far, I would like to highlight two points related to EVs. First, our group company, JFE Technos Co., Ltd., sells rapid charging systems for EVs at roadside stations. Second, as part of the product lineup in the waste Incineration and power generation plant division, we have been trialing EV garbage trucks (waste collection vehicles with replaceable batteries) for several years and have delivered them to several customers. Since EV garbage trucks are still in the process of gaining traction in Japan, we are selling them to local governments that are considering them as pilot projects.

Q. You mentioned that EV garbage trucks will be piloted. Will they be commercialized and increase their contribution to earnings?

A. We are still in the process of evaluating this, but we hope to have it on track during the eighth medium-term business plan period.

Q. In the diagram of process conversion in the lower part of the presentation document (Direction of Process Transformation (Innovation Period)) on page 18, what does the arrow extending to each blast furnace mean? Does it indicate the timing of blast furnace refurbishment or that some innovation will be used here?

A. The ends of the arrows in the lower diagram indicate the timing of each blast furnace refurbishment. The decision to change the process will be made by comprehensively considering whether each of the innovative technologies mentioned above has been completed by the time of refurbishment and whether the overall situation, including other infrastructure, is in place.

Q. The UAE's direct-reduced iron project appears to be slightly behind schedule. What is the reason for this delay? Also, please tell us the schedule for charging reduced iron to the blast furnace.

A. Regarding the Middle East reduced iron project, we are conducting feasibility studies (FS) on plant selection, production costs, and other factors, aiming to start production in 2 to 3 years. Discussions are also ongoing regarding the off-take volume. As for using hot briquetted iron (HBI), experiments have been completed in Chiba, and we have established the prospect for continuous charging, which has led to a decision on plant investment in Chiba. The charging of HBI into the blast furnace is expected to achieve a maximum potential reduction of 2 million tons of greenhouse gas (GHG) emissions. We will assess the procurement status from the Middle East reduced iron project and other sources to determine the expansion of reduced iron utilization in each district.

Q. It is said that the company aims for the top share in the green steel market, but does it mean that the 3 million tons in fiscal 2030 is the top in Japan? Also, the cycle of taking premiums and investing them is important, but I would like to know how you plan to secure premiums in the future.

A. In fiscal 2023, the first year the company sold green steel products, the maximum supply capacity was approximately 200,000 tons, and in fiscal 2024, it is expected to increase to approximately 500,000 tons. We aim to expand our maximum supply capacity of green steel to 3 million tons by fiscal 2030, by promoting GHG emissions reductions, including the innovative electric arc furnace in Kurashiki. Our sales are not limited to the domestic market; we also plan to export. With the major goal of achieving the top share in Japan, we are actively working to stimulate demand, visualize the value of green transformation (GX) to create a GX market, and promote international standardization to make it easier for customers to use green steel products.

Regarding how we plan to secure premiums, in order to obtain a premium commensurate with the environmental value of green steel products, we carefully explain this value to our customers, taking into account the carbon price of the EU Emissions Trading System (EU ETS), our reduction costs, and the costs associated with future GHG reduction investments. We receive a premium for all green steel products. While it is difficult to provide an exact figure, we currently receive a premium of about 40% compared to traditional products.

Q. Please tell us about the electric power infrastructure after the introduction of large Electric Arc Furnaces in the Kurashiki district. I understand that this is quite a significant topic with a long time horizon, but is it correct to assume that the current infrastructure is sufficient to secure the power supply during the initial phase of introducing the first large Electric Arc Furnace? Additionally, is it based on the assumption that JFE will invest in the form of capital investment or financial support when it becomes necessary to strengthen the power transmission network throughout the region? Regarding hydrogen infrastructure, you mentioned that you are moving forward with the next steps, including collaboration with other companies. Could you provide insights on the funding outlook, necessity, and timeline for this?

A. Regarding the electric power infrastructure, our policy is to enhance the existing power systems for the introduction of the Innovative Electric Arc Furnace, which is scheduled for FY 2028. The expansion of power receiving facilities at the JFE

site is included in the current investment budget for the Innovative Electric Arc Furnace. However, as companies located in the Mizushima Industrial Complex, including ours, pursue carbon neutrality and electrification, we anticipate an increase in electric power demand that will exceed the capacity of the existing power grid. Therefore, significant reinforcement of the power grid will likely be necessary. We have already established a working group with neighboring companies in the Mizushima complex and are in discussions with Chugoku Electric Power Transmission & Distribution Company, Inc. regarding this matter. We are still in the early stages of assessing future electricity demand and the scope of necessary enhancements, and we expect that this will require considerable time and investment costs. However, at this point, we cannot specify the exact costs or timeline involved.

Q. In the effort to achieve carbon neutrality, the reduction of GHG emissions will be greatly affected by the production volume reduction due to structural reforms, but the reduction of emission intensity will also be related to the emissions trading system (GX-ETS) from the next fiscal year. Does your company believe it can sell credits by cutting emissions intensity ahead of other companies? What is your strategy for this system?

A. The GX-ETS is one of the government's growth-oriented carbon pricing initiatives, and it is recognized that the steel industry and other GHG-emitting industries will continue to make significant investments in R&D and GX, supported by substantial government assistance. According to media reports, under the framework of the system, companies that emit 100,000 tons or more per year will be subject to the system, and it is expected that not only JFE Steel but also several of our group companies will fall under this category. I believe that the details of the system, including benchmarks and target levels, will be discussed in the future, and our company's position will be evaluated after more information becomes available.

On the other hand, there is a concern that this may divert resources away from R&D and the implementation of ultra-innovative technologies aimed at achieving carbon neutrality. In designing the detailed system, we strongly hope that it will contribute to maintaining and enhancing the international competitiveness of Japanese industry and support economic growth.

Q. Regarding the GHG emission reduction plan on page 15 of the presentation material, what are the production capacities and production volumes that are assumed for the emission targets for fiscal 2027 and 2030?

A. As announced in the 8th Medium-Term Business Plan, we have decided to permanently suspend Fukuyama No. 4 Blast Furnace in fiscal 2027, and crude steel production capacity will be adjusted accordingly. The crude steel production capacity of the seven blast furnaces in FY 2024 is estimated to be about 26 million tons, but in FY 2027, it will be approximately 21 million tons. The GHG emission reduction target of 24% for fiscal 2027 is set as an intermediate target, representing a linear combination of 18% for fiscal 2024 and 30% for fiscal 2030. Technological GHG reduction investments planned for FY 2027 have already been decided and implemented as part of the previous business plan. A significant portion of the investment required to achieve a reduction of 30% or more by fiscal 2030 has also been approved and will be steadily implemented. In the 8th Medium-Term Business Plan, we will continue to invest in emission reductions. We believe that it is crucial to steadily reduce GHG emissions through the development of technologies and energy

conservation. Since crude steel production fluctuates based on steel demand, we are currently assessing how much GHG can be reduced without being affected by these factors. When crude steel production decreases, GHG emissions directly decrease; however, a reduction in production can lead to decreased production efficiency and increased unit energy consumption. Nonetheless, we believe it is essential to consistently reduce GHG emissions by developing appropriate technologies and linking them to our investments. Therefore, we aim to achieve GHG reductions through the investments outlined here.

Q. I think it is difficult to make a decision to invest in carbon-neutral technology development because there is currently no predictability. How did you decide to invest in the innovative electric arc furnace in Kurashiki? What is the concept behind the sales premium?

A. The Japanese steel industry accounts for 13% of Japan's total CO2 emissions and is a key industrial sector for achieving carbon neutrality in the country. Therefore, we believe that continuous and maximum reduction efforts are necessary. We view climate change not only as a business risk that necessitates CO2 reduction but also as a business opportunity. The innovative electric arc furnace to be constructed in Kurashiki will enable the large-scale production of high-quality, high-performance steel products that have been difficult to manufacture with existing electric arc furnaces. We believe our company is the first in the world to establish such a system with a 2 million-ton electric arc furnace. As the top runner in the domestic green steel market, we intend to generate returns by leveraging the emission reduction value as a premium, positioning this investment as part of our growth strategy.

Q. It is recognized that the mass balance method has been criticized in some areas for calculating environmental value. How is the mass balance method being discussed in the domestic and international institutional design?

A. The practice of selling green steel by allocating GHG reduction results to specific steel products based on the mass balance method is not unique to our company. Three Japanese steel companies, as well as companies in Europe and the United States, also sell green steel using the same method. As shown on page 16, this approach has been adopted not only in Japan but also by users in Malaysia, the United States, Vietnam, and other countries, and we believe that a certain level of understanding has been achieved. However, it is a complex concept to grasp, and it is essential to ensure that steel products have the same value based on a unified standard worldwide. In Japan, the Japan Iron and Steel Federation has defined the guidelines for green steel products based on the mass balance method, ensuring that the value is consistent regardless of which company the products are purchased from. Additionally, based on the guidelines of the Japan Iron and Steel Federation, a common guideline was established at worldsteel last autumn and announced at COP29. On the other hand, we have received numerous opinions from our customers, and to address these concerns and establish clearer and fairer standards, we are simultaneously revising the guidelines of both the Japan Iron and Steel Federation and the WSA. We aim to announce the revised version at COP30.

Furthermore, as part of international initiatives, SBTi and the GHG Protocol have been reviewing their guidelines since the latter half of last year. Activities to incorporate the concept of mass balance steel developed by worldsteel are also being pursued concurrently, and I recognize that positive discussions are taking place.

Q. How do you see the offshore wind market?

A. Ramping up production is expected to begin in fiscal 2026, with full operation anticipated during the 8th Medium-Term Business Plan, which concludes in fiscal 2027. Depending on pricing, the project is expected to reach an annual scale of approximately 50 billion yen at full capacity. The Kasaoka Monopile Factory is currently the first and only offshore wind monopile manufacturing facility in Japan. In addition to our efforts to reduce costs, we will emphasize the quality of domestic products and our commitment to delivery timelines, aiming to build additional trust and engage in various projects, including round projects.

Q. Regarding the bridge business using stainless clad steel, please tell us how you plan to develop the business and how you expect the market to expand.

A. There is a condition that the product cannot be delivered unless the customer recognizes the value of the technology for extending the life of infrastructure and adopts it. In short, since bridges' lifespan is doubled, customers do not perceive any disadvantage even if the selling price is slightly higher. The percentage of bridges that are over 50 years old is currently over 37%, and it is expected to soon exceed 50%, facing deterioration before they are rebuilt. Additionally, due to the declining birthrate and aging population, a shortage of workers for construction is anticipated in the future. Considering the future state of infrastructure in Japan, even if new construction is not carried out, there will be little room for large-scale repairs and painting. Therefore, we aim to actively promote this product as a valuable solution for enhancing national resilience.

Q. Will steel produced at the innovative electric arc furnace in Kurashiki be used for automobiles? I think that the realization of high-quality steel products depends on the quality of scrap, and I would like to know how you intend to procure it.

A. At the Kurashiki Innovative Electric Arc Furnace, we aim to manufacture and supply high-quality, high-performance steel products produced by the blast furnace process, including those for automobiles, to our current customers and those who understand the environmental value of these products. We recognize that scrap procurement is a very important issue. First, because our company has a good understanding of the quality of scrap generated from steel supplied by JFE, we collaborate with customers to collect and utilize this type of scrap, known as return scrap. Additionally, reduced iron is necessary for producing high-quality steel, so we will procure it through the Middle East Reduced Iron Project I mentioned earlier. Furthermore, to reduce overall costs, the use of waste scrap is also important. Although there are various technical challenges, we aim to overcome them and produce steel products of the same quality as those manufactured by the current blast furnace process using the innovative electric arc furnace, and to sell them widely to our customers.

Q. While the company has set high targets for the sale of green steel products, its high price has not yet been adopted by consumers who are strict about costs. What do you think is necessary to promote the adoption of green steel products? What will JFE work on?

A. We carefully explain our environmental values to our customers to stimulate demand. In fiscal 2024, our products

are expected to be adopted across all sectors, and their adoption is expanding in the shipbuilding industry, where we can secure continuous orders. Isuzu Motors, Toyota Motor Corporation, and Nissan Motor Co., Ltd. have also decided to adopt our products starting in fiscal 2025. To further promote sales of green steel products, it is crucial to first ensure that customers understand the environmental value. Based on the recommendations made by the Study Group on Green Steel for Green Transformation (GX), sponsored by the Ministry of Economy, Trade and Industry, we will develop clear guidelines to visualize environmental values and revise the standards to make them more user-friendly for customers, enabling them to reflect these values in the carbon footprint (CFP) of products made from green steel. Furthermore, we aim to achieve ISO standardization to enhance the reliability of our standards as a global benchmark. Since some customers prioritize the GHG Protocol and SBTi standards, we are also working to incorporate these into the GHG Protocol. To share these environmental values with society as a whole, it is essential for the public to understand them; without this understanding, progress toward carbon neutrality will be hindered. I believe it is vital to recognize the value of reducing GHG emissions both in Japan and globally, and to create an environment that makes this economically viable.

Q. It has been mentioned that waste scrap will be used in the innovative electric arc furnace in Kurashiki. How will the company address logistics when procuring waste scrap from urban areas where a large amount of waste scrap is produced?

A. The investment in the innovative electric arc furnace includes the costs for constructing a new quay to procure large quantities of scrap, as well as the costs for equipment to handle scrap on-site. Generally, waste scrap is primarily generated in eastern Japan and is transported to western Japan along the distribution route. Regarding how this scrap will be collected and transported to Kurashiki, we plan to work closely with the entire JFE Group, including scrap dealers with whom we already have business relationships and JFE Shoji Co., Ltd., which handles a significant amount of scrap, to ensure effective collection and utilization as raw material for the electric arc furnace.

Q. Is there anything you can tell us about the expansion of electric arc furnaces in Sendai?

A. In the Sendai district, we are currently producing special steel and steel bars using electric arc furnaces. There is a demand for these products due to their low carbon footprint (CFP), so we will increase the manufacturing capacity of our electric arc furnaces to meet customer needs.

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