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JFE Holdings, Inc.

JFE Issues Seventh Medium-term Business Plan to FY2024

Biggest transformation in company's history aimed at achieving global success

JFE announced today that it has issued its seventh medium-term business plan running from FY2021 through FY2024, signaling the beginning of the most transformative period in the company's history. Through the plan, JFE aims to rise to a new level by taking bold steps to establish a foundation for sustained, long-term growth. In particular, the plan is designed to enable JFE to overcome rapid and extensive change in social and economic conditions surrounding the company, including a difficult and unprecedented operating environment characterized by intensifying global competition amid the ascendancy of China, increasing economic uncertainty and geopolitical risk due to U.S.–China conflict, needs to address climate change, such as carbon neutrality, the emergence of innovative new digital technologies, and the spread of COVID-19.

I. JFE's mission

The long-term goal of JFE is to provide products and services that support the development of a prosperous global future, which reflects JFE's corporate vision of contributing to society with the world's most innovative technology.

At the core of JFE's business is steel, a basic material that is indispensable to modern-day civilization. But the strengths of JFE go beyond that, encompassing an engineering business born out of steel operations that makes life safer and more convenient for society, and also a global trading business that helps to deliver the diverse value of JFE's many operations to all corners of the world. JFE generates value by making maximal use of business resources accumulated over many years, including technology, people, financial and intellectual capital, and networks.

JFE's mission is to be essential to **society's sustainable development and to create safe, comfortable lives for people everywhere**, and to become a company that is widely recognized throughout the world. Ensuring **environmental & social sustainability (helping to solve critical issues)** and establishing **economic sustainability (stable earnings power)** will be crucial to making this happen. This will ensure the resiliency of JFE's operational foundations and allow the company to achieve sustainable growth and increased value over the medium to long term. Through these efforts, JFE employees will develop a stronger sense of mission and responsibility about the company's contributions to sustainable development, motivating them to approach their work with a greater sense of purpose and satisfaction.

II. Medium- & long-term strategies under new plan

1. Achieve environmental & social sustainability

A. JFE Group Environmental Vision for 2050

Having positioned climate change as a top-priority business issue, we formulated the JFE Group Environmental Vision for 2050 and are now vigorously pursuing efforts to achieve carbon neutrality by 2050.

- **Climate change is an extremely important business concern for JFE, based on which the company aims to become carbon neutral by 2050.**
- **The company will accelerate R&D in new technologies and strive to create super-innovative technologies.**
- **JFE also will contribute to the reduction of CO₂ emissions in society and use this as a business opportunity to increase corporate value.**
- **Under the TCFD philosophy, JFE will work systematically to combat climate change**

1) Key environmental initiative

- Reduce steel-business CO₂ emissions by 18% vs. FY2013 by the end of FY2024 (adjust FY2030 targets based on progress in technology development under the medium-term plan)

2) Carbon neutrality by 2050

a. Reduce CO₂ emissions at JFE Steel

- Pursue super-innovative technology for carbon-recycling blast furnaces and CCU (see Exhibit).
- Develop hydrogen-based ironmaking (direct reduction) technology.
- Leverage top-in-class electric arc furnace technology for high-grade steel manufacturing, high efficiency, etc.
- Develop transitional technologies for carbon neutrality, including ferro coke, increased use of steel scrap in converters, energy savings and low-carbon energy transformations.

b. Expand contributions to CO₂ emissions reduction in society

- Engineering business: Expand and develop renewable-energy power generation and carbon-recycling technologies.
- Reduce CO₂ emissions by 12 million tons in FY2024 & 25 million tons in FY2030.
- Steel business: Develop and market eco-products and eco-solutions.
- Trading business: Increase trading in biomass fuels, steel scrap, etc. and strengthen business in supply chain management (SCM) for eco products.

c. Accelerate groupwide commercialization of offshore wind-power business

- Engineering business: Manufacture and market monopile and other seabed-fixed structures for offshore wind-power generation.
- Steel business: Use new continuous casting machine in Kurashiki to produce large heavy plates.
- Trading business: Carry out SCM for steel materials and processed products.
- Shipbuilding business:* Manufacture power-generation floating structures and construct work vessels.
- Groupwide: Operation and maintenance (O&M) making maximum use of group resources

* Japan Marine United Corporation (equity method affiliate)

The task of developing processes to mass produce high-performance steel with zero CO₂ emissions is essential for a sustainable world. Huge R&D and equipment replacement costs will be inevitable as JFE executes strategies targeting carbon neutrality. Society must decide how these costs should be shouldered, including with the support of government and other forms of support. Working toward the lofty goal of carbon neutrality by 2050, JFE aims to establish the necessary decarbonization technologies as soon as possible, ahead of global competitors, with the underlying goal to develop decarbonization infrastructure and achieve equal footing on a global basis.

B. Solve issues impacting society

1) Safety/health management

We take seriously the fact that we have not been able to achieve our top-priority goal of zero major accidents. Accordingly, we will further increase efforts to prevent accidents by installing facilities.

- Invest around **10 billion yen** per year groupwide to address safety issues.
- Implement multifaceted health/safety management using advanced IT (monitoring, detection, etc.).

2) Facilitate employee participation Workstyle reforms

As business becomes increasingly globalized and complex, it is vital that we attract people who can enhance our competitive advantages and execute our growth strategies. Create workplaces and internal structures to maximize employees potential and enable them to work safely and confidently. We will address the following three points:

- Diversity & inclusion (maximize capabilities of employees with diverse backgrounds)
- Personnel development (improve individual abilities and develop skills for global competence)

- Workstyle reforms (create workplaces where employees can work safely and confidently).

3) Contribute to regional societies through engineering

JFE Engineering helps to build independent, decentralized, recycling-oriented societies through businesses for renewable-energy power generation, regional PPS,* utility services such as gas and water supply & sewerage, food recycling, and waste-power generation.

*Power producers and suppliers engaged in local production of energy for local consumption

4) Respect human rights throughout supply chain

As we believe we must respect human rights not only within our own group, we will conduct human-rights due diligence across our entire global supply chain from FY2021 and continue to expand our support in this field.

C. Enhance corporate governance

So far we have formulated a Basic Policy on Corporate Governance, established a directors nomination committee and remuneration committee, introduced stock-based compensation for directors, revised the structure of our board of directors and audit & supervisory board based on evaluations of effectiveness, and taken other steps to enhance governance. During this medium-term plan, we will set performance targets for non-financial metrics related to environmental, etc. issues and consider how to apply these in terms of director compensation and investment decisions. We will further strengthen our groupwide cross-sectional risk-management system to appropriately deal with diverse risks in our business environment as well as further strengthen group governance.

2. Establish economic sustainability (stable earnings power)

A. Shift focus of domestic steel business from quantity to quality—Pursue world-class earnings power

The steel market in Japan is the most important market for us, but we must assume it will shrink as Japan's population declines. Nevertheless, intensifying price competition for commodity products and the increasing trend of local production of steel for local use suggest that efforts to grow export volumes are not likely to be profitable. Therefore, we must fully shift production in Japan toward profitability based on quality rather than quantity. The new medium-term plan **targets per-ton profit** of steel materials.

1) Achieve world-class cost and quality competitiveness

- By successfully completing structural reforms in the steel business and thereby greatly reducing fixed costs and lowering our breakeven points, we will establish a profit base that is resilient to changes in economic conditions, ultimately to achieve world-class cost competitiveness.
- We will introduce new technologies through digital transformation (DX) to improve production efficiency and yields and also to greatly increase labor productivity. Large cost reductions (**approx. 120 billion yen**) will be pursued through investment in equipment modernization and rationalization. We will also strive to ensure competitiveness by improving quality and delivering increased customer satisfaction.

2) Expand margins and achieve stable profit

- We will enhance our product mix by focusing resources on strategic products. For improved profits, we will increase our mix of highly value-added products* to an unprecedented **50%**, drawing on advanced technologies that underpin our competitive strength.
- We will ensure that products offering the type of high value that customers seek are suitably recognized in the market, based on which we aim to fully overhaul our sales pricing.

*Products that offer technological advantages, are recognized by customers for their value added, and have greater earnings power than commodity products.

B. Growth strategies

1) Production & sales JV with India's JSW for (gain-oriented) electromagnetic steel sheets (steel

business)

To expand earnings, we will further deepen our direct participation in global markets. In India, the demand for (gain-oriented) electromagnetic steel sheets used in transformers is expected to grow in parallel with significantly increasing demand for electric power. To leverage our advanced technology, JFE will partner with JSW to study the possible **establishment of a joint-venture company to manufacture and sell (gain-oriented) electromagnetic steel sheets** in India. The feasibility study will finish within fiscal 2021.

2) Expand solution business (steel business)

In the steel business, we will build a platform to provide technologies, operations and research knowhow for manufacturing highly value-added products and reducing environmental impact. By developing a **solutions-based business model**, we aim to **triple earnings** in this field in fiscal 2024 compared to fiscal 2020.

3) Expand sales revenue to 1-trillion-yen level in FY2030 (engineering business)

In view of the increasing importance of the environmental, recycling and renewable-energy fields, we aim to expand our engineering business as a growth sector by helping to solve pressing issues in global society. The goal is to double current sales revenue to the 1-trillion-yen level by fiscal 2030 through expansion of operational businesses and also M&As and business alliances.

4) Expand SCM for overseas processing of electromagnetic steel sheets (trading business)

In the trading business, we intend to create the world's No. 1 global distribution and processing system by making full use of the global network. This will include leveraging synergies with the steel business to expand SCM for the overseas processing of high-function electromagnetic steel sheets, which is one of our strengths.

C. Significantly enhance competitiveness through DX

1) Advance productivity through innovation

The intangible assets we have amassed over many years, including vast stores of data and knowhow, are key sources of our steel business's competitive advantage. We intend to use such assets to innovatively optimize all operations for enhanced productivity. This will include deploying leading-edge digital technologies such as cyber-physical systems (CPS)* in all steel-manufacturing processes and building a platform that does not require specialized knowledge to analyze plant-operation data.

*Systems that generate value by collecting huge amounts of sensor-based data about physical equipment and products, analyzing it in cyberspace, and feeding the results back into the physical environment in real time.

2) Transform existing businesses

We will enhance products and services and strengthen relationships with customers. The strategies are to improve supply chain efficiency among group companies, digitize accumulated plant-operation data, etc., and utilize digital-twin technology optimized in virtual spaces for everything from design to operations.

3) Create new businesses

We will create new business models by expanding our solutions businesses that provide operational technologies and knowhow, and by developing new value, markets and customers in fields such as disaster-resilience and environmental-protection through digital services.

Our expanding deployment of DX will require us to address cybersecurity risks. To prevent cyberattacks and the unauthorized use of our systems as well as to protect our information assets and ensure we conduct business in a safe manner, we will strengthen our security measures and governance led by our JFE Security Integration and Response Team (JFE-SIRT).

D. Balance financial soundness with effective investment based on a “select and concentrate” approach

In the steel business, from the beginning of our business integration we were among the first to reduce fixed costs by consolidating and shutting down production facilities. In March 2020 we fixed plans for structural reforms to reduce our annual crude steel production capacity in Japan by approximately **4 million tons**. This is expected to have the effect of reducing annual costs by approximately **60 billion yen** in fiscal 2024 and lowering needs for renewal investment by approximately **200 billion yen** over 10 years. Under the plan, investments to maintain functions will be carefully selected from the perspectives of effectiveness and necessity. The emphasis will be shifted to investments for improved profitability, cutting-edge facilities, green transformation (GX) and DX.

Furthermore, we will reduce our assets by **200 billion yen**, particularly those assets and businesses that contribute little to earnings or are tied to unprofitable businesses, to strengthen our investment effectiveness and financial stability. Also, to reduce the volatility of earnings that are susceptible to changes in economic conditions, we will establish a more stable profit base by expanding our solutions business for steel and operational business for engineering projects.

Investment and asset-downsizing plans (consolidated basis, 4-year horizon)

		Seventh medium-term business plan	Notes
Consolidated Investment	Equipment Investment	About 1,200 billion yen	
	Business Investment	About 250 billion yen	
	Total	About 1,450 billion yen	Steel business: 1,080 billion yen Steel business maintenance: About 30%
(Of above)	GX Investment	About 340 billion yen	Steel business: 160 billion yen Engineering business: 130 billion yen Trading business: 50 billion yen
	DX Investment	About 120 billion yen	
Asset Downsizing		About 200 billion yen	
Non-consolidated Crude Steel Production (FY2024)		About 26 million tons	
Steel Business Cost Reduction		120 billion yen	

We are also working with Kawasaki city and other government authorities to consider how to repurpose various sites in the Keihin District of our East Japan Works after our restructuring. We are looking at options for land sales, leasing and business uses to maximize economic efficiency and land-use conversion in ways that contribute to sustainable development in local communities. Large-scale land-repurposing initiatives will begin in the Minamiwatarida area and after we disclose our development plans for the Ogishima area in FY2023, we will strive to see some properties put to new use by FY2030.

Performance & profitability targets and dividend policy

We have set the following performance and profitability targets for the plan's final year in FY2024: ROE of 10%, consolidated business profit of 320 billion yen and profit attributable to owners of the parent of 220 billion yen. We will execute a range of measures to ensure achievement of these goals. Regarding returns to shareholders, our policy is to aim for a dividend payout ratio of around 30%.

		7th Medium-term Plan targets	FY2020 actual
Consolidated	Consolidated business profit	320 billion yen	-12.9 billion yen
	Profit attributable to owners of the parent	220 billion yen	-21.8 billion yen
	ROE	10%	-1.3%
	Debt/EBITDA ratio	About 3x	8.1x
	D/E ratio ¹	About 70%	93%

Operating companies	Steel business • Profit per ton ² • Segment profit	10,000 yen/ton 230 billion yen	-3,000 yen/ton (-65.4 billion yen)
	Engineering business • Segment profit • Revenue	35 billion yen 650 billion yen	24 billion yen 485.7 billion yen
	Trading business • Segment profit	40 billion yen	20 billion yen

¹ For liabilities with equity subject to credit ratings, these equities reflect the evaluations of rating agencies.

² Steel business profit per ton (consolidated segment profit ÷ nonconsolidated sales volume)

III. Basic policies & measures for operating companies

1. Steel business (JFE Steel)

- Capital investment, business financing & investment: **1,080 billion yen over 4 years (40% for strategic investment & 30% for maintenance investment).**
- FY2024 unconsolidated crude steel production capacity: **Around 26 million tons**
- FY2024 segment profit target: **10,000 yen/ton; 230 billion yen** (based on unconsolidated sales volume in tons)

A. Transition to a lean, robust business structure by shifting focus from quantity to quality

- Implement structural reforms and product-mix enhancements focused on selectively concentrating resources in priority fields.
- Secure customer recognition of our product value and then suitably rebuild pricing structure to expand margins.
- Reduce costs by using DX initiatives to increase labor productivity, improve yields, etc.
- Contribute to reduced CO₂ emissions in society by increasing production capacity for Grain-oriented electrical steel sheet (49 billion yen investment) and heavy, extra-thick steel plate for offshore wind-power applications, using new continuous-casting equipment in Kurashiki, and stably producing high-strength steel sheets for vehicles.
- Achieve world-leading profit per ton based on solid execution of above measures.
 - **Cost reductions: 120 billion yen over 4 years**
 - **Labor productivity: +20% (13% via structural reform + 1,670→2,000 tons/person/year via DX, etc.)**
 - **Ratio of high value-added products: Increase to 50%**

B. Expand and accelerate overseas business via solutions based on knowledge, skills, and data

- Begin studying the feasibility of establishing a grain-oriented Grain-oriented electrical steel sheet manufacturing company in India together with JSW.
- Actively capture expanding demand overseas by having JFE Steel participate in growth markets directly as an “insider” (strengthen relationship with FHS Vietnam, etc.).
- Expand solution-business earnings by leveraging valuable technological intangible assets.
 - **FY2024 solutions business profit: Triple FY2020 level**

C. Use digital technology to strengthen production base and strategies for new growth

- Use digital technology to streamline production operations and achieve huge improvements in labor productivity, including by introducing cyber-physical systems on all production lines.
- Utilize DX to raise customer satisfaction through quality enhancements and better delivery services.
- Build platforms for providing technology and knowhow to actively expand solutions business.
 - **DX investment: 115 billion yen over 4 years**

D. Pursue innovation aimed at achieving carbon neutrality

- Develop a range of super-innovative technologies through a multi-track approach. Accelerate R&D in technologies for achieving carbon neutrality as early as possible and seek government and other support

for such undertakings.

- Initiate R&D for carbon-recycling blast furnaces and CCU (proof-of-principle process by FY2027).
- Accelerate development of hydrogen-based steelmaking technology, including expanded use of raw material sources through collaboration with BHP and other overseas partnerships.
- Continue to develop technologies for manufacturing high-grade steel using electric arc furnace method, high efficiency, economic rationality, and diversification of raw materials.
- Actively participate in Iron and Steel Federation of Japan's long-term vision for climate-change mitigation.
 - **CO₂ reductions: 18% reduction vs. FY2013 by end-FY2024**
 - **GX investment: 160 billion yen over 4 years**

2. Engineering business (JFE Engineering)

- Capital investment, business financing & investment: **Around 220 billion yen over 4 years**
- FY2024 revenue target: **650 billion yen**
- FY2024 segment profit target: **35 billion yen**

A. Medium/long-term priority areas

Waste to resources

- In domestic environmental business, establish a profit base through M&A deals and DX initiatives to increase productivity and enhance product strengths.
- In recycling business, make priority investments, including M&A deals, focusing on food, plastics and incineration & power generation.
 - **FY2024 revenue target: 290 billion yen**

Carbon-neutral business

- Study prospects for manufacturing and supplying monopile and other seabed-fixed structures for offshore wind-power generation.
- Actively pursue engineering, procurement and construction (EPC) projects in areas including biomass, solar power and geothermal power.
- Contribute to carbon neutrality through application of practical technologies and development of new energy solutions, such as hydrogen energy.
 - **FY2024 revenue target: 80 billion yen**

Combined utility services

- Shift to a comprehensive business model, including for efficient operation of facilities, to contribute to energy savings and decarbonization.
- Expand footprint of these businesses to contribute to independent, decentralized regional societies.
 - **FY2024 revenue target: 20 billion yen**

Core infrastructure

- Continue to use new materials, new construction methods and technologies such as construction robots to address newly arising needs.
 - **FY2024 revenue target: 260 billion yen**

B. Overseas business expansion

- Enhance EPC competitiveness, engage in bridge construction projects under official development assistance (ODA), and pursue M&A synergies in chemical-plant field.
- In the environmental, water and recycling fields, deploy technology and knowhow to actively participate in projects with local partners.
 - **FY2024 revenue target: 100 billion yen (included in (1))**

C. DX initiatives

- Digitize entire business and provide new digital services to customers.

- Increase design efficiency by building next-generation solutions for EPC and operation & maintenance utilizing digital-twin technology. Also generate new businesses through digital services.
 - **FY2024 design efficiency: 20% increase**

3. Trading business (JFE Shoji)

- Capital investment, business financing & investment: **Around 120 billion yen over 4 years**
- FY2024 segment profit target: **40 billion yen**

A. Key strategies for growth

Establish No. 1 position in global processing & distribution of Grain-oriented electrical steel sheet

- Establish SCM operations, enhance processing functions and expand collaboration with alliance partners in new regions.
- Establish world-leading operations for Grain-oriented electrical steel sheet processing & distribution.

Strengthen SCM for automotive steel composite materials

- Deepen JFE's cooperative ties across four key regions: Japan, China, Americas and ASEAN.
- Expand sales of strategic products and strengthen business in automotive steel composite material.

Accelerate efforts in overseas construction materials business

- In ASEAN and North American regions, expand trading in this sector and collaborate with local companies to strengthen business foundations.

Fully capture steel demand in Japan

- Continue to strengthen SCM beyond group boundaries and expand capabilities including secondary and tertiary processing to build strong foundations.
- Expand business volume of new transactions to strengthen JFE's market presence.

B. Strengthen purchasing and sales capabilities (expand non-JFE Steel business)

Expand business domains in steel, raw materials, and materials & equipment

- Increase sales of both JFE group products and alliance-partner products as well as actively expand business with other suppliers' products.

C. Seize new business opportunities

Expand environmental-solutions business

- Build SCM operations for steel and processed products targeted at offshore wind-power generation and grow biomass-fuel business.

DX initiatives

- Implement digital technologies in SCM operations to improve customer service.
- Pursue new businesses by leveraging DX.
- Expand rollout of robotic process automation (RPA), expand AI deployment, and adopt new workstyles and internal systems suited to digitization.

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Exhibit

Carbon-recycling Blast Furnaces and CCU

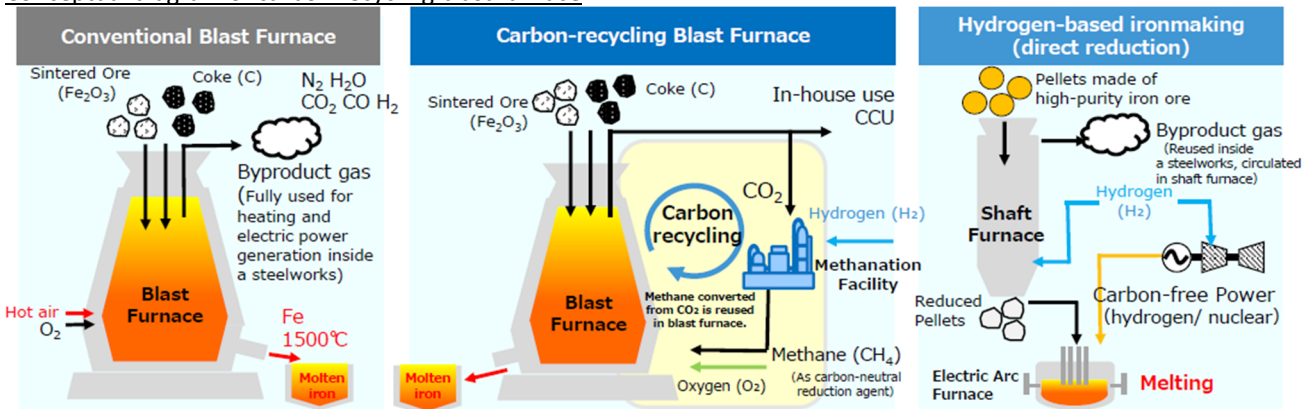
JFE Steel will continue to study the combination of carbon-recycling blast furnaces and carbon dioxide capture and utilization (CCU) to reuse and thereby significantly reduce CO₂ generated in blast furnaces.

Main Features

- JFE Steel's proprietary carbon-recycling blast furnace technology turns CO₂ in blast furnace exhaust gas into methane (methanation), which can be blown back into the blast furnace as a reducing material.
- Recycling carbon leads to fewer CO₂ emissions as well as reduced use of iron ore. In addition, raw materials of the same grade as those used in current blast furnaces can be utilized.
- CCU combined with methanol synthesis also reduces CO₂ emissions along with other reductions by methanation of the blast furnace method.
- The technology can use existing blast-furnace infrastructure to help facilitate the transition to carbon neutrality while continuing to meet the enormous demands for regular and high-quality steel for sustainable global development.

JFE Steel, which is committed to zero-carbon steel production, aims to verify this CO₂-reduction effect for carbon-recycling blast furnaces and practically demonstrate the process by fiscal 2027.

Conceptual diagram of carbon recycling blast furnace



	Conventional Blast Furnace	Carbon-recycling Blast Furnace	Hydrogen-based ironmaking (direct reduction)
Capacity	4M t / BF-year	4M t / BF-year (on par with Conventional BF)	2M t/ Shaft Furnace-year (current direct reduction ironmaking basis)
Reducing Agent	Coke + Pulverized Coal	Coke + Recycled methane (CH ₄)	Hydrogen (H ₂)
Raw Materials	Low-grade raw materials possible.	Low-grade raw materials possible.	Limited (High-grade iron ore)
CO ₂ Emissions	2/t-CO ₂ /1-ton of pig iron	Target: Zero (CO ₂ reduction in BF+CCUS)	Target: Zero (Carbon-free method)