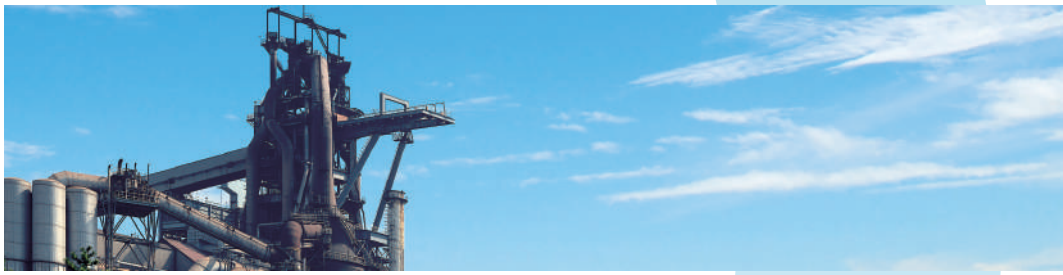

JFE GROUP

SUSTAINABILITY REPORT 2025

JFE

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JFE Group
SUSTAINABILITY
REPORT 2025

Message from the CEO

September 2025
Yoshihisa Kitano
Representative Director, President and CEO
JFE Holdings, Inc.

The JFE Group will play an indispensable role in supporting people's daily lives, driving sustainable development and ensuring safe, comfortable lives for all.

JFE Group's Aspiration

In a business environment facing challenges never before experienced, the JFE Group has sought to enable every employee to reflect on the purposes of their business and organization, as well as their individual purposes, and to envision what they wish to become over the long term. To this end, each operating company defined its purpose, and based on these, we formulated the Group's long-term vision, JFE Vision 2035.

Over the years, we have been steadfastly advancing sustainability initiatives focused on climate change as well as essential economic issues for the Group's sustainable growth. JFE Vision 2035, grounded in our newly articulated corporate purposes, sets out two Groupwide aspirations for the future: becoming the top runner in carbon neutrality technology development and expanding consolidated business profit (Segment profit: ¥700 billion).

Pursuing greenhouse gas (GHG) reduction and carbon neutrality are essential chalenges that humanity must address to continue living comfortably on this planet. The growing frequency of extreme weather events serve as a reminder of how global warming is intensifying, which makes addressing climate change one of the most critical challenges of our time.

By our calculations, achieving carbon neutrality by 2050 will require investing a trillion yen to reduce GHG by fiscal 2035, and around 4 trillion yen between fiscal 2036 and fiscal 2050. This will require expanding our business profit and bolstering our financial base. We set a segment target of 700 billion yen for fiscal 2035 in JFE Vision 2035 to generate the required profit for these investments. Pursuing initiatives for environmental and social sustainability is our mission, and we believe this will lead to corporate economic growth.

In our Sustainability Report 2025, we will introduce readers to the JFE Group's initiatives for sustainable growth.

Our Sustainability Initiatives

Under the Eighth Medium-term Business Plan, which began in fiscal 2025, we are striving Groupwide to proactively facilitate the transition to a circular economy and support biodiversity conservation and nature positive, in addition to addressing climate change as a top-priority business issue under the previous medium-term business plan.

The Japanese government is maintaining its basic stance of ensuring the competitiveness of Japanese industry by achieving carbon neutrality by 2050 and the GX2040 Vision for promoting green transition toward 2040. In the steel business, we are considering the implementation and economic viability of new process technologies as the fundamental premise for achieving carbon neutrality by 2050. To this end, JFE is determined to develop and swiftly implement ultra-innovative technologies to produce high-quality steel, which is our core strength. I believe that a paradigm shift will occur in which all products, including steel, will become eco-friendly. Gaining recognition for the environmental value of green steel will be crucial during this paradigm shift. So we are also pursuing the establishment of an international standard that incorporates environmental value as a prerequisite for expanding overseas demand for green steel, and Japan should lead the way in this effort. The Japan Iron and Steel Federation has already created a guideline on green steel as the basis for the world steel guidelines for GHG chain of custody approaches in the steel industry announced in 2024, and work is being done to revise the GHG Protocol and standardization within the ISO. It is also important for the Japanese steel industry to be the driving force for these initiatives. More details are provided in the "Policy Engagement" section (P. 90) of this report.

Meanwhile, the world population quadrupled from 1.5 billion to 6 billion in the 20th century, reached 8 billion by 2023, and is projected to ultimately surpass 10 billion. This scale of population growth has released a tidal wave of challenges for humankind in areas such as resource depletion, food insecurity, environmental degradation, and growing inequality. Given these pressures, the transition to a circular economy is essential to maintain a comfortable way of life. Activities for realizing this transition will constitute a major framework of JFE Vision 2035 and the Eighth Medium-term Business Plan. In managing the Earth's limited resources, greater emphasis will be placed on the three Rs—"Reduce" use to a minimum, "Reuse" repeatedly, and "Recycle" for effective use in other forms—to sustain comfortable lifestyles. Recognition of these challenges has heightened public awareness of the need to transition to a circular economy.

In addition to the steel and trading businesses, the JFE Group also engages in engineering, and it is leveraging this strength to facilitate the transition to a circular economy.

For example, our steel business offers products as "Reduce" initiatives, such as high-performance electrical steel sheets and high tensile strength steel sheets for automobiles that require fewer additional resources by extending product life cycles and saving energy, as well as highly corrosion-resistant steel plates and anti-fatigue-damage steel plates that decrease the consumption of virgin resources by extending the longevity of infrastructure. Our steel manufacturing process will support the shift to electric arc furnaces and expand the use of scrap. Moreover, the development of technologies, such as an innovative electric arc furnace for production of high-quality steel that will be constructed in the Kurashiki district, will expand "Reuse" by broadening the use of scrap and its transformation into new products. At the same time, it will reduce GHG by using less coal. Our engineering business will promote "Reuse" and "Recycle" initiatives through bottle-to-bottle, plastic recycling, food recycling, and waste-to-energy power generation ventures. In the trading business, we will construct a supply chain for products that "Reduce" and disseminate "Reuse" and "Recycle" initiatives throughout society by supplying scrap materials and collecting waste. The three Group companies will also collaborate further to provide their respective products and technologies to society.

These initiatives for addressing climate change and the transition to a circular economy also contribute to biodiversity conservation and nature positive. We will deepen our awareness of how Group business activities depend on and impact biodiversity and natural capital. In addition to reducing risks, we will adopt diverse approaches, including collaborations with

local communities and the supply chain, to actively expand sales of steel slag products, develop nature-positive products and technologies, plant trees at our business sites, and create and open biotopes to the community.

These initiatives for climate change, transitioning to a circular economy, biodiversity conservation, and nature positive depend upon the power of our employees. The collective efforts of employees with diverse backgrounds and aspirations will be vital during this time of unprecedented transformation and need to adapt to change across society and in the business environment, to achieve sustainable growth in an era that demands carbon neutrality. My main mission is to support these efforts by turning JFE into a more attractive company where employees fully demonstrate their talents and work with enthusiasm. In JFE Vision 2035, we formulated a long-term human resources strategy that links corporate growth and employee growth. We will continue to focus on enhancing employee engagement and advance initiatives for improving work engagement, promoting talent acquisition, and promoting diversity, equity and inclusion (DEI).

With the recognition that contributing to the realization of a society in which the human rights of each and every individual are respected and protected is not only a corporate social responsibility but also a foundational principle of management, we are particularly committed to upholding respect for human rights across the supply chain as a key management concern. In addition to providing education and training for employees, we will continue to promote risk management at suppliers and Group companies and expand human rights due diligence.

To Our Stakeholders

The JFE Group, through the concerted efforts of all employees, will establish its position as a company essential to society's sustainable development and create safe and comfortable lives for people everywhere. To this end, we will steadfastly ensure thorough legal and regulatory compliance. At the same time, the Group will work in concert to address environmental issues such as climate change, transition to a circular economy, and also address biodiversity conservation and nature positive as well as social issues such as occupational health and safety, DEI, and respect for human rights.

Sustainability Report 2025 presents current and prospective stakeholders with a comprehensive overview of our initiatives for achieving sustainable growth. I hope it will deepen understanding of the JFE Group's efforts, and I look forward to your candid feedback and continued support of the JFE Group as we move forward together.

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Value of Steel

Appealing Qualities of Steel that Create Safe, Comfortable Lives for a Prosperous Global Future

Iron makes up approximately 30% of the Earth's mass. Because of its rich reserves, steel can be mass produced at very low cost. Compared to other materials, the environmental impact of its production is extremely low and it has excellent recyclability. Steel can be recycled repeatedly and reborn as various products (closed-loop recycling) with little or no environmental impact, contributing to the sustainable growth of our society.

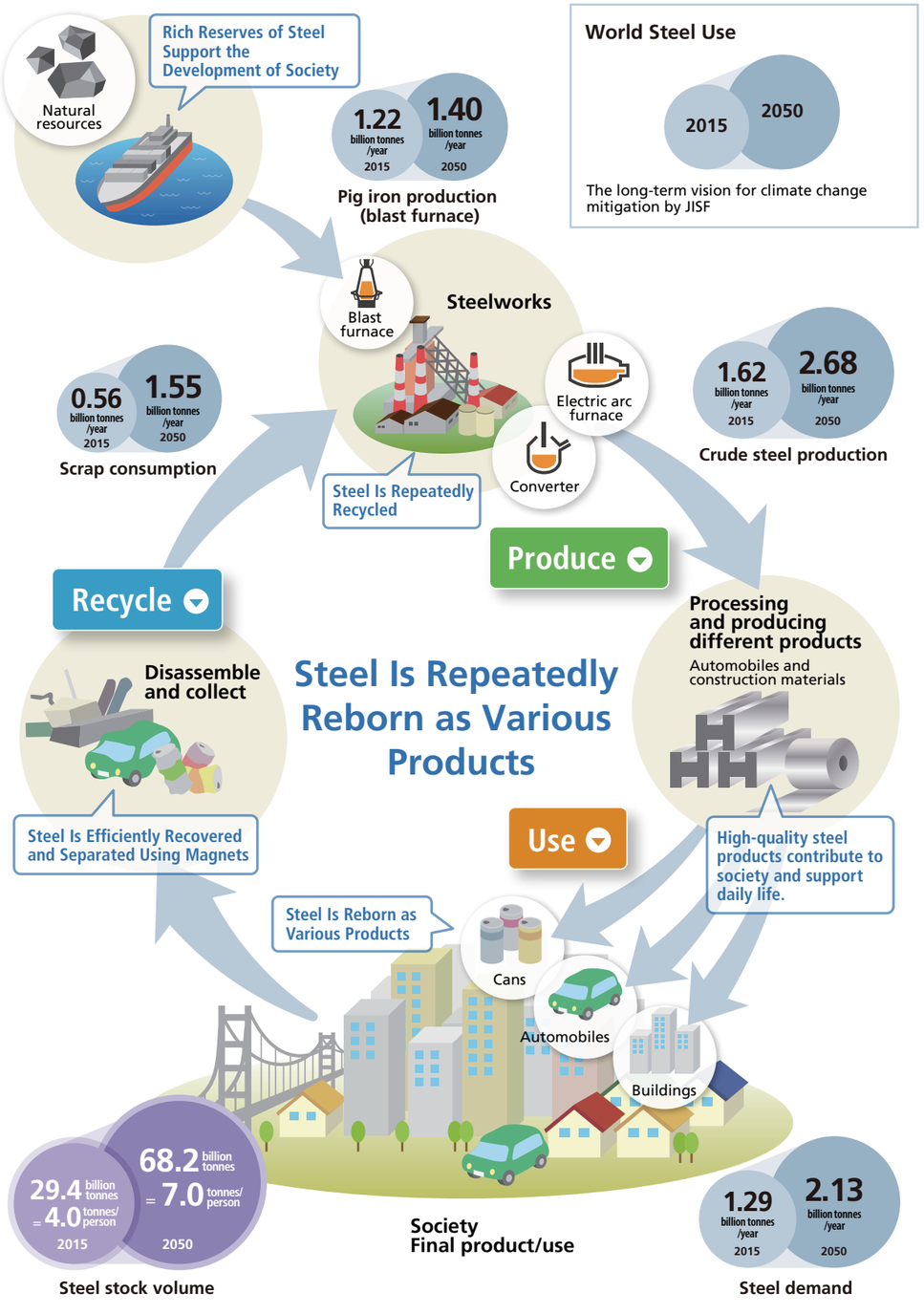
Life Cycle Assessment of Steel

Steel's excellent recyclability contributes to the creation of a sophisticated value chain (P. 29) encompassing three components: Produce, Use, and Recycle. Steel products can be repeatedly reborn as various products. It is therefore important that the environmental impact of steel be assessed across its entire life cycle, including at the recycling stage. JFE Steel participates as a key member in an initiative led by the Japan Iron and Steel Federation (JISF) to quantify the environmental impact of the entire life cycle of steel products and developed the ISO/JIS standard* calculation methodology. Corresponding to this standard, materials with higher recyclability are found to have lower environmental impact such as on global warming.

Fifteen blast furnace and electric arc furnace steel manufacturers operating in Japan, including JFE Steel, have compiled and published the national average value for life cycle inventory (LCI) data for different types of steel products for FY2018.

*ISO 20915: Life cycle inventory calculation methodology for steel products (November 2018)
JIS Q 20915: Life cycle inventory calculation methodology for steel products (June 2019)

> Efforts to Assess the Environmental Impact of the Excellent Recyclability of Steel Products (P. 106)



Produce High Economic Efficiency and Low Environmental Impact

The stable mass production of steel serves as the foundation for daily life and society. CO_2 generated by the manufacturing process of steel is extremely low compared to other materials, making it an environmentally sound material. Steel is an essential for society's sustainable development and to create safe, comfortable lives for people everywhere.

Earth, a Planet of Iron (Abundant Resources)

As much as 86% of the Earth's metal resources are iron ore (200 billion tonnes).

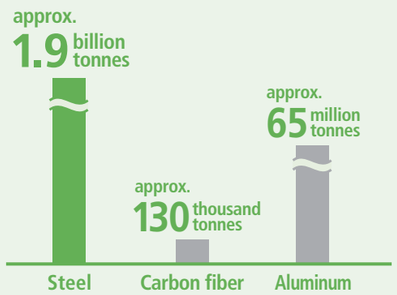
Recoverable Reserves of Iron Ore on the Earth

Source: Mineral Commodity Summaries (2025)

Mass Production at Low Cost

With rich reserves and a long history of technological development, iron is mass produced at reasonable prices and supplied stably, thereby contributing to the sustainable growth of society.

Global Demand (2020)



Research: JFE Holdings

Price*

Research: JFE Holdings
*Cost of producing one unit weight of iron is indexed at 1 for comparison with other materials.

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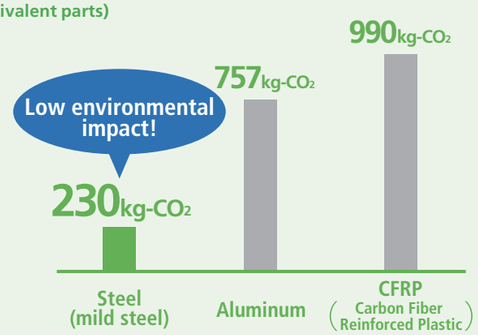
Extremely Low Environmental Impact at the Manufacturing Stage when Compared to Other Materials

Greenhouse gas (GHG) emissions of steel at the manufacturing stage is approximately one-fourth to one-fifth of that of aluminum and carbon fiber with equivalent functionality.

GHG Emissions at the Manufacturing Stage of Materials (CO_2 equivalent)
(kg-CO_2/100 kg of steel equivalent parts)



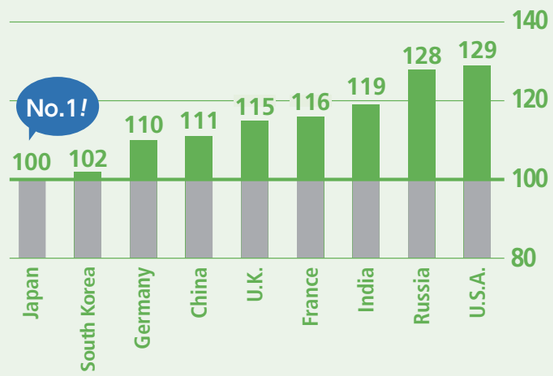
	Steel (mild steel)	Aluminum	CFRP (Carbon Fiber Reinforced Plastic)
GHG emissions per unit weight (CO_2 equivalent) (kg-CO_2/kg)	2.3	11.3	22.0
Functional equivalent weight (kg)	100	67	45

Source: Compiled from data disclosed by WorldAutoSteel

Japan's Steel Industry Boasts the Highest Energy Efficiency in the World

Japan's steel industry (converter steel) produces steel with the lowest environmental impact compared to other major countries. This is a result of its longstanding efforts toward environmental conservation, including developing and spreading the use of energy-saving technologies.

Energy Efficiency by Country, with Japan at 100 (2019)



Source: Research Institute of Innovative Technology for the Earth (RITE)

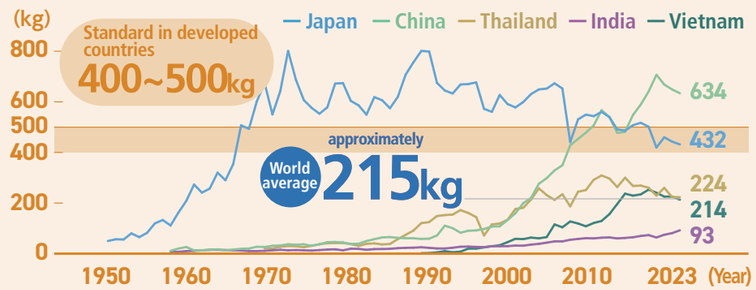
Use Foundation of Daily Life and Society

The use of steel supports daily life while helping to reduce our impact on the environment. For example, making automobile frames with high tensile strength steel sheets, which have a reduced thickness but retain their strength, considerably decreases the weight while maintaining crash performance, thereby helping to reduce CO_2 emissions for society as a whole.

Potential to Grow on a Global Scale

Global average of annual consumption of steel is approximately 215 kg per capita. The long-term global demand for steel is expected to keep growing alongside the economic development of emerging countries.

Trends in Annual Steel Consumption per Capita by Country (kg/person/year)

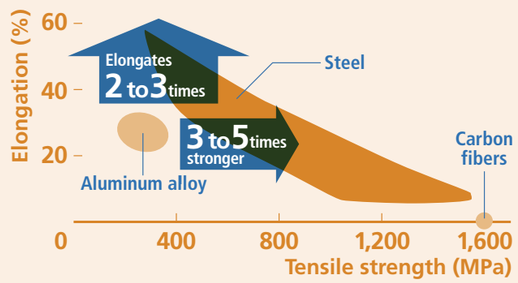


Source: World Steel Association

Potential for Evolution

Steel can be elongated two to three times more than aluminum at the same rigidity and is three to five times stronger at the same extended rate, making it the optimal material for new world-class structures such as TOKYO SKYTREE. And yet there is still potential for further evolution. The emerging needs of society will advance the development of steel and contribute to a productive future.

Comparison of Strength and Elongation between Steel, Aluminum, and Carbon Fiber



Research: JFE Holdings

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Recycle Excellent Recyclability

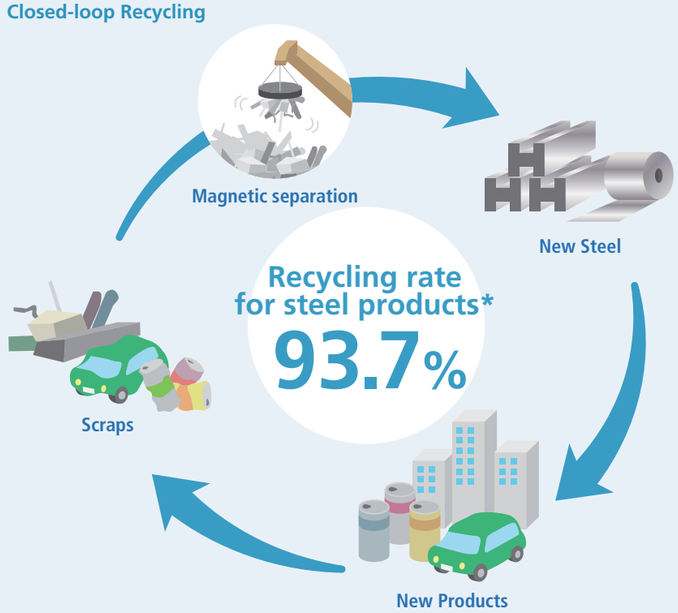
Steel is a highly recyclable material that can be easily separated and collected using its magnetic property. It can be efficiently separated, collected, and recycled into high-quality, high-functioning products over and over again through closed-loop recycling.

Closed-loop Recycling of Steel

Steel can be recycled a number of times as a raw material for steel products while retaining its original properties. Closed-loop recycling is superior to open-loop recycling* in terms of sustainability, because closed-loop recycling reduces the consumption of natural resources, as well as the amount of environmentally hazardous substances and wastes.

*In open-loop recycling, the material recycling process involves two types of finite recycling which are thermal recycling and cascade recycling. Thermal recycling means that heat generated by incineration is recovered while cascade recycling indicates recycling the material accompanied by the degradation or alteration of the material's properties.

Closed-loop Recycling



Source: The Japan Iron and Steel Federation

Sustainability Management

Basic Policy

Based on its corporate philosophy of "contributing to society with the world's most innovative technology," the JFE Group will continue to be a company that provides products and services for a prosperous global future for a long time to come. We also consider it our mission to become an organization that is highly regarded by society by striving to play an indispensable role in supporting people's daily lives, driving sustainable development and ensuring safe, comfortable lives for all. In addition to our initiatives on environmental sustainability, we will also focus strongly on promoting our human resources strategy and human capital management to achieve sustainable growth and enhance corporate value.

JFE Vision 2035—JFE Group's Aspirations for 2035

Given our goal of achieving carbon neutrality by 2050, 2035 will be a very important year. By this time we should have completed developing and started implementing our carbon-neutral technologies in a full-scale transformation of our business processes. We have determined the following aspirations for 2035 in response to stakeholder concerns over the steel industry's ability to meet the technological and financial challenges to achieving carbon neutrality and whether JFE will be capable of sustainable growth in the face of intensifying competition across all fronts.

Become the leader in carbon neutrality (CN) technology development	Expand consolidated business profit (Segment profit: ¥700 billion)
• Complete development of ultra-innovative process conversion technology • Provide strong technological capabilities and a diverse eco-product lineup to help conserve the global environment • Become the main player in the high-quality green steel market	• Streamlined yet resilient domestic structure based on growth strategies – Create technologies and nurture talent that drive our competitive advantage – Deepen our shift from quantity to quality, and reorganize and integrate each business • Growth through the expansion of business in overseas growth regions "from the inside" – Collaborate with top-tier partners and pursue M&A

JFE Group Sustainability System

The Group established the JFE Group Sustainability Council, chaired by the president of JFE Holdings and comprised of the Executive Vice President (director), full-time Audit & Supervisory Board members, Corporate Officers, the Presidents of Operating Companies, and other members to oversee and direct the sustainability initiatives of the entire organization, including risk management, from the perspective of preventing damage to the JFE Group's corporate value and enhancing it. Independent, cross-Group committees have also been established under the council, including the JFE Group Compliance Committee, the JFE Group Environmental Committee, the JFE Group Internal Control Committee, the JFE Group Information Security Committee, the Public Disclosure Committee, and the Corporate Value Enhancement Committee. Overseeing and directing the Group's sustainability initiatives, these committees deliberate on Group policies, monitor how they are being instilled across the Group, and share information on the tasks at hand as well as on issues that have materialized and relevant responses. Included in the agenda discussed by the JFE Group Sustainability Council, the Group's basic policies, action plans, content of key initiatives and response to critical circumstances are reported regularly to the Board of Directors, which deliberates on the issues and provides the council with direction and supervision.

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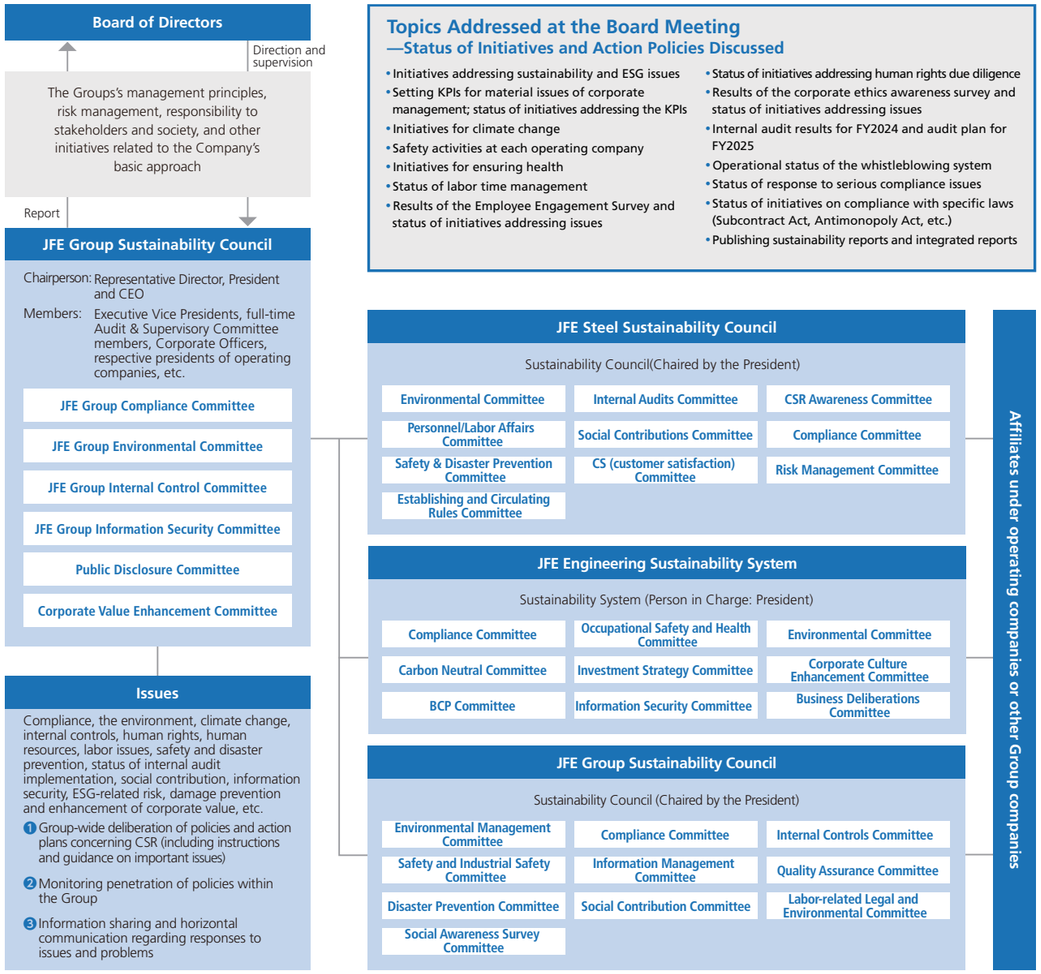
Activities of the Group Sustainability Council

The Group Sustainability Council meets approximately once every three months to discuss wide-ranging issues such as the antimonopoly act, compliance with laws and regulations to prevent corruption such as bribery involving public servants and other officials, human resources, labor issues, safety, disaster prevention, the environment, climate change, quality, financial reports, addressing antisocial forces, risk management including information security and other ESG-related risks, and social contribution. The council deliberates on policies related to Group initiatives, which also include providing instruction and guidance on material issues, monitors the penetration of the policies, and shares information on and carries out horizontal communication regarding our responses to issues and problems.

Cooperation with Operating Companies

The Operating Companies have also set up respective entities that operate in collaboration with the JFE Group Sustainability Council to promote Groupwide initiatives from the perspective of preventing damage to the JFE Group's corporate value and enhancing that value. JFE Steel, JFE Engineering, and JFE Shoji are also working to achieve sustainability through the establishment of committees in areas such as compliance, the environment, safety, and disaster prevention.

Diagram of System for Promoting Sustainability



Confirmation and Improvement through the Employee Awareness Survey

The JFE Group conducts a Corporate Ethics Awareness Survey on a regular basis (twice a year starting FY2024) for directors and employees of JFE Holdings and its operating companies to confirm the penetration and thorough compliance of the Group's Corporate Vision, Corporate Values, and Standards of Business Conduct, along with the identification of potential risks. The survey conducted in FY2024 confirmed that most employees had a good understanding of the Group's Corporate vision and standards of business conduct, as well as the laws, regulations, and rules related to their work, and that the JFE Group's Basic Policy on Preventing Bribery of Public Officials and the Guidelines for entertainment and gifts were being adhered to at workplaces. However, while we confirmed that employees are carrying out their work with a high awareness of compliance, the survey also brought to our attention issues to address going forward. The results of the corporate ethics awareness survey and relevant policies were reported at the JFE Group Sustainability Council and Board of Directors meeting in fiscal 2025. Each Group company will continue to implement specific initiatives under the supervision of the JFE Group Sustainability Council and Board of Directors.

During the formulation of the Eighth Medium-Term Business Plan, JFE Holdings' Board of Directors confirmed that the Group's Corporate Vision and Standards of Business Conduct remain the unchanging philosophy and unifying force of the JFE Group, 22 years after its founding.

Risk Management

JFE Holdings is responsible for comprehensive risk management in accordance with its Basic Policy to Establish the Internal Control Systems. The JFE Group Sustainability Council, chaired by the president of JFE Holdings, consolidates information and strengthens management across the Group to reduce the frequency and impact of risks.

The executive officer responsible for risk strives to identify potential ESG risks such as those associated with climate change. As necessary, the council confirms and evaluates risks and discusses and determines countermeasures. Key managerial issues are deliberated by the Group Management Strategy Committee.

The Board of Directors supervises initiatives on ESG risks such as those related to climate change and CSR by discussing, making decisions on, and receiving reports about these matters.

Monitoring Method for ESG Risks

Issues that may affect management are monitored by the JFE Group Sustainability Council, Group Management Strategy Committee, and Management Committee. The JFE Group Environmental Committee consolidates information and strengthens management to reduce the frequency and impact of risks and to maximize opportunities.

Group Sustainability Strategy

Formulating the Eighth Medium-Term Business Plan and Revising the Material Issues of Corporate Management

The Eighth Medium-Term Business Plan (FY2025–FY2027) covering the next three years was formulated by backcasting from our JFE Vision 2035, which targets the year 2035. Achieving progress toward the JFE 'Group's aspirations under this challenging environment will require a greater-than-ever resolve to implement our growth strategy centered on realizing a resilient, streamlined domestic production structure based on a product portfolio that leverages the JFE Group's strengths, and a business expansion strategy including aggressive investment in overseas growth fields and regions.

We will continue to position climate change as a top-priority business issue and follow the JFE Group Environmental Vision for 2050 to address the issue. Under the Vision, we promote activities for reducing CO_2 emissions at JFE Steel and for society as a whole, while also developing technologies to address these challenges as an opportunity for growth. JFE will continue to systematically ensure a stable supply of steel, the core of JFE's business, to society as an indispensable material for social development and daily life. In formulating the Eighth Medium-Term Business Plan, we also revised the material issues of our corporate management.

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Refer to the following on details of the Eighth Medium-Term Business Plan.

> JFE Group Long-term Vision "JFE Vision 2035" and Eighth Medium-Term Business Plan
(https://www.jfe-holdings.co.jp/en/investor/management/plan/)

Material Issues of Corporate Management

JFE Group's Materiality under the Eighth Medium-Term Business Plan

The JFE Group's actions related to management issues are based on identifying materiality and setting KPIs to minimize negative societal impact and maximize societal value by investing JFE Group's resources from the standpoint of meeting stakeholder needs.

Under the Eighth Medium-Term Business Plan, we identified issues requiring special attention over the next three years for realizing the JFE Vision 2035, while also taking into consideration the issues we have been addressing to date. The issues were extracted from the perspectives of developing a business foundation for sustainable growth and pursuing a growth strategy for achieving the vision. Following a materiality assessment, we identified our material issues of corporate management (16 issues in 6 focus areas).

Areas of Focus	Material Issues
Address climate change issues	(1) Reduce the JFE Group's GHG emissions and contribute to reducing GHG emissions across society
Contribute to the transition to a circular economy	(2) Promote initiatives for realizing a circular economy
Acquire robust profitability	(3) Steel Business: Improve sales and manufacturing capabilities, expand and advance business areas
	(4) Engineering Business: Improve profitability and competitiveness, promote investment in growth areas
	(5) Trading Business: Revitalize the management foundation, advance insider status in overseas growth markets
Ensure occupational safety and health for employees	(6) Prevent workplace accidents
	(7) Promote health and productivity management
Promote human capital management	(8) Improve work engagement
	(9) Promote diversity, equity and inclusion (DEI)
	(10) Promote talent acquisition and development
Minimize risks to the business foundation	(11) Respect the human rights of each person involved in our business
	(12) Ensure adherence to corporate ethical standards and compliance
	(13) Provide appropriate quality assurance
	(14) Improve the level of information security
	(15) Coexist with local communities, society, and nature
	(16) Maintain a sound financial structure

Process for Identifying Material Issues of Corporate Management

During past updates to our medium-term business plans, we have also reevaluated our material issues of corporate management. This time, as we formulated the Eighth Medium-Term Business Plan, we also determined our key material issues through the following process.

STEP 1 Reevaluate material issues of corporate management under the Seventh Medium-Term Business Plan

We reevaluated our material issues of corporate management under the plan, along with the implementation and results of KPIs set for each materiality.

Refer to the following on how we identified material CSR issues up to FY2020.

> Material CSR Issues (CSR REPORT 2020) (https://www.jfe-holdings.co.jp/common/pdf/sustainability/data/2020/csr_2020_j.pdf)

Refer to the following on the process we used to identify material issues of corporate management in FY2021.

> Process for Identifying Material Issues of Corporate Management (CSR Report 2021)
(https://www.jfe-holdings.co.jp/en/sustainability/pdf/csr2021e.pdf)

STEP 2 Extract candidates for material issues

We formulated a long-term vision targeting 2035 and extracted 28 candidate items for material issues under the Plan from the perspectives of developing a business base for sustainable growth and pursuing a growth strategy for achieving the vision.

- Prevent workplace accidents
- Preserve environmental air and water quality
- Promote health and productivity management
- Reduce disaster risks at production sites
- Respect the human rights of each person involved in our business
- Address aging social infrastructure
- Ensure adherence to corporate ethical standards and compliance
- Ensure employee safety during emergencies
- Provide appropriate quality assurance
- Address economic security risks
- Raise level of information security
- Implement measures for natural and other disasters
- Coexist with local communities, society and nature
- Appropriately disclose information
- Maintain sound financial structure
- Return profits to stakeholders
- Reduce the JFE Group's CO_2 emissions and contribute to reducing CO_2 emissions across society
- Widely provide products and services to society by expanding and advancing business areas
- Improve work engagement
- Sustainable manufacturing based on improvement in sales and manufacturing capabilities
- Promote diversity, equity and inclusion (DEI)
- Realize the scope of profits to ensure sustainable growth
- Promote talent acquisition and development
- Expand business through ongoing investment in operating businesses
- Promote initiatives for realizing a circular economy
- Improve operational efficiency and productivity through digital technology
- Improve the competitiveness of products and services through DX
- Balance trade and business profit

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STEP 3 Narrow down material issues

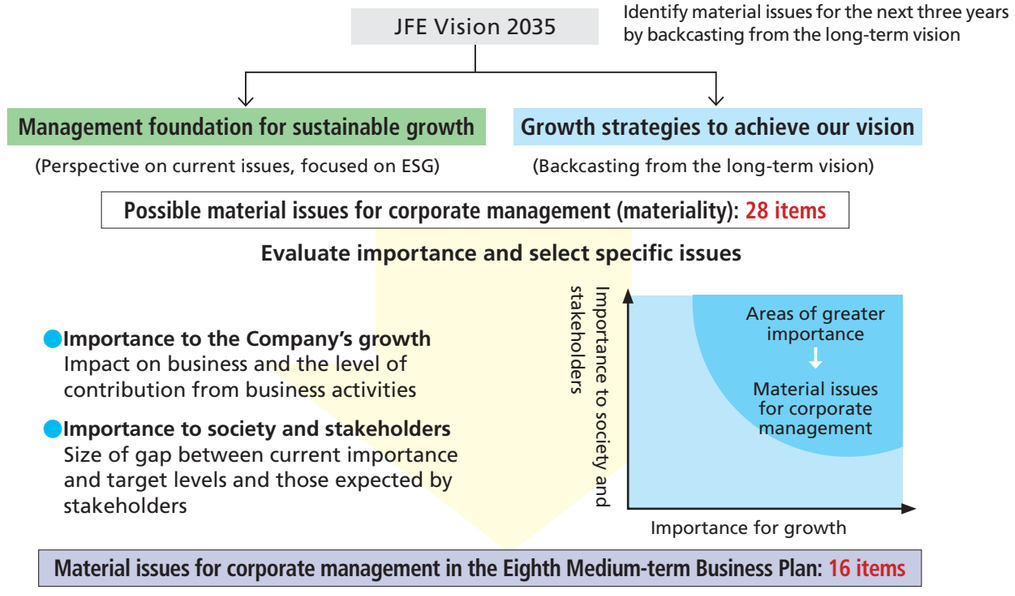
We evaluated the extracted issues in terms of their materiality to the JFE Group's growth and to society and stakeholders and identified the 16 material issues of corporate management under the Eighth Medium-Term Business Plan.

- Prevent workplace accidents
- Promote health and productivity management
- Respect the human rights of each person involved in our business
- Ensure adherence to corporate ethical standards and compliance
- Provide appropriate quality assurance
- Improve the level of information security
- Coexist with local communities, society, and nature
- Maintain a sound financial structure
- Reduce the JFE Group's GHG emissions and contribute to reducing GHG emissions across society
- Improve work engagement
- Promote diversity, equity and inclusion (DEI)
- Promote talent acquisition and development
- Promote initiatives for realizing a circular economy
- Steel Business: Improve sales and manufacturing capabilities, expand and advance business areas
- Engineering Business: Improve profitability and competitiveness, promote investment in growth areas
- Trading Business: Revitalize the management foundation, advance insider status in overseas growth markets

STEP 4 Determine aspirations and targets

We set the targets and aspirations for each identified material issue, together with KPIs as management indicators for achieving them. With regard to these material issues, we conduct an annual materiality assessment that includes reviewing the status of KPI achievement and performance, in addition to a reevaluation during the formulation of the medium-term business plan.

Material Issues for Corporate Management: Review Process



Initiatives to adress Material Issues of Corporate Management

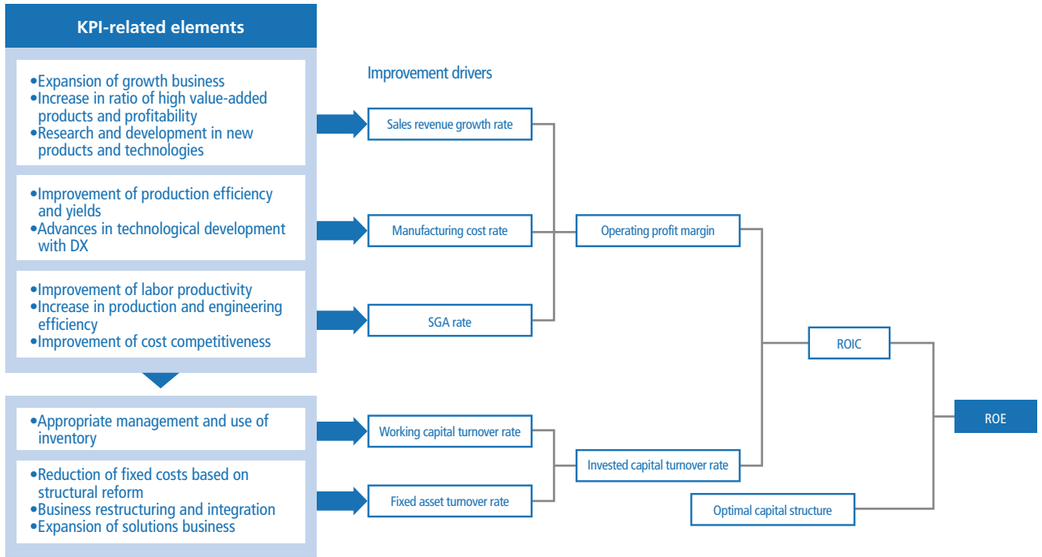
Performance Evaluation for FY2024 KPIs and Establishment of FY2025 KPIs

We assessed the performance of KPIs for FY2024 that were established to address material issues of corporate management identified in FY2021, and established KPIs for FY2025 that correspond to material issues under the Eighth Medium-Term Business Plan, identified through the above-mentioned process. FY2024 performance and KPIs for FY2025 were finalized following discussions by the Management Committee and other organs of each operating company and deliberation by the Group Management Strategy Committee and Board of Directors. Achieving the KPIs will fulfill our corporate social responsibility while also reducing risks that threaten the foundation of management, acquiring robust profitability, and attaining our financial targets.

> FY2024 KPI Results and FY2025 KPIs (P. 19)

Initiatives for Improving Financial Indicators

Achieving the financial targets will depend upon enhancing performance as measured by financial indicators that serve as drivers for improvement. intentionally linking each initiative to the financial targets will increase effectiveness and lead to raising medium- to long-term corporate value.



Improving the Sales Revenue Growth Rate

We will seek to expand growth businesses including the "from the inside" model in overseas growth regions and those that contribute to advancing the circular economy. We will also promote activities for increasing sales revenue by designating KPIs that include increases in the ratio of high-value-added products and the number of new products and technologies developed in the steel business and improved project profitability in the engineering business.

Improving the Manufacturing Cost Rate

We will consistently work on enhancing production efficiency and yields to improve the manufacturing cost rate. To drive further improvement through DX, we will designate the number of advanced DX personnel trained as a KPI to bolster our human resources.

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Improving the SGA Rate

To enhance labor productivity, we will advance operational efficiency and automation through measures such as core system upgrades in each business. In the steel business in particular, we will manage the initiatives by designating KPIs to measure the contribution to profits from rationalization and higher labor productivity due to core system upgrades, use of data science and automation as well as labor savings achieved in line with the decline in Japan's labor force and population.

Impact on the Working Capital Turnover Rate and Fixed Asset Turnover Rate

In addition to implementing the above-mentioned initiatives and undertaking appropriate management and use of inventory, we will seek to make improvements by constructing optimal domestic systems, restructuring and integrating businesses, and promoting the use of land owned in the Keihin district. We will also work to expand revenues from solutions services, primarily in the steel segment, drawing upon our accumulated knowledge and expertise as a KPI.

Initiatives and Relevant SDGs

The JFE Group engages in initiatives for achieving sustainable growth for the Group over the medium to long term and enhancing corporate value.

The following chart summarizes all activities introduced in this report. Through these activities, the JFE Group intends to contribute to the achievement of the SDGs.

Activities		Related SDGs
Addressing ESG Issues		
> Environmental Management (P. 46)	• Promotion of environmental management system • Environmental education • Reducing environmental impact	4, 12
> Initiatives to Address Climate Change Issues (P. 53)	• Steel industry initiatives for achieving carbon neutrality • Reduction of CO_2 in the steel business • Contributing to reducing GHG emissions across society • Greater contribution to reducing CO_2 in society as a whole • Adapting to climate change (contribution to achieving societal resilience) • Reducing energy usage • Scenario analysis based on TCFD recommendations	7, 9, 12, 13
> Initiatives to Transition to a Circular Economy (P. 124)	• Conversion of byproducts and waste into resources • Development of resource-efficient eco-products and eco-solution technologies • Expanded use and sales of recycled materials	6, 7, 9, 11, 12, 14
> Biodiversity Conservation and Nature Positive (P. 151)	• Commitments to external initiatives • Assessment of relationship between engagement, business activities, and natural capital (based on the LEAP approach)	12, 14, 15
> Human Capital: Promoting Talent Acquisition and Development (P. 178)	• Human resource development	4, 5, 8, 9, 10

Activities		Related SDGs
Promoting Diversity, Equity and Inclusion (DEI) (P. 180)	• Promoting women's professional development • Promoting childcare leave taken by men • Employment of people with disabilities • Programs for employees over 60 years old • Creating an inclusive workplace • Securing diverse human resources	4, 5, 8, 9, 10
Human Capital: Improving Work Engagement (P. 185)	• Making working conditions more pleasant and increasing work engagement • Operational reforms • Invigorating workplaces through small group activities	4, 5, 8, 9, 10
Human Capital: Occupational Health and Safety (P. 191)	• Occupational health and safety • Employee health	3
Human Rights (P. 200)	• Respecting human rights initiatives • Conducting human rights due diligence	8, 10, 16
Providing Quality Products and Enhancing Customer Satisfaction (P. 214)	• Quality initiatives • Improving customer satisfaction • Ensuring stable supply	3, 8, 9, 10, 12, 16
Supply Chain Management (P. 220)	• Promoting green procurement • Procurement policy and initiatives for each business	10, 12, 16
Community (P. 222)	• Local activities • Support for external organizations • Support for youth development • JFE 21st Century Foundation	1, 2, 3, 4, 5, 8, 9, 10, 13, 15, 17
Compliance (P. 246)	• Adherence to ethical standards, legal compliance	16

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FY2024 KPI Results

S/T JFE Steel E/N JFE Engineering S/H JFE Shoji

Evaluation criteria

Target attributes		○	△	×
Quantitative	Set for each fiscal year	Accomplished 100% or better.	Accomplished 80%–99%.	Accomplished 79% or less.
	Set medium- to long-terms (in case of setting a multi-year target)	Final target accomplished 100% or better.	Final target partly accomplished with some results (80% or better with linear interpolation).	Working toward the goal but no results yet (79% or less with linear interpolation).
Qualitative		Fully accomplished with significant results.	Partly accomplished with some results.	Working toward the goal but no results yet.

*In Groupwide evaluations, the lowest result among the companies is taken as the overall result.

Areas of Focus		Priority Issues	Operating Company	FY2024 KPIs	Initiatives and Results for FY2024	Assessment
Contribute to resolving climate change issues (initiatives for achieving carbon neutrality by 2050)		Reduce the JFE Group's CO_2 emissions	S/T	• Achieve at least 18% of CO_2 reduction target by the end of FY2024 compared to FY2013 levels • Achieve 100% of the CO_2 reduction target of 3.06 million tonnes through energy conservation and technological development, as part of the 18% reduction in CO_2 emissions by the end of FY2024 to FY2013 levels • Expand adoption of JGreeX™ by stimulating demand for green steel	• Achieved 23% reduction in CO_2 emissions in FY2024 compared to FY2013 levels • Achieved 101% of the CO_2 reduction target of 3.06 million tonnes through energy conservation and technological development, as part of the 18% reduction in CO_2 emissions, by the end of FY2024 compared to FY2013 levels • Expanded adoption of JGreeX™ by stimulating demand for green steel, received orders in all areas	○ ○ ○
			E/N	• Reduce CO_2 emissions in its own plants and offices FY2024: 40% reduction from FY2013 levels	• 63% reduction from FY2013 levels (FY2013: 15,600 tonnes, FY2024: 5,700 tonnes)	○
			S/H	• Reduce CO_2 emissions through the procurement of electricity derived from renewable energy FY2024 domestic CO_2 emissions: Reduce by 20% from FY2019 levels (Reduce by 5% per year from FY2019 levels from FY2021 to FY2024)	• 32.4% reduction from FY2019 levels	○
Business activities		Contribute to reduction of CO_2 across the society	S/T	• Launch sales and implement eco-friendly products and technologies*: 15 or more cases in FY2024 (cumulative total of 60 or more cases from FY2021 to FY2024) *Products and services that contribute to saving energy and resources, reduce waste and environmentally hazardous substances, and do not require hazardous substances for manufacturing or use.	• FY2024: 15 (eco-friendly products: 5, technologies: 10) (FY2021–FY2023: 63)	○
			E/N	• Contribute to reduction of CO_2 in society by providing renewable energy power generation facilities and expanding the basis of the recycling business (for plastics, food, etc.) Contribute to reduction in CO_2 emissions (FY2024): 12 million tonnes per year	• Contribution to reduction in CO_2 emissions (FY2024): 12.0 million tonnes per year	○
			S/H	1. Global resource recycling of steel scrap • FY2024 scrap transactions: +5% from FY2020	1. Global resource recycling of steel scrap • 6% increase from FY2020	○
				2. Increase transaction quantity of fuel for biomass power generation plants and create framework for reliable supply of fuel • FY2024 biomass fuel (palm kernel shells and wood pellets) transactions: 100% increase from FY2020 • Diversify supply sources to ensure stable supply	2. Created system for expansion and reliable supply of fuel for biomass power plants • Handling volume: +120% compared with FY2020 • Expanded new suppliers	○

Areas of Focus		Priority Issues	Operating Company	FY2024 KPIs	Initiatives and Results for FY2024	Assessment
Business activities	Ensure occupational safety and health	Prevent workplace accidents	Groupwide	Groupwide Workplace fatalities: Zero occurrences • Lost-workday injuries rate ST 0.10 or less EN 0.25 or less SH 0.15 or less	Groupwide Workplace fatalities: Zero • Lost-workday injuries rate ST 0.15 EN 0.22 SH 0.37 (Work-related accidents and frequency rates are tabulated on a calendar year basis.)	×
			ST	(Key measures) (1) Reinforce activities to prevent similar injuries • Horizontal Companywide deployment of measures, including for close calls (2) Strengthen efforts to promote essential safety • 100% installment of electromagnetic locks at secondary mill entrances versus plan by FY2024	(Key measures) (1) Reinforce activities to prevent similar injuries • Held monthly meetings to prevent similar accidents. Discussed and decided on the importance of horizontal Companywide deployment of measures for 210 cases including close calls and more serious incidents, and thoroughly followed up on progress until all measures decided at the meetings had been fully implemented. (2) Strengthen efforts to promote essential safety • Achieved 100% installment of electromagnetic locks at secondary mill entrances versus plan by FY2024	
			EN	(Key measures) (1) To eliminate serious injuries, conduct pre-operation checks of equipment in use, including work floors Decisive work plans (identify and prevent dangerous risks) Through proper work instructions (awareness of work plans and prohibition of unplanned work), raise awareness of occupational safety of related workers and take measures to prevent accidents Implement 100% of the following: ▶ Pre-operation checks • Pre-operation checks of equipment to be used, curing openings in high locations and edges of work floor, install handrails, ensure on-site understanding of work plans, and cover/enclose/ turn off machinery ▶ Strict adherence during operations • Use of safety belts, prohibit access under suspended loads or within the operating range of heavy machinery, assign worksite guides, disconnect power when equipment or tools are not in use (2) Multifaceted management of occupational safety and health using IT ▶ Use remote monitoring and information communications systems ▶ Use safety management operations support system	(Key measures) (1) Ensured thorough dissemination of proper work instructions based on pre-operation checks and decisive work plans, and confirmed steady and thorough implementation of measures by conducting daily site inspections and patrols by site safety and health supervisors (2) Multifaceted management of occupational safety and health using IT • Used apps based on remote monitoring and information communications systems to instantly share problems, safety instructions, and status of corrective action Use of large outdoor waterproof LED monitors for disseminating information and conducting safety training Remote site monitoring of vast construction sites Remote monitoring by site safety and health supervisors through IP cameras and other means • Used safety management operations support system Active introduction of CCUS/Buidee (on-site construction management service)	
			SH	(Key measures) (1) 100% implementation of crane operation drills (once a year or more at each company) (2) Advance hardware measures (introduce interlocks for coil lifting equipment) Complete measures for 24 applicable machines in FY2024 (3) Reevaluate and update education system for new employees and reassigned employees	(Key measures) (1) Crane operation drills: 100% implementation at least once annually at each company (2) Hardware measures (introduce interlocks for coil lifting equipment): completed for 24 machines (3) Revision of rules on education for new employees and reassigned employees: Individually completed by each company	
		Ensure the health of employees and their families	Groupwide	1. Provision rates of healthcare guidance Groupwide 60%	1. Provision rates of healthcare guidance* ST 72.7% EN 41.3% SH 43.0% *FY2023 results for eligible individuals	×
				2. Reduce rates of smokers (ensuring employee health and preventing passive smoking) Groupwide 1.5% reduction per year (total for operating companies)	2. Reduce rates of smokers (ensure employee health and prevent exposure to passive smoke) Groupwide 0.6% reduction per year (total for operating companies)	×
	Recruit and nurture diverse human resources	Pursue diversity and inclusion	Groupwide	1. Rates for female recruits ST Career-track (administrative position): Degree of gender parity Career-track (technical position): 10% or more Operational position: 10% or more EN Career-track (administrative position): Degree of gender parity Technical (career-track, production/construction position): 15% or more SH Administrative position: Degree of gender parity	1. Rates for female recruits ST Career-track (administrative position): 55% Career-track (technical position): 12% Operational position: 5% EN Career-track (administrative position): 31% Technical (career-track, production/construction position): 9% SH Administrative position: 48%	×
				2. Women in managerial positions Groupwide 10% or more in positions qualified as section manager or above. Of whom, 20% or more to be in management and sales departments (FY2030 target)	2. Women in managerial positions Groupwide 4.3% in positions qualified as section manager or above. Of whom, 8.0% in management and sales departments (total for operating companies)	△
				3. Rate of male employees taking childcare leave or time off related to child-rearing Groupwide Aim for all male employees whose spouses have given birth to take such leave or time off	3. Rate of male employees taking childcare leave or time off related to child-rearing Groupwide 97.5% (total for operating companies)	△

Areas of Focus		Priority Issues	Operating Company	FY2024 KPIs	Initiatives and Results for FY2024	Assessment
Business activities	Recruit and nurture diverse human resources	Strengthen human resources development	Groupwide	1. Training hours per person ST 40 hours or more per year EN 20 hours or more per year SH 20 hours or more per year	1. Training hours per person ST 45.2 hours per year EN 24.2 hours per year SH 25.2 hours per year	○
				2. Train DX personnel ST Number of internal data scientist trainees: Total of 660 as of end of FY2024 EN Number of employees who took internal data scientist training: Total of 210 as of end of FY2024	2. Trained DX personnel ST Cumulative total as of end of FY2024: 662 EN Cumulative total as of end of FY 2024: 207	△
		Create work environment that motivate employees	Groupwide	1. Groupwide Annual leave acquisition rate: 75% or higher (total for operating companies)	1. Groupwide Annual leave acquisition rate: 83% or higher (total for operating companies)	○
				2. Engagement survey Groupwide Affirmative response to questions about motivation: At least 75%	2. Affirmative response to questions about motivation in engagement survey ST 70% EN 81% SH 77%	△
	Reinforce resilience of production and engineering capabilities (realize worldclass earnings power through DX and other measures)	Increase efficiency and enhance cost competitiveness in production and engineering	ST	1. Improvement in labor productivity • Improve labor productivity by 20% by end of FY2024 • Steadily execute investments aimed at improving labor productivity through automation and remote work	1. Improvement in labor productivity • Streamlined operations toward improving labor productivity by 20% by investing in automation and remote work, in addition to implementing structural reform (staff reduction rate: 19.3%; progress rate: 97%) • Effect of investments to improve labor productivity executed in FY2024 (including projected effects): Equivalent to 214 staff reductions (progress rate: 98%)	△
				2. Stabilize production with DS, improve yields through application of quality prediction technologies FY2024 yields: +2.0% compared to FY2020 *Adjusted for sales composition *DS: Data science	2. FY2024 yields: +1.1% compared to FY2020 (87.2%)	×
			EN	• Increase the efficiency of engineering operations by introducing DX technologies AI and big data analysis engineers utilizing Pla'cello*: 2,400 *Pla'cello: Proprietary data analysis platform using AI	• Launched a user community (Pla'cello Users' Group) and promoted expansion AI and big data analysis engineers utilizing Pla'cello*: Approximately 2,700	○
		Raise quality of products and services and ensure reliable supply	ST	1. Ensure quality • Continue implementing activities for raising awareness of quality compliance for the Company and Group companies in accordance with the Japan Iron and Steel Federation's guidelines for strengthening the quality assurance system • Promote automated transmission of tensile test results among Group companies Targeting six companies: 83.5% introduction ratio in FY2024 (100% in FY2025)	1. Ensure quality • Maintained activities for raising awareness of quality compliance for the Company and Group companies in accordance with the Japan Iron and Steel Federation's guidelines for strengthening the quality assurance system • Promote automated transmission of tensile test results among Group companies Targeting six companies: 89.1% introduction ratio in FY2024 (100% in FY2025)	○
				2. Strengthen manufacturing infrastructure using DX Companywide CPS installation rate: 80% or more	2. Strengthened production infrastructure using DX Companywide CPS installation rate: 77%	△
			EN	1. Secure a stable number of certified managing engineers	1. Reliably secured certificated managing engineers amid high level of sales	○
				2. Enhance information sharing and verification functions by improving operation of quality management systems No major quality problem	2. Major quality issues: Zero	○
			SH	1. Make consistent investment in processing and distribution operations	1. Steady capital investment in the distribution and processing operations Selected and executed necessary investments to ensure stable supply of products in FY2024 Investment amount: ¥11.0 billion	○
				2. Conduct quality audits at Group companies Continue conducting quality audits at 36 Group manufacturing affiliate companies in Japan and overseas (same as FY2023) (Audits completed: 100%)	2. Conducted quality audits on Group companies Conducted quality audits at 36 companies (100% audit implementation rate)	○

Areas of Focus		Priority Issues	Operating Company	FY2024 KPIs	Initiatives and Results for FY2024	Assessment
Business activities	Strengthen competitiveness of products and services (promote the growth strategy by providing high-value-added solutions)	Expand business by increasing value added in products and services with advanced technologies	ST	1. Pursue strategic research and development focusing on priority development fields* Develop new products and technologies: 20 or more *Automobiles, energy, infrastructure construction materials, DX technology, and GX technology	1. Advanced strategic research and development in priority development fields* New products and technologies developed: 20 (7 new products, 13 new technologies) (Cumulative total from FY2021 to FY2024: 90) *Automobiles, energy, infrastructure construction materials, DX technology, and GX technology	○
				2. Increase sales ratio of high-value-added products FY2024 high-value-added product sales ratio: 50%	2. FY2024 sales ratio of high-value-added products: 48%	△
				3. Expand the solution business • Triple solution business revenue in FY2024 compared to FY2020 • Win three or more orders for new JFE Resolus™ brand products, lay the groundwork for significant growth in JFE Resolus® during the next medium-term plan	3. Expanded the solution business • Solution business revenue was ¥6.4 billion, double the ¥3.3 billion revenue in FY2020 but not high enough to achieve the target of tripling that amount • Target achieved with 7 orders received for new JFE Resolus™ brand products The product lineup is being expanded, and sales activities are underway to catch up with the target for the Eighth Medium-term Business Plan	△
			EN	1. Develop technologies in four priority fields of waste to resources, carbon neutrality, combined utility services, and DX Ratio of R&D Expenses on these four fields: 70% or more	1. R&D expense ratio in the four priority fields: 75%	○
				2. Number of patent applications: 80 or more annually	2. Number of patent applications: 84 per year	○
		Sales strategies for realizing sustainable growth	ST	• Expand the earnings difference between high-value-added products (A-rank products) and commodity products Maintain earnings difference of ¥8,000 per ton (double the target for FY2024)	• Expanded earnings difference between high-value-added products (A-rank products) and commodity products FY2024: +¥9,400 per ton (achieved the goal of doubling the initial target of +¥4,000 per ton for FY2024)	○
			EN	Expand operating businesses to expand the stable earnings base • Sales: ¥265 billion • Base expansion: 3 or more bases Recycling business (food, plastics, electronic appliances, etc.), regional electricity retail new power business, and waste processing business	• Sales of operating businesses: ¥282.8 billion • New bases: 3 bases (2 recycling businesses, 1 regional electricity retail new power business)	○
			SH	• Enhance the competitiveness of products and services by increasing added value in the supply chain through business expansion Make investments to improve value added in supply chain: 5 or more per year	• Investments to improve value added in supply chain: 7 per year	○
Basis of activity	Thoroughly enforce compliance	Ensure adherence to corporate ethical standards and compliance	Groupwide	1. Steady execution of training to foster and maintain a sense of compliance (100% attendance from the target audience)	1. Participation rate: 100% (rank-based compliance training, training on different laws and regulations, etc.)	○
				2. Affirmative response rate of 75% or higher to questions related to compliance awareness in the Corporate Ethics Awareness Survey	2. Survey question related to raising compliance awareness Affirmative response to the question: "Do you think your awareness of compliance has improved?" ST 97% EN 98% SH 98%	○
	Respect human rights	Respect human rights across the supply chain	Groupwide	1. Participation rate of targeted attendees in human rights awareness training: 100%	1. Participation rate: 100%	○
				2. Promote human rights due diligence Promote the following initiatives to realize respect for human rights throughout the supply chain: (Expand human rights due diligence to Group companies) • Conduct human rights risk surveys at overseas Group companies, prioritizing those located in countries at high risk of human rights violations • Continue to support the correction and improvement of human rights risks at major domestic Group companies that have already been surveyed, while considering regular risk surveys and methods for checking corrective measures (Build a system for managing human rights risks of suppliers) • Provide feedback on the results of the FY2023 supplier survey, and offer support for improvement to those identified as needing follow-up support	2. Conducted human rights due diligence Promoted the following initiatives to ensure respect for human rights throughout the supply chain: (Expand human rights due diligence to Group companies) ST Conducted human rights risk surveys and provided feedback to three Group companies in Thailand, Indonesia, and Brazil, which were prioritized based on investment ratios, company size, and other factors EN Conducted human rights risk surveys and provided feedback to three Group companies in the Philippines, India, and Thailand, which were prioritized based on their having bases in countries with high human rights risks, and other factors SH Conducted human rights risk surveys with 45 overseas consolidated companies ST EN SH Considered the deployment method and schedule for future supplier surveys of major Group companies in Japan (build a system for managing human rights risks of suppliers) ST EN SH Offered support to improve human rights due diligence at suppliers identified as requiring follow-up in the FY2023 survey, including sending a follow-up tool with explanations of key issues, concrete action plans, and reference cases SH Conducted a new human rights risk survey for 88 suppliers of raw materials for steel production, natural resources, and machinery	○

Fiscal 2025 KPIs

Areas of Focus	Material Issues	Aspirations	FY2025 KPIs
Address climate change Issues	Reduce the JFE Group's GHG emissions and contribute to reducing GHG emissions across society	Steel business FY2030 GHG emissions reduction rate: 30% or more FY2027 GHG emissions reduction rate as a milestone: 24% or more (compared to FY2013)	1. Approval rate for GX investment designed to reduce GHG emissions by 30% or more by FY2030: 95% 2. Green steel sales: 100,000 tonnes per year
		Engineering business Reduction rate of CO_2 emissions in owned plants and offices: 40% or more (compared to FY2013)	Promote use of own renewable energy Non-fossil fuel electricity use: 90% or more
		Engineering business Contribution to reduction in CO_2 emissions : 13.5 million tonnes per year	Contribute to reduction of CO_2 emission in society by providing renewable energy power generation facilities and expanding the power supply business : 12.5 million tonnes per year
		Trading business Domestic CO_2 emissions reduction rate (compared to FY2019) FY2027: −27.5% FY2030: −35%	FY2025 domestic CO_2 emissions: 22.5% (compared to FY2019)
Contribute to the realization of a recycling-oriented society	Promote initiatives for realizing a circular economy	Steel business Improve resource recycling of iron sources, co-products, etc.	1. Expand collection and use of collected "return scrap": 2.0 times (compared to average volume under the Seventh Medium-term Business Plan) 2. Recycle co-products generated in the Company (recycling rate of slag, dust, sludge, etc.): 99% or more 3. Expand use of steel slag products for marine are use (cumulative total under the Eighth Medium-term Business Plan): 50,000 tonnes
		Engineering business Expand bases for business that contribute to a circular economy	Expand bases for recycling/new regional electricity/waste-to-energy power generation business, etc.: 3 sites or more
		Trading business Expand products that contribute to a circular economy	Expand product lineup to contribute to a circular economy • Increase products handled by at least three in addition to current products with over 3,000 tons in volume per year
Acquire robust Profitability	Steel business Improve sales and manufacturing capabilities, expand and advance business areas	Expand domestic steelmaking business profitability: \90 billion	1. Companywide OPY: +0.3% (compared to FY2024 results) 2. Develop new products and technologies : 20 or more 3. Increase revenue from high-value-added products (proportion, profitability index): 54% 4. Improvements through streamlining (core systems, data science, automation) and labor productivity enhancement: Achieved FY2027 target of 25% 5. Time saved by generative AI and low-code development: 3,000 hours per month 6. Labor-saving initiatives in response to declining labor force and population: Reduced by more than 80 employees
		Expand profits in the overseas steel business, domestic Group companies business, and solutions business Overseas steel: \75 billion Domestic Group companies: \90 billion Solutions business: \15 billion	1. Overseas steel business profit: ¥30 billion 2. Domestic Group companies business profit: ¥80 billion 3. Solutions business profit: ¥8 billion 4. Increase in foreign patent applications: 109%
	Engineering business Improve profitability and competitiveness, and promote investment in growth areas	ROS: 6%	Improve project profitability Proportion of high-value-added and differentiated across projects: Aim for over 50% by FY2027, and over 40% by FY2025
		Stabilize profits by expanding scale of O&M business	O&M business sales: Over ¥290 billion
		Improve labor productivity	Progress of operational reforms (to improve business efficiency by FY2035): Completed workflow analysis for specified departments in FY2025, aiming to complete optimization of all business processes in FY2027
		Expand DX solution revenue	Progress of external sales activities for DX solutions: Aim for 20% more new customers in FY2027, and 10% more in FY2025 (compared to FY2024)

Areas of Focus	Material Issues	Aspirations	FY2025 KPIs
Acquire robust Profitability	Trading business Revitalize the management foundation and advance insider status in overseas growth markets	Overhaul core systems	• Aim to complete core system overhaul by FY2027 • In FY2025, visualize current operations and complete workflow creation for over 75% of total
		Trade and business profit: ¥30 billion each	Implement growth investments to achieve profits (¥85 billion over 3 years)
Ensure occupational safety and health for employees	Prevent workplace accidents	Establish safe work environment to achieve zero accidents	Serious injuries: 0 Lost-workday injuries : Steel business: 0.10 or less Engineering business: 0.25 or less Trading business: Trading business: 0.15 or less
	Promote health and productivity management	Realize a workplace in which everyone can work with good physical and mental health for a long time	Proportion of employees who are physically and mentally healthy and working at an 80% or higher performance level (presenteeism below 20%): 67% or higher
Promote human capital management	Improve work engagement	Realize a environment in which every employee can maximize their potential	Engagement survey Affirmative response to questions about job satisfaction : Steel business: Steel business: 75% or more Engineering business: Engineering business: 80% or more Trading business: Trading business: 80% or more
	Promote diversity, equity and inclusion	Realize a environment in which the experience, abilities, and individuality of diverse talent can be maximized	1. Women in managerial positions : Aim for at least 10% by April 2030 (including at least 20% in management and sales departments), with a target of achieving 5.7% by April 2026 2. Percentage of male employees taking childcare leave: 65% or more
	Promote talent acquisition and development	Build a talent portfolio to realize business strategies	Steel business 1. New international employees trained: +33 2. Advanced DX employees trained (cumulative): 800 Engineering business 1. New international employees trained: +10 2. Advanced DX employees trained (cumulative): +30 Trading business New overseas secondments: +25
Minimizing risks to the business foundation	Respect the human rights of each person involved in our business	Identify, prevent, and mitigate adverse impacts on human rights in the supply chain	1. 100% attendance from the target audience for human rights awareness training 2. Promote human rights due diligence Promote the following initiatives to realize respect for human rights throughout the supply chain: • Continue conducting human rights due diligence at both the Company and Group companies • Build a system for managing human rights risks of suppliers
	Ensure adherence to corporate ethical standards and compliance	Raise awareness of compliance	Compliance training participation rate: 100%
	Promote appropriate quality assurance	Steel business Zero serious quality assurance issues	1. Quality audit implementation at Group companies: 100% of planned number 2. Quality assurance investment execution: 30%
		Engineering business Zero quality compliance violations	1. Strengthen quality check functions through third-party audits of product departments, including at Group companies: 10 departments 2. Permeate quality compliance awareness e-learning participation rate: 100% of planned participants
		Trading business Consistently deliver products that satisfy quality requirements	Major quality problems: 0
	Improve level of information security	Continue zero serious security incidents (Level 3 incidents that impact the business foundation)	1. Thorough management of vulnerabilities 2. Improve resilience against cyberattacks
	Coexist with local communities, society, and nature	Steel business Ensure that steelworks and other plants are trusted by their local communities	Serious environmental or disaster accidents: 0 1. Continue improving efforts towards more transparency in steelworks 2. Create opportunities for communication with local communities at business sites and conduct social contribution activities tailored to local needs
		Steel business Expand contributions to biodiversity	New collaborative activities with local governments to improve blue carbon and marine area environments: +2 projects per year
		Engineering business Advance efforts to biodiversity conservation	Conduct conservation activities (i.e., reforestation) and assess biodiversity impacts in the infrastructure construction sector
	Maintain sound financial structure	R&I rating: AA	Eighth Medium-term Business Plan Targets: 1. Debt/EBITDA ratio : Approx. 3 times 2. D/E ratio: Approx. 60%

JFE Group Long-term Vision "JFE Vision 2035" and Eighth Medium-Term Business Plan

The JFE Group implemented its Seventh Medium-Term Business Plan (FY2021–FY2024) by pledging to take on the challenges of the most transformative period in the Group's history to ensure a prosperous future for the planet. We tackled climate change as a top-priority business issue and achieved a milestone 18% reduction in greenhouse gas emissions in our steel business in fiscal 2024, compared to levels in fiscal 2013. We continue to make steady progress toward meeting our fiscal 2030 target of reducing emissions by at least 30% over fiscal 2013 by taking actions such as introducing innovative electric arc furnaces, scheduled to come online in fiscal 2028. Meanwhile, due primarily to the unexpectedly steep decline in the business environment for steel, consolidated business profit for fiscal 2024 was 135.3 billion yen, falling far short of the 320 billion yen target of the Medium-Term Business Plan.

Under these circumstances, we believe that two of the greatest concerns stakeholders have with regard to the JFE Group are: (1) its economic outlook, or whether it can achieve sustainable growth as competition intensifies across all fronts; and (2) its response to carbon neutrality, or whether it can meet the technological and financial challenges for achieving carbon neutrality. To address these two issues, we formulated our long-term JFE Vision 2035, targeting the year 2035 to present our aspirations and strategies.

> JFE Group Long-term Vision "JFE Vision 2035" and Eighth Medium-Term Business Plan
(FY2025-FY2027) (https://www.jfe-holdings.co.jp/en/investor/management/plan/)

JFE Group's Aspirations

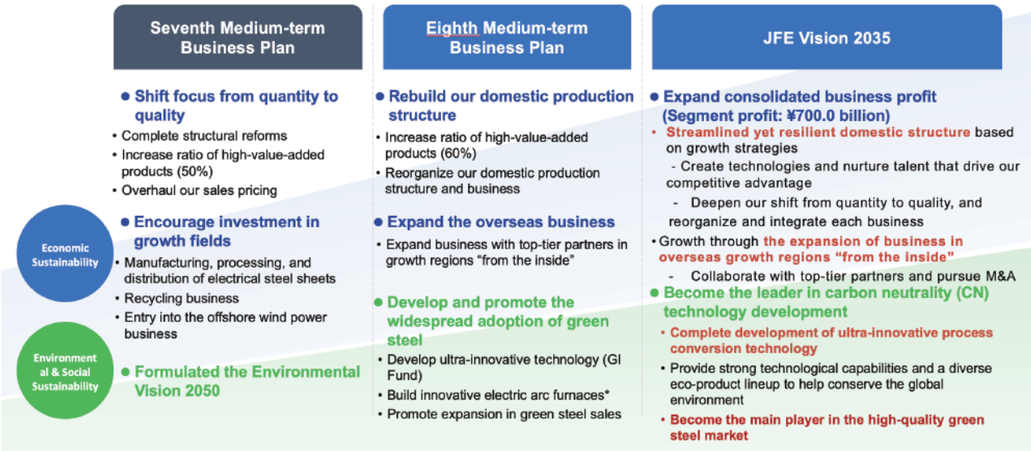
Our Corporate Purpose

In considering the JFE Group's vision, we reexamined how each business should leverage its strengths to fulfill its role and contribute to society. And through extensive participation and discussion by employees in operating companies, we defined our corporate purpose as follows.

JFE Vision 2035—JFE Group's Aspirations for 2035

Based on the JFE Group's Corporate Vision and Standards of Business Conduct and the corporate purpose defined by each operating company, we defined the JFE Group aspiration as "becoming the leader in carbon neutrality (CN) technology development." We set the target of 700 billion yen in consolidated business profit as the level of profit necessary for developing technologies and making capital investments to achieve CN by 2050. We also formulated the Eighth Medium-Term Business Plan (FY2025–2027) to promote growth strategies for realizing the JFE Group's aspirations in the face of a challenging business environment.

- We formulated the JFE Group Long-term Vision, **JFE Vision 2035**, to announce the JFE Group's aspirations.
- To promote growth strategies aimed at realizing our aspirations, we formulated **the Eighth Medium-term Business Plan (FY2025–2027)**.



*a large, high-efficiency electric arc furnace capable of producing high-grade and high-function steel products

Sustainability Initiatives of the Eighth Medium-Term Business Plan

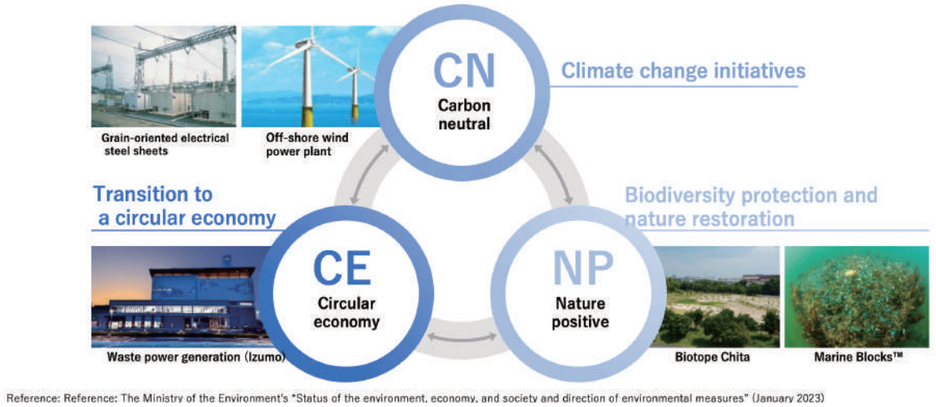
Following the formulation of our Eighth Medium-Term Business Plan, we reviewed our material issues of corporate management and KPIs. We extracted and scrutinized the necessary initiatives for the JFE Group to achieve sustainable growth by backcasting from our past initiatives on environmental and social issues and long-term vision and identified 16 material issues.

> Process for Identifying Material Issues of Corporate Management (P. 14)
> KPIs for FY2025 (P. 23)

Initiatives to Achieve Environmental Sustainability

In addition to climate change, a top-priority business issue in the previous Medium-Term Business Plan, we will proactively strive Groupwide to drive the transition to a circular economy and engage in biodiversity conservation and nature positive.

- **The entire JFE Group will contribute greatly to the global environment and society by working proactively on the transition to a circular economy, biodiversity conservation, and nature positivity, with a focus on the climate change problem.**



Reference: Reference: The Ministry of the Environment's "Status of the environment, economy, and society and direction of environmental measures" (January 2023)

Initiatives to Address Climate Change Issues

We will further promote initiatives for achieving carbon neutrality by 2050, guided by the JFE Group Environmental Vision for 2050 formulated in 2021. In the steel business, we will position the current Medium-Term Business Plan period as a preparatory phase toward achieving the fiscal 2030 target of reducing GHG emissions by at least 30% compared to levels in fiscal 2013 and completing as scheduled the development of ultra-innovative technologies in fiscal 2035. Accordingly, we will continue working to roll out the innovative electric arc furnace in the Kurashiki district of the West Japan Works in Okayama Prefecture and develop ultra-innovative technologies. In the engineering business, we will work to achieve the fiscal 2030 target of reducing GHG emissions across society by 20 million tons by capturing the demand for offshore wind power while also seeking to win EPC* orders and participate in projects in the hydrogen, ammonia, and carbon capture and storage areas, where social implementation is expected to advance in the years ahead.

*Projects in which the engineering, procurement, and construction processes are undertaken as a single package.

> Initiatives to Address Climate Change Issues (P. 53)
> JFE Group Environmental Vision for 2050 (P. 53)

Initiatives to Realize a Circular Economy

The JFE Group is focusing on the priority issues of expanded use and sales of recycled materials, development of resource-efficient eco-products and eco-solution technologies, and conversion of byproducts and waste into resources, and it will promote initiatives that leverage the strengths of each operating company and Group synergies.

> Initiatives to Transition to a Circular Economy (P. 124)

Initiatives to Promote Biodiversity Conservation and Nature Positive

By deepening our awareness that the JFE Group's business activities depend on and impact biodiversity and natural capital, we will promote initiatives to mitigate the associated risks. At the same time, we will not only develop processes, products, and technologies that contribute to these initiatives but also advance activities through diverse approaches, including collaborating with local communities and the supply chain. The JFE Group also endorses the TNFD* recommendations and will disclose information in line with the TNFD framework to share information with society at large.

*Taskforce on Nature-related Financial Disclosure

> Biodiversity Conservation and Nature Positive (P. 151)

Promoting Our Human Resources Strategy and Human Capital Management

The JFE Group believes that human resources are the driving force for corporate growth in times of transformation. In executing and realizing our management strategies, we formulated our human resources strategy from a long-term perspective with the understanding that the Company's sustainable growth must be actively linked with the personal growth of employees. This strategy focuses on securing skilled resources to build our talent portfolio, advancing DEI to maximize individual capabilities, and enhancing work engagement.

> Human Capital (P. 176)

Corporate Governance

We transitioned to being a company with an Audit & Supervisory Committee with the aim of swiftly responding to rapid and major changes in the environment surrounding the Company, such as carbon neutrality and DX. We will further advance initiatives undertaken in the previous Medium-Term Business Plan for enhancing the effectiveness of the Board of Directors and strengthening its supervisory functions. By doing so, we will strive to accelerate management decision-making, enrich Board member discussions on management policies and strategies, and further strengthen the Board's supervisory role. We will also introduce new indicators to calculate ESG remuneration for directors.

> Corporate Governance (P. 232)

Major Performance and Profitability Targets, Shareholder Returns Policy

Major performance and profitability targets for the current Medium-Term Business Plan are listed below. We consider returning profit to shareholders as one of the top management priorities. We will proactively distribute dividends while striving to ensure the entire Group's sustainable corporate structure. While we intend to maintain a dividend payout ratio of around 30%, our policy is to set a minimum of 80 yen per share from the perspective of conducting stable dividends.

			Eighth Medium-Term Business Plan FY2027
JFE Group	Consolidated business profit		400.0 billion yen
	ROE		10% or more
	Debt/EBITDA		About 3 times
	D/E		About 60%
Operating Companies	Steel business	Segment profit	260.0 billion yen
	Engineering business	Segment profit	42.0 billion yen
	Trading business	Segment profit	60.0 billion yen
Shareholder Returns	Dividend Policy		Payout ratio of around 30% with minimum set at 80 yen per share

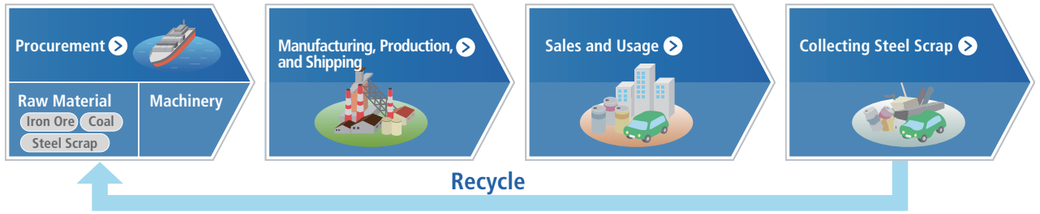
For measures of each operating company, refer to JFE GROUP REPORT 2025 (Integrated Report)

> JFE GROUP REPORT 2025 (Integrated Report) (https://www.jfe-holdings.co.jp/en/investor/library/group-report/)

JFE Group Value Chain

The JFE Group's value chain encompasses upstream and downstream activities across the globe. We seek to address social challenges by identifying the risks and opportunities that the Group must resolve through its business operations and pursue initiatives that tackle those challenges. We will also continue to strengthen the sustainability of the entire Group and implement countermeasures throughout our value chain.

Overview of the Value Chain



Procurement

To ensure stable supply of iron ore and coal used as raw materials in the production of steel products, we purchase from various sources around the world such as Australia, South America, etc., and transport materials to the steelworks on a special vessel. Equipment and materials used at steelworks plants are also purchased globally, and we promote the recycling of steel scrap from the steelmaking process. JFE Steel has established these JFE Steel Procurement Guidelines in accordance with the JFE Group Standards of Conduct and the JFE Group Basic Policy on Human Rights, to enhance sustainability across its entire supply chain. We share these guidelines with our business partners and promote sustainability initiatives throughout our supply chain.

Manufacturing, Production, and Shipping

The JFE Group is one of the world's largest steelmakers and has cutting-edge technologies for the efficient production and stable supply of high-quality steel products, used in products indispensable to daily life such as automobiles, infrastructure, and home appliances. We also promote resource recycling by repurposing iron and steel slag generated in the process of producing steel products as cement and other construction materials.

Sales and Usage

We pay due consideration for the global environment in our own steel production processes as well as by developing eco-products and solution technologies that contribute to the reduction of CO_2 emissions across society. Furthermore, we work at the frontier of production by responding to the diverse needs of different industries through research and development and by improving production technologies.

Collecting Steel Scrap

We collect steel scrap generated by customers after processing and use, as well as scrap from the market, and repurpose it as raw material for steelmaking.

Risks and Opportunities in the Value Chain

Challenges in the Value Chain	Procurement: Raw Material Iron Ore/Coal/ Steel Scrap	Procurement: Machinery	Manufacturing, Production, and Shipping	Sales and Usage	Collecting Steel Scrap
Address Climate Change Issues					
JFE Group views the issue of climate change as a critical managerial concern from the perspective of business continuity, and it considers achieving carbon neutrality by 2050 a top priority. By designating climate change issue as a material issue of corporate management, we are actively tackling the challenge to solve this issue.					
Risks • Increased instability in raw material procurement • Decline in production caused by typhoons, heavy rains, or droughts at manufacturing sites • Burden of investment required for introducing new technologies to realize large-scale decarbonization • Introduction of carbon pricing • Intensified competition and surge in the price of cold iron sources (scrap and reduced iron) • Increased demand for electricity due to a transition from blast furnaces to electric arc furnaces • Decline in the sales volume of steel products due to a reduction in internal combustion engines caused by the spread of EVs, and the shift to alternative materials caused by multi-material manufacturing	●	●	●	●	●
Opportunities • Increased demand for steel products with high environmental value for achieving decarbonization • Growth in demand for products used in EVs caused by expanded production of EVs	●	●	●	●	●

Key Initiatives

> Initiatives to Address Climate Change Issues (P. 53)

Related Pages

> Policy Engagement (P. 90) > Scenario Analysis in Line with the TCFD Recommendations (P. 113) > Supply Chain Management (P. 220)
> Environmental Data (P. 255)

Challenges in the Value Chain	Procurement: Raw Material Iron Ore/Coal/ Steel Scrap	Procurement: Machinery	Manufacturing, Production, and Shipping	Sales and Usage	Collecting Steel Scrap
Contribute to the realization of a Recycling-Oriented Society					
Recognizing that the transition to a circular economy is essential for realizing a circular society, we will advance this initiative beyond the scope of the JFE Group through collaboration with our value chain partners. We will work to convert byproducts and waste into resources, develop resource-efficient eco-products and solution technologies, and expand the use and sale of recycled resources.					
Risks • Resource depletion • Shortage of disposal sites for waste generated • Declining in the grade, rising price, and difficulty of obtaining obsolete scrap	●	●	●		●
Opportunities • Renewed interest in recyclability of steel products • Increased demand for eco-products and solutions • Expanded use and sales of steel slag products and steel scrap • Increased demand for recycled materials			●	●	●

Key Initiatives

> Initiatives to Transition to a Circular Economy (P. 124)

Related Pages

> Environmental Data (P. 255)

Challenges in the Value Chain	Procurement: Raw Material Iron Ore/Coal/ Steel Scrap	Procurement: Machinery	Manufacturing, Production, and Shipping	Sales and Usage	Collecting Steel Scrap
Acquire Robust Profitability					
To achieve the JFE Vision 2035, the JFE Group's Aspirations for 2035, we will strive to construct a streamlined yet resilient domestic structure based on growth strategies and realize growth through the expansion of business in overseas growth regions "from the inside."					
Risks • Decline in domestic demand • Difficulty in securing human resources due to the contraction of Japan's labor force • Stagnation in the drive for decarbonization • Expansion of low-cost exports of materials from China and elsewhere • Tighter tariff policies and rise of protectionism in various countries • Improvement in technological capabilities of overseas competitors			●	●	●
Opportunities • Increased demand for eco-products that contribute to reducing CO_2 emissions (steel sheets, high-strength steel sheets, etc.) • Increased demand for green steel products and steel products used for new energy applications • Progress in the development of a circular economy • Capture demand in overseas growth markets			●	●	●

Key Initiatives

> Initiatives to Address Climate Change Issues (P. 53) > Initiatives to Transition to a Circular Economy (P. 124)
> Human Capital (P. 176)

Related Pages

> JFE Group Report (https://www.jfe-holdings.co.jp/en/investor/library/group-report/)
> JFE Group Long-term Vision "JFE Vision 2035" and Eighth Medium-Term Business Plan (FY2025-FY2027) (https://www.jfe-holdings.co.jp/en/investor/management/plan/)
> DX REPORT (https://www.jfe-holdings.co.jp/en/investor/library/dxreport/)

Challenges in the Value Chain	Procurement		Manufacturing, Production, and Shipping	Sales and Usage	Collecting Steel Scrap
	Raw Material Iron Ore/Coal/ Steel Scrap	Machinery			
Ensure Occupational Safety and Health for Employees					
Ensuring the occupational safety and health of employees is a basic corporate requirement for manufacturers and is fundamental to the continued existence of any company. The JFE Group adheres to the philosophy of safety first, and, together with its Group companies and partner companies (including contractors), is promoting safety and health activities to create safe and healthy workplaces where all employees remain physically and mentally fit as they continue working for many years.					
Risks • Occurrence of accidents, including occupational injuries • Talent drain			●	●	
Opportunities • Stable recruitment of human resources and improvement in labor productivity			●	●	

Key Initiatives

> Occupational Health and Safety (P. 191)

Related Pages

> Social Data (P. 273)

Promote Human Capital Management					
The JFE Group believes that human resources are the driving force for corporate growth in times of transformation. In executing and realizing our management strategies, we formulated our human resources strategy from a long-term perspective with the understanding that the company's sustainable growth must be actively linked with the personal growth of employees. This strategy focuses on securing skilled resources to build our talent portfolio, advancing DEI to maximize individual capabilities, and enhancing work engagement.					
Risks • Occurrence of accidents, including occupational injuries • Talent drain • Culture of passing down technical skills is dying out	●	●	●	●	●
Opportunities • Acquisition of diverse talent for promoting the company's growth strategies • Improvement in employee engagement • Improvement in labor productivity			●	●	

Key Initiatives

> Human Capital (P. 176) > Promoting Diversity, Equity and Inclusion (DEI) (P. 180)
> Promoting Talent Acquisition and Development (P. 178) > Improving Work Engagement (P. 185)

Related Pages

> Supply Chain Management (P. 220) > Social Data (P. 273)

Challenges in the Value Chain	Procurement		Manufacturing, Production, and Shipping	Sales and Usage	Collecting Steel Scrap
	Raw Material Iron Ore/Coal/ Steel Scrap	Machinery			
Minimize risks to the business foundation					
To achieve the JFE Group's sustainable growth and enhance corporate value, we will promote the establishment and operation of a risk management system to accurately identify and appropriately address risks across the Group.					
Risks • Occurrence of human rights issues and violation of laws and regulations, etc. • Information leaks and system failures caused by cyber-attacks or improper system use • Production and quality issues, decline in customer trust • Deterioration in relationship with local communities • Insufficient response to stricter environmental regulations • Water shortage at the intake source, contamination of drainage destination • Difficulty in fund procurement	●	●	●	●	●
Opportunities • Expansion in sustainable procurement and construction of stable procurement system • Competitive advantage based on stable production and quality • Diversification in fund procurement	●	●	●	●	●

Key Initiatives

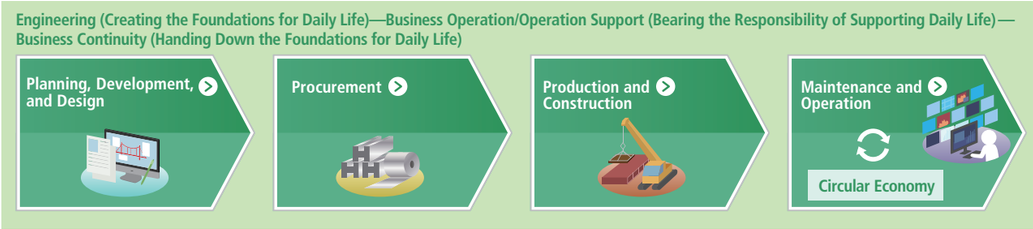
> Biodiversity Conservation and Nature Positive (P. 151) > Compliance (P. 246) > Risk Management (P. 251)

Related Pages

> Environmental Data (P. 255) > Supply Chain Management (P. 220) > Governance Data (P. 279)
> DX REPORT (https://www.jfe-holdings.co.jp/investor/library/dxreport/index.html)

Engineering Business

Overview of the Value Chain



Engineering (Creating the Foundations for Daily Life)

The JFE Group has built many high-functioning, high-quality facilities in fields such as energy, the environment, and bridges while satisfying the needs of our customers every step of the way, from design to delivery. We have combined and evolved the technologies for processing and assembling in shipbuilding business and technologies relating to materials and combustion in the steel business to create next-generation energy and to address environmental issues. Many of our technologies support society. In addition, we are assembling our resources to develop new business models and new technologies based on existing technologies. We produce high-quality products at low cost by establishing production sites, including one of the largest steel structure production factories in Japan, overseas bases centered on Asian countries, and global engineering structures.

Business Operation/Operation Support (Bearing the Responsibility of Supporting Daily Life)

The JFE Group engages in many private-public initiatives in the field of public services by applying the operational and maintenance know-how acquired over many years, primarily with regard to the environment and water and sewage plants. Furthermore, we build plants, engage in the recycling business and renewable energy business, and take the initiative to realize a recycling-oriented sustainable society. Going forward, we intend to expand our initiatives even further.

Business Continuity (Handing Down the Foundations for Daily Life)

The JFE Group is committed to the construction, operation, and maintenance of infrastructure facilities such as plants related to energy and environment, bridges, and coastal structures to hand down safe and secure foundations for the next generation.

Risks and Opportunities in the Value Chain

Challenges in the Value Chain	Planning, Development, and Design	Procurement	Production and Construction	Maintenance and Operations
Address Climate Change Issues				
The JFE Group strives to reduce CO_2 emissions in society through its eco-friendly products and technologies, including renewable energy technologies and energy-saving products in its engineering business. The Group designates climate change issue as a material issue of corporate management and is tackling the challenge to solve this issue.				
Risks • Damages incurred by typhoon, heavy rain, and drought at manufacturing and construction sites	●	●	●	●
Opportunities • Growing demand for strengthening infrastructure and addressing disasters • Greater opportunities for decarbonization and solution businesses	●	●	●	●

Key Initiatives

> Initiatives to Address Climate Change Issues (P. 53)

Related Pages

> Policy Engagement (P. 90) > Scenario Analysis in Line with the TCFD Recommendations (P. 113)
> Supply Chain Management (P. 220) > Environmental Data (P. 255)

Contribute to the realization of a Recycling-Oriented Society				
Recognizing that the transition to a circular economy is essential for realizing a circular society, we will advance this initiative beyond the scope of the JFE Group through collaboration with our value chain partners. We will work to convert byproducts and waste into resources, develop resource-efficient eco-products and solution technologies, and expand the use and sale of recycled resources.				
Risks • Lack of disposal sites for waste generated • Depletion of resources		●	●	●
Opportunities • Increased demand for waste to resource technology (plastics recycling, food waste power generation) • Growing demand for more resilient, longer-lasting infrastructure • Growing need for improving operational efficiency and reducing environmental impact	●	●	●	●

Key Initiatives

> Initiatives to Transition to a Circular Economy (P. 124)

Related Pages

> Environmental Data (P. 255)

Challenges in the Value Chain	Planning, Development, and Design	Procurement	Production and Construction	Maintenance and Operations
Acquire Robust Profitability				
To achieve the JFE Vision 2035, we will strengthen our earnings base by leveraging our diverse business portfolio, while expanding our business operations by transitioning to a circular economy.				
Risks • Decline in domestic demand • Difficulty in securing human resources due to the decrease in Japan's labor force • Stagnation in the drive for decarbonization	●	●	●	●
Opportunities • Increased demand for carbon neutral plants, growing need for renewable energy • Capture demand in overseas growth markets	●	●	●	●

Key Initiatives

> Initiatives to Address Climate Change Issues (P. 53) > Initiatives to Transition to a Circular Economy (P. 124)
> Human Capital (P. 176)

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> DX REPORT (https://www.jfe-holdings.co.jp/en/investor/library/dxreport/)

Ensure Occupational Safety and Health for Employees				
Ensuring the occupational safety and health of employees is a basic corporate requirement for manufacturers and is fundamental to the continued existence of any company. The JFE Group adheres to the philosophy of safety first, and, together with its Group companies and partner companies (including contractors), is promoting safety and health activities to create safe and healthy workplaces where all employees remain physically and mentally fit as they continue working for many years.				
Risks • Occurrence of accidents, including occupational injuries • Talent drain	●		●	●
Opportunities • Stable recruitment of human resources • Improvement in labor productivity	●		●	●

Key Initiatives

> Occupational Health and Safety (P. 191)

Related Pages

> Social Data (P. 273)

Challenges in the Value Chain	Planning, Development, and Design	Procurement	Production and Construction	Maintenance and Operations
Promote Human Capital Management				
The JFE Group believes that human resources are the driving force for corporate growth in times of transformation. In executing and realizing our management strategies, we formulated our human resources strategy from a long-term perspective with the understanding that the Company's sustainable growth must be actively linked with the personal growth of employees. This strategy focuses on securing skilled resources to build our talent portfolio, advancing DEI to maximize individual capabilities, and enhancing work engagement.				
Risks • Labor shortage • Talent drain • Culture of passing down technical skills is dying out	●	●	●	●
Opportunities • Acquisition of diverse talent for promoting the Company's growth strategies • Improvement in employee engagement • Improvement in labor productivity	●	●	●	●

Key Initiatives

> Human Capital (P. 176) > Promoting Diversity, Equity and Inclusion (DEI) (P. 180)
> Promoting Talent Acquisition and Development (P. 178) > Improving Work Engagement (P. 185)

Related Pages

> Supply Chain Management (P. 220) > Social Data (P. 273)

Minimize risks to the business foundation				
To achieve the JFE Group's sustainable growth and enhance corporate value, we will promote the establishment and operation of a risk management system to accurately identify and appropriately address risks across the Group.				
Risks • Occurrence of human rights issues and violation of laws and regulations, etc. • Information leaks and system failures caused by cyber-attacks or improper system use • Production and quality issues, decline in customer trust • Deterioration in relationship with local communities • Lack of adequate responses to stricter environmental regulations • Contamination of a drainage destination • Difficulty in fund procurement	●	●	●	●
Opportunities • Expansion in sustainable procurement and construction of a stable procurement system • Competitive advantage based on stable production and quality • Diversification in fund procurement	●	●	●	●

Key Initiatives

> Biodiversity Coservation and Nature Positive (P. 151) > Compliance (P. 246) > Risk Management (P. 251)

Related Pages

> Environmental Data (P. 255) > Supply Chain Management (P. 220) > Governance Data (P. 279)
> DX REPORT (https://www.jfe-holdings.co.jp/en/investor/library/dxreport/)

Stakeholder Engagement

The JFE Group strives to maintain agreeable and favorable relationships with all stakeholders, including Stakeholder Engagement shareholders, customers, clients, employees, and local communities, for the sustainable growth and medium- to long-term increase of corporate value.

JFE Group Standards of Business Conduct

2 Be open to society

Proactively disclose corporate information and engage in constructive dialogues with diverse stakeholders to enhance our corporate value.

Engagement with Major Stakeholders

Engagement with Major Stakeholders in FY2024

Major Stakeholders	Methods of Engagement	FY2024 Results	
Shareholders and Investors	Ordinary General Meeting of Shareholders	Once	Approx. 330,000 shareholders (number of unit shareholders)
	Individual meetings, primarily with institutional investors and securities analysts	In Japan: 71 companies (198 meetings) Overseas: 94 companies (195 meetings)	
	Meetings with shareholders, primarily ESG managers or those with voting rights at institutional investors	In Japan: 24 companies (41 meetings) Overseas: 16 companies (20 meetings)	
	Investor meetings and individual briefings on business strategy for analysts and persons responsible for ESG	5 times	Approx. 1,000 persons in total
	Business site and plant tours primarily for individual shareholders	14 times	Approx. 750 persons
	Newsletters (JFE Dayori)	Twice(mid-year and year-end)	Approx. 690,000 copies
	Various reports, including the JFE GROUP REPORT and JFE Group Sustainability Reports*1	Once	Approx. 22,000 copies
	Information via websites, etc., for shareholders and investors	As needed	
Customers	Communication through sales activities and sales support for quality assurance	Conducted at each Operating Company	
	Interviews and questionnaires, such as those related to customer satisfaction	Conducted at each Operating Company	
	Information via websites (product information), etc.	As needed	
Suppliers	Communication through purchasing activities	Conducted at each Operating Company	
	Interviews and questionnaires	Conducted at each Operating Company	
	Briefings and exchanges of opinion	Conducted at each Operating Company	
	Information disclosure and other communication through the website	As needed	

Message from the CEO | Value of Steel | JFE Group's Sustainability | Environment | Social | Governance | ESG Data | External Evaluations and Awards | Editorial Policy | Guidelines Content Index
Sustainability Management | JFE Group Value Chain | Stakeholder Engagement

Major Stakeholders	Methods of Engagement	FY2024 Results	
Employees	Communications through daily operations and in the workplace	As needed	
	Internal newsletters and intranet	As needed	
	Various labor-management committees	2 to 4 times	Management and labor unions at each Operating Company
	Corporate Ethics Hotline	As needed	JFE Holdings and Operating Companies 161 cases (153 cases at Group companies)
	Position-specific training on compliance and human rights	As needed	Conducted at each Operating Company
	Family days (visits by employee families, lunch at employees' cafeteria), etc.	As needed	Conducted at each Operating Company
	Corporate Ethics Awareness Survey	Once	JFE Holdings and Operating Companies
	Engagement Survey*2	Once	JFE Holdings and Operating Companies
	Management feedback*3	Once	JFE Holdings, JFE Steel, and JFE Engineering
Local Communities	Communication through local residents' association, events, etc.	As needed	
	Events at manufacturing bases (festivals, etc.)	Once per region	Approx. 170,000 persons per year
	Plant tours	As needed	Around 100,000 persons per year
	Cleanup activities in the vicinity of manufacturing bases and local regions	As needed	
	Sports promotion (baseball or jogging workshops, various sports competitions, etc.)	As needed	
	Dispatch of lecturers to elementary schools, craft workshops, workplace experience events	As needed	
	Information via websites (environmental info, etc.)	As needed	
	> Social contribution through JFE 21st Century Foundation (http://www.jfe-21st-cf.or.jp/eng/index.html) (various research support, regional activity support, etc.)	As needed	

*1 Number of issues published is for the JFE GROUP REPORT, and the JFE Group Sustainability Report is only posted online.
*2 Questionnaire targeting all employees for surveying the level of satisfaction and applying results to initiatives and operations.
*3 Corporate officers and managers are evaluated by co-workers and subordinates and receive feedback.

Engaging Our Shareholders and Investors

We work to disclose information accurately, fairly and in a timely and appropriate manner as well as strive for active communication. We established the Investor Relations and Corporate Communications Department as an organization responsible for communication with domestic and international shareholders and investors, and to promote constructive dialogue as well as provide management with the information acquired, with the aim of maintaining and improving the relationship of trust.

Policy on Constructive Dialogue with Shareholders and Investors

The JFE Group endeavors to enhance corporate value sustainably through dialogues with shareholders and investors, and it has established the Investor Relations and Corporate Communications Department to be responsible for promoting such constructive dialogue. The director supervising the department and director in charge are also responsible for promoting constructive dialogues with shareholders and investors, and the department takes the lead in ensuring organic collaboration between relevant departments by appropriately sharing information.

To promote active dialogue, JFE holds various briefings for institutional investors, including announcements of medium-term business plans and financial results by executive directors, and also arranges for visits to investors in Japan and overseas. With regard to individual shareholders and investors, JFE organizes briefings on corporate activity and tours of plants and other sites. Opinions, questions, and other information obtained through these dialogues are regularly collected and reported to directors and corporate officers.

In conducting the dialogues, JFE prevents any leaks of insider information and ensures fair disclosure by adhering to its disclosure policy. In addition, important press releases and IR materials are disclosed in English to provide the same information to overseas investors as to those in Japan.

For more on this, please refer to the following information.

> Investor information (https://www.jfe-holdings.co.jp/en/investor/index.html)
> Plant tours (special benefit for shareholders) (Japanese only) (https://www.jfe-holdings.co.jp/investor/stock/factory_tour/index.html)
> Disclosure policy (https://www.jfe-holdings.co.jp/en/investor/management/disclosure-policy/index.html)

General Meetings of Shareholders

General Meetings of Shareholders are opportunities for dialogue with shareholders, so JFE sends invitations at the earliest possible date to maximize attendance and avoid overlapping with the shareholder meetings of other companies. The company has been posting an invitation on its website at the earliest possible date while allowing online voting for shareholders who are unable to attend. JFE also strives to provide the same information to overseas investors as it does in Japan by, for example, disclosing the convocation notice in English.

For more information on the General Meetings of Shareholders, please refer to the following.

> General Meetings of Shareholders (https://www.jfe-holdings.co.jp/en/investor/stock/general_meeting/index.html)

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Sustainability Management | JFE Group Value Chain | Stakeholder Engagement

Engaging Our Customers

The Group believes that the stable supply of products and services and reliable quality assurance, along with advancing research and development, are necessary to meet customer needs.

We will work to establish win-win relationships by continuously meeting customer needs and the trust they place in us.

For more on this, please refer to the following information.

> Provide Quality Products and Enhance Customer Satisfaction (P. 214)

Engaging Our Suppliers

As a key business partner, we actively promote sustainability initiatives in cooperation with suppliers. We have established a basic purchasing (procurement) policy to promote fair and honest procurement activities and build sound relationships with suppliers.

For more on this, please refer to the following information.

> Supply Chain Management (P. 220)

Engaging Our Employees

Recognizing that human resources are the driving force behind corporate growth, top management has formulated human resources strategies aligned with our management strategies. It has also established the JFE Group's Basic Policy on Human Resource Management and the JFE Group Health Declaration to promote initiatives that maximize the talents and vitality of our human resources through aggressive investment in human capital.

For more on this, please refer to the following information.

> Human Capital (P. 176)

Engaging the Local Community

To ensure business continuity at manufacturing bases where steelworks are located and elsewhere, constructing a relationship of trust with citizens in local communities and realizing coexistence and prosperity are crucial.
We will pursue various activities with the aim of realizing sustainable growth and regional development, including continued initiatives toward ensuring safety and reducing our environmental impact.

For more on this, please refer to the following information.

> Community (P. 222)

Environmental Communication

The JFE Group gives utmost priority to communicating with all stakeholders, including in matters relating to the environment. In addition to disclosing environmental information, the Group carries out extensive two-way communication between the public and the business community by supporting and participating in environment-related activities outside the Group.

Disclosing Environmental Data

The East Japan Works of JFE Steel discloses real time environmental data on local air and water quality. Visitors can review this information in the first-floor lobby of the Visitor Center in the Chiba District and in the Amenity Hall and the first-floor lobby of the Keihin Building in the Keihin District.

Environmental data display in the Keihin District

Dissemination of Environmental Information and Public Outreach

Commercial Video and Special Website about JFE

We created a commercial video and special website featuring the JFE Group's initiatives for a sustainable future to bring the Group closer to stakeholders. The video and website are titled "Sus-tetsu-nable!" with the word "tetsu" meaning iron inserted into the word "sustainable." We hope that the video and website will help the public better understand iron as an essential element for social infrastructure and recognize the Group's efforts as an indispensable member of society.

> Special website "Sus-tetsu-nable!" (Japanese Only) (https://www.jfe-holdings.co.jp/sus-tetsu-nable/)

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ecobeing Environmental Website

The JFE Group provides support to ecobeing, a web magazine operated by KLEE INC., which disseminates information on the environment under the slogan, "Let's talk more with the Earth!" The website series, ecopeople, has featured people from a variety of fields and also introduced JFE Group employees and initiatives. To date, the magazine has covered JFE Steel's BETTER RECYCLE Shonan, featuring the project for addressing plastic pollution by increasing the application of steel sheets for can-making, and the JFE Dragonfly Path in the Tsurumi Works of JFE Engineering. In 2024, we introduced the "Public-Private Partnership for Creating a Rich Marine Environment," a collaborative effort between Yokohama City and JFE Steel. This ongoing project launched in 2013 has demonstrated how steel slag products such as JFE's Marine Block™and Frontier Rock™ can be used to build an artificial bed for marine life and create new value. Many other activities and initiatives undertaken outside the JFE Group are also featured. By supporting this website magazine from an objective standpoint, the JFE Group seeks to help stimulate public discussion and awareness about ESG and the SDGs.

Please see the following for further details.

> ecobeing (Japanese only) (https://www.ecobeing.net/)
> Public-Private Partnership for Creating a Rich Marine Environment (Japanese only) (https://www.ecobeing.net/ecopeople/2025_spring/)
> JFE Steel's steel slag products(Japanese only) (https://www.jfe-steel.co.jp/en/products/slag/index.html)

Sponsoring Midori no Komichi Environmental Diary

The JFE Group sponsors the Midori no Komichi (Green Trail) environmental diary project hosted by Green Cross Japan with the hope that children will become more aware of environmental issues by keeping diaries of their activities and thoughts about ecology.

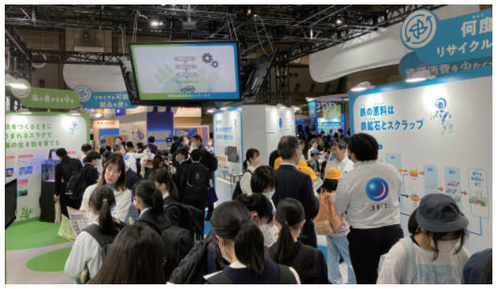
Please see the following for further details.

> Midori no Komichi Environmental Diary (Japanese only) (https://www.midorinokomichi.net/)

Participation in Environmental Exhibitions Such as EcoPro2024 and Tokyo Bay Festival 2024

The JFE Group's business activities for protecting the environment have been presented at various environmental exhibitions.

EcoPro2024, one of the largest environmental exhibitions in Japan, was held in December 2024 at the Tokyo Big Sight, and the JFE Group participated under the theme: "Sus-tetsu-nable! Let's create an environmentally friendly loop for the future!" The JFE Group develops technologies and products that efficiently use limited resources without generating waste. At our booth, we explained the high recyclability of steel and showcased technologies such as environmentally friendly steel products, power generation using waste materials, and PET bottle recycling, so that visitors could learn about a circular society through JFE's business activities. We also sponsored an Eco Study Note for pre-visit review to aid children's understanding. As in the previous year, our VR factory tour was also well-received.



The JFE Group's booth at EcoPro2024

VR factory tour

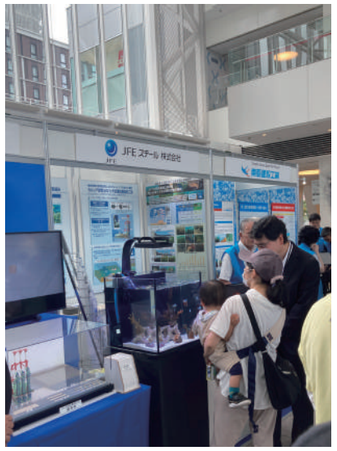
The JFE Group's eight companies jointly participated in the WIND EXPO at Tokyo Big Sight in February 2025. The WIND EXPO is one of the Smart Energy Week expos, a set of simultaneous expositions about seven new energy fields, and Japan's largest wind energy exposition that draws participants from around the world. We promoted our initiatives under categories such as foundational structures, construction, O&M, and supply chain, and we offered information on the start of operations at JFE Engineering's monopile manufacturing plant in Kasaoka, Okayama Prefecture, as well as the sales expansion of JFE Steel's high-quality large and heavy steel plate J-TerraPlate™ and green steel product JGreeX™.

The JFE Group has positioned its work on the offshore wind power business as a key initiative. Our strength lies in having a diverse range of businesses within the Group, which can collaborate to generate synergies and deliver new added value. We will continue to leverage the Group's comprehensive capabilities to commercialize this business.

JFE Group's booth at WIND EXPO

The JFE Group participated as a panelist in the NIKKEI Blue Ocean Forum, sponsored by The Nihon Keizai Shimbun and Nikkei BP and held in May and December 2024. We introduced our project using steel slag products to create seaweed beds and our "blue carbon" effort to calculate the amount of carbon absorbed and fixed by marine life.

In September 2024, JFE Steel took part in Tokyo Bay Festival 2024, an event held in Yokohama City to appreciate the bounty of Tokyo Bay, and presented the company's involvement in the regeneration of the marine environment and contribution to biodiversity through its steel slag products. The event offered a great opportunity for the company to showcase to the many visitors how its products contribute to the SDGs.



JFE Steel's booth at Tokyo Bay Festival 2024

Environment: Executive Summary

The JFE Group strives to maintain its businesses in harmony with the environment for the prosperity of society. We have positioned climate change as a key management concern in our pursuit of becoming the top runner in carbon neutrality technology development by 2035 toward achieving carbon neutrality by 2050. To this end, we are reducing greenhouse gas emissions in the steel business and expanding our contribution to reducing greenhouse gas emissions in society as a whole, centered on the engineering business. The entire Group is working in concert to establish an environmental management framework, and we have identified climate change, transition to a circular economy, and biodiversity conservation and nature positive as key issues under our Eighth Medium-term Business Plan (FY2025–FY2027). We are committed to resolving global environmental concerns.

The JFE Group systematically addresses climate change by incorporating the Task Force on Climate-related Financial Disclosures (TCFD) philosophy in its management strategies. In the steel business, we have created a roadmap for achieving carbon neutrality by 2050 and are working to reduce greenhouse gas emissions (GHG) toward short-, medium-, and long-term targets. In FY2024, we achieved a 23% reduction against the target of an 18% reduction in greenhouse gas emissions compared to FY2013. Our efforts targeting a reduction of more than 30% by FY2030 include introducing innovative electric arc furnaces and using direct reduced iron. Furthermore, to achieve carbon neutrality by 2050, we are pursuing the parallel development of ultra-innovative technologies, including a carbon-recycling blast furnace, to establish these technologies around 2035. The shift to steelmaking processes that achieve carbon neutrality, however, entails enormous costs, and creating markets for products with environmental value (GX products), such as green steel, and gaining support from the government and others will be indispensable. To this end, since FY2023 we have been supplying JGreeX™, a variety of green-steel products that, compared to conventional products, significantly lowers GHG emissions in the steelmaking process based on the mass balance approach, and we are expanding sales to a variety of sectors. To support investment, we applied for a program of the Ministry of Economy, Trade and Industry and secured support for the introduction of an innovative electric arc furnace at the Kurashiki district of the West Japan Works. In the engineering business, we are working to expand our contributions to reducing GHG emissions in society by constructing renewable energy power generation facilities, including offshore wind power generation. In FY2024, we achieved our target of contributing to a 12 million tonne reduction in GHG emissions in society, and we are expanding initiatives for achieving reductions of 20 million tonnes in FY2030 and 30 million tonnes in FY2035.

The transition to a circular economy is also positioned as a key theme, and we are coordinating our steel, engineering, and trading businesses and value chain to expand the use of recycled resources, improve the efficiency of waste resource utilization, and convert waste into resources.

In addition, we are promoting initiatives for biodiversity conservation and nature positive, assessing the dependencies and impacts between our business activities and natural capital, and advancing disclosures in line with the TNFD. These efforts mainly include monitoring and conservation activities around production sites and initiatives to improve the marine environment by using steel slag products.

In regard to the blast furnace site and other facilities suspended in FY2023 at JFE Steel's East Japan Works (Keihin District), we are focusing on converting the land for public and highly public-interest use, contributing to the sustainable development of local communities and society by establishing new industries and creating jobs for the next 100 years.

Targets and Results for Environment-Related Material Issues of Corporate Management
> FY2024 KPI Results and FY2025 KPIs (P. 19)

Key Initiatives

- Environmental Management Initiatives (P. 46)
- Initiatives to Address Climate Change Issues (P. 53)
- Policy Engagement Initiatives (P. 90)
- Scenario Analysis in Line With the TCFD Recommendations (P. 113)
- Initiatives to Transition to a Circular Economy (P. 124)
- Biodiversity Conservation and Nature Positive (P. 151)

Environmental Management

Basic Policy

JFE Group companies are developing innovative technologies and international cooperation for the protection of the global environment by operating in harmony with the global environment, as well as protecting it, in accordance with the Group's environmental philosophy and policy.

Environmental Philosophy

The JFE Group puts top priority on protecting and enhancing the global environment to maintain its business in harmony with the environment and ultimately for the prosperity of society as a whole.

Environmental Strategies

1. Reduce the environmental impact of all businesses
2. Contribute through technologies and products
3. Contribute through businesses for resource conservation and energy efficiency
4. Communicate with society
5. Facilitate international cooperation

Management Structure

Framework for Environmental Management

The JFE Group Environmental Committee, chaired by the president of JFE Holdings and operating under the JFE Group Sustainability Council, sets goals for environmental protection, monitors the progress of these initiatives and works to improve the Group's overall environmental performance. Key issues for corporate management such as climate change are deliberated at the Group Management Strategy Committee as well and reported to the Board of Directors. The board oversees environmental challenges by discussing the reported material. Additionally, specialized committees set up by JFE Group operating companies and affiliates implement specific activities.

We will continue to place top priority on addressing climate change from the perspective of business continuity and are striving to achieve carbon neutrality by 2050. In addition to addressing climate change, our Eighth Medium-term Business Plan designates the transition to a circular economy as well as biodiversity conservaion and nature positive as key issues, and we will actively contribute to resolving global environmental concerns.

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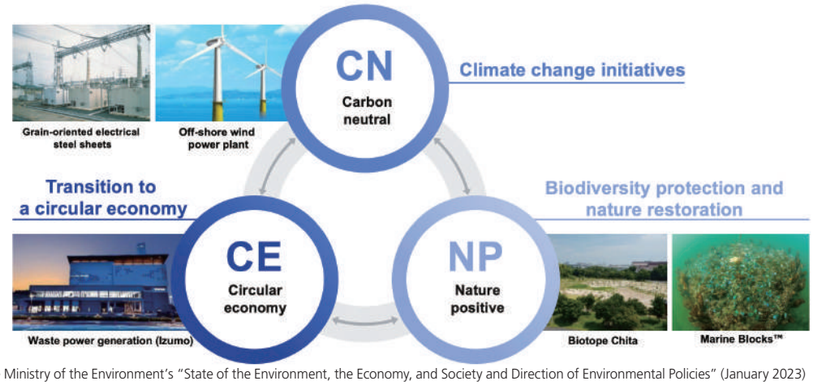
Environmental Philosophy
The JFE Group puts top priority on protecting and enhancing the global environment to maintain its business in harmony with the environment and ultimately for the prosperity of society as a whole.

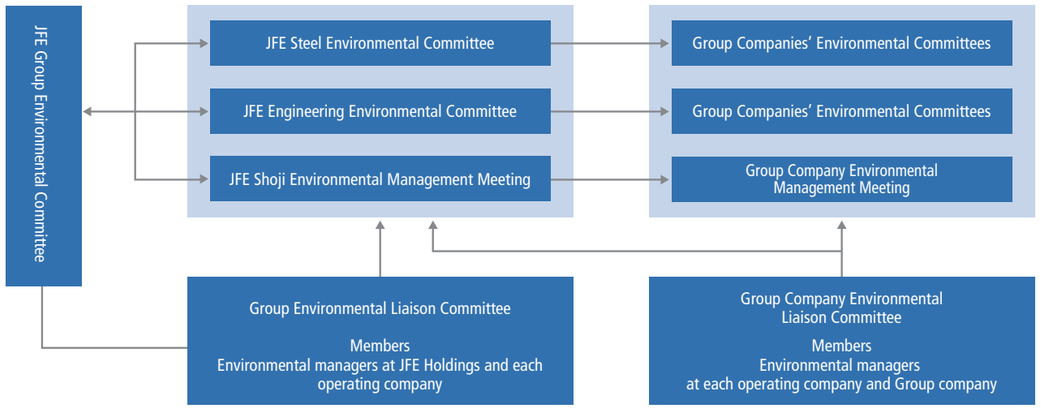


Based on the Ministry of the Environment's "State of the Environment, the Economy, and Society and Direction of Environmental Policies" (January 2023)

Building an environmental management system as a unified group, setting "climate change issues" as well as "transition to a circular economy" and "biodiversity conservation" as important issues in the Eighth Medium-term Business Plan. Actively contributing to solving global environmental issues.

For further details, please refer to:
> System for Promoting Sustainability (P. 10)
> Eighth Medium-term Business Plan (P. 25)
> JFE Group Environmental Vision for 2050 (P. 53)

Environmental Management System



Initiatives

Environmental Management System

Acquiring ISO 14001 certification is a key part of every JFE Group company's environmental program. In accordance with the requirements of ISO 14001, each registered organization reviews its environmental policy, legal requirements, and progress toward achieving last year's targets and activities, and then formulates and communicates environmental targets and action plans for the coming year. In addition to periodic reporting and reviews within the organization, audits are conducted as necessary to confirm results. Annual results are evaluated through management reviews, and deliberation on future initiatives incorporates these findings into next year's plans.

All global production sites of JFE Steel and JFE Engineering and major offices of JFE Shoji have been certified, encompassing 66% of 43,243 employees at 82 companies covered in this report and 52% of all sites. In FY2024, there were no major violations of environmental laws or regulations by Group companies (air, water, soil, etc.) that resulted in a fine or other penalty.

For quantitative data related to ISO 14001 for each business, please refer to:
> List of ISO 14001-certified companies (https://www.jfe-holdings.co.jp/common/pdf/sustainability/environment/env_manage/iso14001.pdf)

ST Environmental Committee and Environment Management Committees Provide Appropriate Management Supervision

JFE Steel maintains Environment Management Departments at its head office and in each business office, as well as an Environmental Committee, chaired by its president, and Environment Management Committees in each local office. In addition, the Management Committee deliberates and sets materialities and KPIs, including those related to the environment, and evaluates performance. In FY2024, we achieved our target of reducing CO_2 emissions by more than 18% compared to FY2013, and by stimulating demand for green steel, we expanded the adoption of JGreeX™ and received orders across all sectors, thereby achieving our environmental KPIs. Starting in FY2025, we will set new materialities and KPIs related to the circular economy, biodiversity conservaion, and nature positive activities, and follow through to take action.

> Environmental Management System (Environmental Strategies) (Japanese only) (https://www.jfe-steel.co.jp/research/environment.html)
> FY2024 KPI Results and FY2025 KPIs (P. 19)

EN Environmental Committee Oversees Environmental Management

JFE Engineering maintains an Environment Management Department at each of its major locations, including production sites and branch offices as well as all divisions in charge of products. The Environmental Committee, chaired by the president, oversees environmental management for the entire company. Under its Environmental Management System, JFE Engineering works to minimize environmental impact at production sites, branch offices and construction sites and contribute to environmental protection through all products and services. The major strategies for FY2025 are (1) promote environmental contribution through products for mitigating global warming and climate change, (2) promote environmental protection, effective energy conservation, and resource recycling in business activities, and (3) ensure thorough compliance with environmental laws and regulations. We are reflecting these strategies into the related operations. These strategies are incorporated into related operations and are addressed.

SH Expand ISO 14001 Certification Acquisition Coverage

JFE Shoji obtained ISO 14001 certification for its head office, Osaka branch, and Nagoya branch in 2000 and later expanded the scope of certification to all domestic offices. JFE Shoji also applies the same environmental management system to domestic Group companies, promoting the same environment management activities and striving for the same certification. Overseas coil centers are also planning to acquire ISO 14001 certification.

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Environmental Audit

In addition to the regular internal and external audits at ISO 14001-certified sites, the audit and environment departments at each operating company's head office conduct independent environmental audits at their production sites.

ST Conduct Detailed Audits

Once a year, JFE Steel's Audit Department and the Environment, Disaster Prevention and Recycling Department conduct an environmental audit at each operational site. JFE Steel categorizes Group companies based on the result of risk assessment considering owned equipment and conducts detailed audits every one to five years using checklists.

In FY2024, we conducted audits of 17 Group company sites.

Document audit at a domestic Group company on-site audit at a domestic Group company

On-site audit at a domestic Group company

EN Conduct Audits to Confirm Compliance with Environmental Laws and Regulations

JFE Engineering places top priority on complying with environmental laws and regulations.

For JFE Engineering's production sites in Japan (Tsurumi, Tsu, and Kasaoka), the Safety and Environment Department conducts environmental law compliance audits as well as internal audits of the environmental management system. In addition, the department annually audits about 50 locations selected from construction sites in Japan and Group companies to confirm compliance with environmental laws and regulations. Furthermore, at JFE Engineering, environmental inspections are conducted at approximately 70 locations annually (including about 30 construction sites and plant operation sites) to evaluate the effectiveness of initiatives for improving environmental performance and take remedial action. Annual environmental inspections to confirm compliance with environmental laws are conducted by the departments responsible for all construction, and self-checks of legal compliance are carried out every year at production sites (Tsurumi, Tsu, and Kasaoka).

SH Conduct Internal Audits and Environmental Audits

The JFE Shoji Group conducts internal environmental audits once a year for ISO 14001-certified Group companies, and environmental audits are conducted once every three years for non-certified group companies to confirm on-site compliance with laws and regulations. In FY2024, we conducted internal audits of all 54 ISO-certified organizations and an environmental audit of one non-certified company.

For quantitative data related to environmental audits, please refer to:
> Environmental Data (P. 255)

Environmental Education

The JFE Group actively provides education to foster a corporate culture of environmental protection. Education at operating companies includes training for new recruits and newly promoted employees as well as specific environmental-protection training by position and job.

For Groupwide environmental training, we hold an annual Review Session on Environment-Related Laws and Regulations, to which lawyers specialized in environment-related laws and regulations are invited to give lectures on the latest information related to the enactment and revision of these laws, as well as associated violations and court decisions. Employees from wide-ranging departments, including the environment, disaster prevention, legal affairs, general affairs, and manufacturing departments of the operating companies and their group companies, who are involved in environment-related activities, attend these annual sessions as the basis for planning their activities, such as educating employees and raising awareness about the Group's policies and initiatives.

ST Promote Pollution Control Managers Acquire Qualifications

JFE Steel encourages employees to obtain qualifications as pollution-control managers. A training program for environmental managers at Group companies was launched in FY2011. In addition, JFE Steel provides employees with training to ensure compliance with environmental laws, disseminates information about regulatory revisions at its Environmental Liaison Committee meetings for Group companies, and organizes brush-up training in waste management skills for on-site personnel.

EN Provide General Environmental Education

JFE Engineering educates all employees about environmental issues to increase their understanding of the company's policies and initiatives. To ensure proper environmental management at production and construction sites, training is often tailored to specific employee operations, helping to enhance their capabilities. In FY2024, we revised the distributed video materials for environmental law education to make them easier to use and encouraged greater participation.

SH Provide General Environmental Training and Specialized Training for Internal Audit Staff

JFE Shoji provides all employees with general environmental training in compliance with ISO 14001 and specialized training for internal audit staff. All employees within the scope of certification receive a pocket-size ISO Employee Card to carry with them so they can check the details of ISO 14001 activities at any time. In addition, each company performs a self-check using its own extensive checklist to ensure understanding and rigorous compliance with environmental laws. Also, JFE Shoji provides environmental training to new executives and information about revised laws and regulations to environmental management personnel.

Environmental Impact Reduction Initiatives

The JFE Group regards co-existence and mutual prosperity with local communities, the global environment, and society at large as a critical managerial challenge in terms of business continuity. It strives to control air and water pollutant emissions and aggressively invests in environmental protection. Related internal controls and education are steadily being strengthened as well. Also, the transfer and widespread application of proprietary technologies, mainly in developing countries, contribute to pollution prevention on a global scale.

For quantitative data related to reducing environmental impact, please refer to:
> Environmental Data (P. 255)

Controlling Air Emissions

ST Initiatives to Further Reduce SOx and NOx Emissions

JFE Steel is installing low-nitrogen oxides (NOx) burners in reheat furnaces, switching to low-sulfur fuels and deploying desulfurization and denitration devices in sintering plants, all major sources of sulfur oxides (SOx) and NOx emissions. It has concluded agreements with local administrations that stipulate conditions that are stricter than the total volume restrictions required by the Air Pollution Control Law. The company is continuing to further control emissions at a level that is less than the amount set forth in the agreement. In addition, the company suppresses dust dispersion through measures that include enhancing on-site cleaning, installing sprinklers and windbreak fences in raw material yards, and improving the performance of dust collectors.

EN Appropriate Management in Place to Restrict SOx and NOx Emissions

To ensure compliance with the Air Pollution Control Law and relevant local regulations, JFE Engineering properly manages facilities that emit soot and smoke at its Yokohama head office, Tsurumi works, and Tsu works, so NOx and SOx emissions from those facilities are maintained at a level sufficiently lower than the total annual volume restriction (NOx: 18,000 Nm^3, SOx: 100 Nm^3).

Environmental protection efforts are underway at construction sites and plant operation sites through the strict use of construction machinery and on-site vehicles in compliance with the Automotive NOx and PM Law and the Act on Regulation, Etc. of Emissions From Non-road Special Motor Vehicles (Off-Road Vehicle Law).

In addition, we strive to prevent leakage at the aforementioned sites and temporary locations such as construction sites by inspecting equipment using fluorocarbons and ensuring proper disposal in accordance with the Fluorocarbons Emission Control Act.

Management of Chemical Substances and Emission Control

ST Initiatives to Reduce VOC Emissions

JFE Steel lowers its environmental impact by voluntarily reducing the chemical substances it releases. Release and transfer amounts of substances subject to Japan's Law concerning Pollutant Release and Transfer Register (PRTR Law) are reported in accordance with the law.

The Japan Iron and Steel Federation formulated a voluntary action plan to reduce VOC emissions by 30% from FY2000 levels by FY2010. As part of this action plan, JFE Steel set a target for reducing emissions to 1,078 tonnes or less. As a result of our initiatives, we achieved a significant reduction that exceeded the 30% reduction target in FY2010 and have been consistently cutting VOC emissions, by more than 50%. Going forward, we will continue to maintain the emissions below 1,078 tonnes and take the necessary steps to prevent any increase.

Emissions of benzene and dichloromethane are kept at low levels. We will continue to set targets for the two substances and maintain low emissions levels.

EN Management of Chemical Substances in Accordance with the PRTR Law

Major chemical substances subject to the PRTR Law for the JFE Engineering works in Tsurumi, Tsu, and Kasaoka include organic solvents such as xylene used for painting products, manganese and its compounds generated during welding. We report the release and transfer amounts of these substances in accordance with the law.

PCB Waste Management at JFE

Polychlorinated biphenyl (PCB) waste is properly stored and managed at the JFE Group's facilities. High-concentration PCB waste has been treated under the guidelines set by the Japan Environmental Storage & Safety Corporation (JESCO), and the treatment is almost completed. Low-concentration PCB waste is being treated under contracts with certified detoxification contractors. The Yokohama Eco Clean Plant of J&T Recycling Corporation treats insulating oil contaminated with slight amounts of PCB, helping to reduce pollutants both in and outside the JFE Group.

Environmental Accounting

Basic Policy

The JFE Group is saving energy and reducing its environmental impacts by making its production facilities increasingly efficient and introducing more environmentally friendly equipment. Any equipment or facilities related to energy conservation and environmental protection are categorized as environmental investment, while all activities related to environmental protection and impact reduction are categorized as environmental expenses.

Through these environmental investments and expenses, we are working to lower unit-based CO_2 emissions to prevent global warming and to reduce final-disposal waste by maintaining a high recycling rate to effectively use natural resources. We are also striving to reduce emissions of pollutants into the water and air, which contributes to environmental protection and ensures thorough compliance with statutory regulations concerning exhaust gas emissions and discharged water.

For quantitative data related to environmental accounting, please refer to:
> Environmental Data (P. 255)

Related Links

> Material Flow (P. 255)
> JFE Steel: Environmental Initiatives (Japanese only) (https://www.jfe-steel.co.jp/research/environment.html)
> JFE Engineering: 360° JFE Engineering—Protecting Natural Environments (https://www.jfe-eng.co.jp/en/360_jfe_engineering/#env)
> JFE Shoji: Environment Management (https://www.jfe-shoji.co.jp/en/sustainability/environment/)

Initiatives to Address Climate Change Issues

Basic Policy

Climate change is a critical business concern for the JFE Group from the perspective of business continuity. Our steel business, which emits 99.9% of the Group's total CO_2 emissions, has been developing various technologies for saving energy and reducing these emissions. We have applied these technologies to steel manufacturing processes to enable production with low levels of CO_2 emission intensity.

Furthermore, the JFE Group has developed and maintains a variety of products and technologies that contribute to reducing GHG emissions, including high-performance steel materials that save energy when customers use them, as well as renewable energy power generation. We will continue to develop and promote the widespread use of these processes and products. We consider this an opportunity to apply the technologies we have fostered across the globe and at the same time contribute to tackling climate change.

JFE announced its endorsement for the TCFD recommendations in May 2019 and has identified climate change-related issues based on the scenario analysis advocated in the TCFD to formulate strategies for sustainable growth. The JFE Group will be a top runner for the development of carbon neutral technologies and formulated the JFE Group Environmental Vision for 2050 toward achieving carbon neutrality in 2050. We will actively work on reducing GHG emissions and contributing to GHG reductions.

JFE Group Environmental Vision for 2050

The JFE Group intends to strengthen sustainability through solutions that address global climate change issues while restructuring its business in response to changes in the environment surrounding the steel business.

In 2021, we positioned climate change as a top-priority issue in the Seventh Medium-term Business Plan (FY2021–FY2024) and formulated the JFE Group Environmental Vision for 2050 toward achieving carbon neutrality by that year. We will continue to regard it as a top priority under the Eighth Medium-term Business Plan (FY2025–FY2027) and will implement related initiatives.

We will systematically address climate change by reflecting the TCFD's principles in the business strategies of our JFE Group Environmental Vision for 2050. In the steel business, we will reduce GHG emissions by 18% from FY2013 levels by the end of FY2024. In addition, we have announced targets for our steel business of reducing GHG emissions by FY2027 by 24% and by FY2030 by 30% or more, compared to FY2013.

To explore all possibilities for realizing carbon neutrality in 2050, we will take on the challenge of developing ultra-innovative technologies such as carbon-recycling blast furnaces developed with our proprietary technology while also adopting a multitrack approach for pursuing other technologies. In our engineering business, we will widen our contribution to the reduction of GHG in society as a whole by expanding and advancing renewable power generation and carbon-recycling technologies, supplying high-performance steel products, and other initiatives. Furthermore, we will apply Group strengths to accelerate the commercialization of our offshore wind-power business.

The development of process technologies that minimize GHG emissions while enabling the mass production of high-quality, high-performance steel products is essential for the sustainable development of society. Efforts for achieving carbon neutrality will inevitably entail substantial costs for research and development and renewed facilities. We believe it will be necessary to consider how society will bear these costs and what support can be provided by the government and other sources.

Given the ambitious target of achieving carbon neutrality by 2050, we hope to lead the way in establishing the necessary decarbonization technologies at the earliest possible stage, based on developing a decarbonization infrastructure and realizing a global equal footing.

JFE Group Environmental Vision for 2050

- **Climate change is a critical business concern for JFE, and we are aiming to achieve carbon neutrality by 2050.**
- **We will accelerate our research and development of new technologies and pursue ultra-innovative technologies.**
- **We will seek business opportunities that allow us to enhance corporate value by contributing to CO_2 emissions reduction across society.**
- **The principles of TCFD will be reflected in our business strategies and systematically deployed.**

The Target of Reducing GHG Emissions in FY2027 (Eighth Medium-term Business Plan Initiatives)
- Reduce steel-business GHG emissions in FY2027 by 24%, compared to FY2013 (steel business).

The Target of Reducing GHG Emissions in FY2030
- Reduce steel-business GHG emissions in FY2030 by 30% or more, compared to FY2013 (steel business).

Initiatives for Carbon Neutrality by 2050

❶ Reduce steel-business GHG emissions
- Pursue ultra-innovative technology for carbon-recycling blast furnaces and CCU.
- Develop hydrogen-based ironmaking direct reduction technology.
- Leverage top-class electric arc furnace technology for high-quality, high-performance steel manufacturing and for high efficiency, ensure early implementation, etc.
- Develop transitional technologies for carbon neutrality, including increased use of steel scrap in converters, energy savings, and low-carbon energy transformations.

❷ Expand contributions to GHG emissions reduction in society
- Engineering business: Expand and develop renewable energy power generation and carbon-recycling technologies. (Reduce GHG emissions by 13.5 million tonnes in FY2027, 20 million tonnes in FY2030, and 30 million tonnes in FY2035.)
- 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 for eco-products.

❸ Offshore wind-power generation business (Groupwide effort to accelerate commercialization of the offshore wind-power business)
- Engineering business: Manufacture monopiles and other seabed-fixed structures for offshore wind-power generation.
- Steel business: Produce large, heavy plates using the No. 7 continuous casting machine at the Kurashiki District of the West Japan Works.
- Trading business: Carry out supply chain management for steel materials and processed products.
- Shipbuilding business: Manufacture offshore wind power generation floating structures and construct work vessels.
- Groupwide: Operation and maintenance (O&M) making maximum use of Group resources.

Notes.
1. Carbon-recycling blast furnace: A technology that converts CO_2 from the blast furnace into methane, which is then used as reducing material in the blast furnace
2. CCU: Carbon dioxide capture and utilization
3. Transitional technologies: Technologies that advance the transition to carbon neutrality

> Eighth Medium-term Business Plan (P. 25)
> JFE Group Environmental Vision for 2050, Presentation Material (https://www.jfe-holdings.co.jp/en/common/pdf/investor/climate/2021-210525-release01.pdf)
> JFE Group Environmental Management Strategy, Presentation Material (https://www.jfe-holdings.co.jp/en/common/pdf/investor/climate/environmental-management-strategy250529-01.pdf)

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Information Disclosure Based on TCFD Recommendations

On May 27, 2019, JFE Holdings announced its endorsement for the final report of the Task Force on Climate-related Financial Disclosures (TCFD)*.

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

*The TCFD was established by the Financial Stability Board (FSB) at the request of G20 finance ministers and central bank governors.

Climate-related risks and opportunities may have a significant impact on medium- to long-term corporate finance. The TCFD was established by the Financial Stability Board at the request of the G20 for reducing the risk of instability in the financial market. The TCFD considers disclosure frameworks that enable the financial markets to appropriately assess climate-related risks and opportunities and releases its findings as a final recommendations report.

Recognizing the importance of investors' and others' accurate understanding of how climate-related risks and opportunities may affect the financial condition of investee companies when making financial decisions, the TCFD recommends disclosure of information regarding the four core elements of organizational management: governance, strategy, risk management, and metrics and targets.

The JFE Group promotes the disclosure of climate-related information in line with international frameworks such as the TCFD, thereby enhancing the reliability and transparency of its initiatives for stakeholders, including investors, customers, employees, and local communities.

In addition, the International Sustainability Standards Board (ISSB), established by the IFRS Foundation*, has succeeded in the achievements of the TCFD and formulated international standards for the integrated disclosure of financial and non-financial information. In Japan, the Sustainability Standards Board of Japan (SSBJ) has formulated disclosure standards based on the ISSB standards, which were published in March 2025. The application of these standards is scheduled to be phased in from 2027, and the JFE Group is also preparing to comply.

*A private, nonprofit organization responsible for developing International Financial Reporting Standards (IFRS)

For the TCFD content index, please refer to:

> Guideline Content Indices (P. 297)

Governance (Management Structure: JFE Group)

In the process of identifying material issues, the perspective of financial impact taking into account recent social and economic trends has become a key factor in addition to the conventional perspective of management through smooth PDCA cycles. In particular, initiatives such as reducing GHG emissions in the steelmaking process and developing and providing products that contribute to reducing GHG emissions are now recognized as being directly linked to corporate value and sustainable growth.

Accordingly, in formulating the Eighth Medium-term Business Plan, we reviewed material issues by selecting items of greater managerial importance, considering economic aspects, including financial impact. In this process, we emphasize the impact of responses to climate change on the Company's medium- to long-term competitiveness, and we have positioned reducing the JFE Group's GHG emissions and contributing to reducing GHG emissions in society as a whole as material issues, continuing from the Seventh Medium-term Business Plan, as initiatives for achieving carbon neutrality by 2050.

As the framework overseeing initiatives to address climate change, the JFE Group has established a cross-sectional JFE Group Environmental Committee under the JFE Group Sustainability Council, chaired by the president of JFE Holdings. This committee discusses setting goals for environmental protection, monitors the progress of these initiatives, and works to improve the Group's overall environmental performance as well as risk assessment and responses.

Particularly important management themes requiring deliberation are discussed at the Group Management Strategy Committee, and the content of these discussions is reported to the Board of Directors, which fulfills its supervisory function through discussions on environmental issues, including climate change.

Examples of climate change-related agenda items involving Board of Directors decisions and reports

- Declaration of endorsement for the final TCFD recommendation report
- Information disclosure consistent with TCFD recommendations (scenario analysis, financial impact, and other information)
- Formulation of the Seventh Medium-term Business Plan, JFE Group Environmental Vision for 2050
- Review the CO_2 emissions reduction target for FY2030.
- Use of climate-related metrics to determine executive remuneration
- Formulation of GHG emissions reduction targets and contribution targets under the Eighth Medium-term Business Plan
- Decision-making on capital investment for GHG emissions reduction

> Corporate Governance System (P. 233)
> Framework for Environmental Management (P. 47)

Risk Management

JFE Holdings is responsible for comprehensive risk management in accordance with its Basic Policy for Building Internal Control Systems.

Climate-related risks and opportunities are identified, assessed, and reviewed at the corporate level through scenario analysis in line with the framework recommended by the TCFD. The results of these analyses are appropriately reported in accordance with the aforementioned governance framework.

Furthermore, key factors affecting business are selected, and the results of a detailed analysis of their impacts are used in formulating business strategies, including the Medium-term Business Plan.

Monitoring Method for Risks

The JFE Group monitors risks that could affect management at the JFE Group Sustainability Council, Group Management Strategy Committee, and Management Committee. Measures are implemented based on a quarterly report on climate change-related risks deliberated by the specialized committees of each Group company (e.g., the Environmental Committee). In addition, the JFE Group Environmental Committee consolidates information related to risks, strengthens management systems, and strives to reduce the frequency and impact of risks. Moreover, the JFE Group promotes initiatives to maximize climate-related opportunities.

Countermeasures Based on Monitoring

1. Groupwide deliberations
2. Monitoring penetration of policies within the Group
3. Monitoring deployment of policies throughout the Group

> System for Promoting Sustainability (P. 10)
> Risk Management (P. 251)
> Framework for Environmental Management (P. 46)

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JFE Group's Strategy for Addressing Climate Change Issues

The JFE Group integrates climate change-related risks and opportunities as follows. The JFE Group formulated the Seventh Medium-term Business Plan (FY2021–FY2024) and positioned responses to climate change as top-priority issues for achieving the Group's medium-to long-term sustainable growth and enhancing corporate value. In the **Eighth Medium-term Business Plan** (FY2025–FY2027), the Group continues to identify responses to climate change as a top priority and is pursuing related initiatives.

In addition, the Group formulated the **JFE Group Environmental Vision for 2050** toward achieving carbon neutrality by 2050, as a key initiative for environmental and social sustainability. Through this vision, we have incorporated climate change initiatives into our business strategies and reflected the TCFD philosophy in our environmental management strategy. JFE Vision 2035, the JFE Group's long-term vision, sets forth the goal of systematically addressing climate change issues and becoming a top runner in carbon neutral technology development. Consistent with TCFD recommendations, we conduct scenario analysis as part of our information disclosure to identify and evaluate key factors affecting the business. These risks and opportunities are reflected in management strategies and used for decision-making. The JFE Group Environmental Vision for 2050 identifies three strategic pillars for achieving carbon neutrality: **"reducing GHG emissions in the steel business," "expanding contributions to reducing GHG emissions throughout society,"** and **"initiatives for the offshore wind power generation business."**

We also communicate our climate change initiatives through briefings and other channels to strengthen relationships of trust with our stakeholders.

For related materials, please refer to:

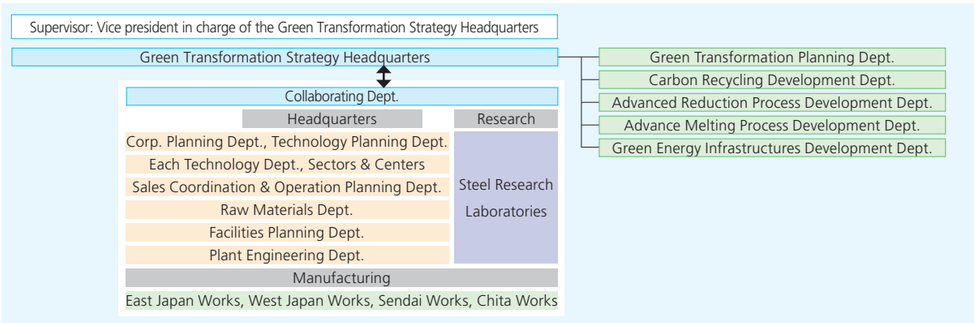
> Scenario Analysis in Line With the TCFD Recommendations (P. 113)
> JFE Group Environmental Vision for 2050, Presentation Material (https://www.jfe-holdings.co.jp/en/common/pdf/investor/climate/2021-210525-release01.pdf)
> JFE Group Long-Term Vision "JFE Vision 2035", Eighth Medium-term Business Plan (FY2025–FY2027) (https://www.jfe-holdings.co.jp/uploads/2024-chuuki250508-01e.pdf)
> JFE Group Environmental Management Strategy, Presentation (https://www.jfe-holdings.co.jp/en/common/pdf/investor/climate/environmental-management-strategy250529-01.pdf)

Initiatives for Achieving Carbon Neutrality in the Steel Business

Promotion Structure

The key for ensuring JFE Steel's sustainable growth is to develop and implement a medium- to long-term strategy for realizing Green Transformation (GX). In April 2024, the Green Transformation Strategy Headquarters was established to formulate and promote a Companywide strategy to realize GX. The office is comprised of the Green Transformation Planning Department and departments responsible for developing technologies, specifically the Carbon Recycling Development Department, the Advanced Reduction Process Development Department, the Advanced Melting Process Development Department, and the Green Energy Infrastructures Development Department. Under this structure, JFE Steel will conduct and manage carbon neutrality technology development and investment as well as address issues such as market development for expanding sales of green steel and strengthening cooperation with government authorities.

JFE Steel's Management Structure to Promote Carbon Neutrality



Steel Business Initiatives for Achieving GHG Emissions Reduction Targets

The JFE Group has adopted a multi-pronged approach to achieve carbon neutrality by 2050, including the development of ultra-innovative technologies. We have set a target in the steel business for reducing GHG emissions by 24% by FY2027 and by at least 30% by FY2030, compared to FY2013. We regard the period through 2030 as a transition phase, during which we will steadfastly implement plans to achieve our GHG reduction targets, mainly by expanding the application of low-carbon technologies focused on "reducing," while accelerating research and development of ultra-innovative technologies in preparation for the innovation phase after 2030. In the innovation phase, we will advance initiatives for the wise use of resources, including the commercialization of carbon-recycling blast furnaces that leverage our proprietary carbon-recycling technology and direct reduction steelmaking, as well as the expansion of CCU applications. Furthermore, we will undertake CO_2 sequestration through CCS to create a carbon-neutral society together with local communities and industrial complexes. We will achieve carbon neutrality through initiatives under these three themes.

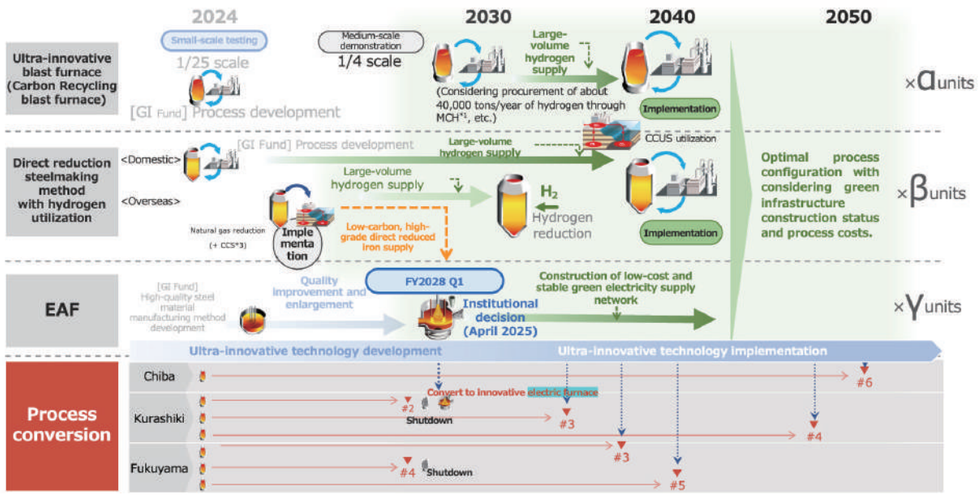
Roadmap to Carbon Neutrality

JFE Steel announced its GHG reduction plan through FY2030 at the JFE Group Environmental Management Strategy Briefing on May 29, 2025. We have targeted a 24% reduction by FY2027 as an interim milestone toward a reduction of at least 30% by FY2030. GX investments that are expected to contribute significantly to achieving the FY2030 target, such as the Kurashiki innovative electric arc furnace and investments in the use of direct reduced iron in a blast furnace, have, for the most part, already been formally approved.

We are advancing phased and strategic initiatives to achieve carbon neutrality in our steel business by 2050. First, we are working on research and development of innovative low-carbon technologies utilizing public support such as the Green Innovation Fund. Targeted for completion around 2035, these efforts are intended to establish ultra-innovative technologies, such as carbon recycling blast furnaces, the use of hydrogen in the direct reduced iron method, and the development of production methods for high-quality, high-performance products using electric arc furnaces, that fundamentally reimagine conventional manufacturing processes.

The state of energy infrastructure will be a crucial factor in addition to the development of ultra-innovative technology for achieving carbon neutrality. Just as essential will be our response to external changes, such as the development of hydrogen supply networks and the stable securing of decarbonized electric power. Furthermore, market demand for green steel and the rising environmental awareness of customers will also be key indicators for the transformation of the steelmaking process. We will pursue this transformation with optimal timing by comprehensively taking these factors into account.

Roadmap to Carbon Neutrality in 2050



*1 Methylcyclohexane: A type of hydrogen carrier, a liquid made by adding hydrogen to toluene
*2 Carbon dioxide capture and storage

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> Source: May 29, 2025 JFE Group Environmental Management Strategy Presentation Materials
(https://www.jfe-holdings.co.jp/en/common/pdf/investor/climate/environmental-management-strategy250529-01.pdf)

JFE Group's Strategy and Alignment with the Paris Agreement

Transition Finance toward decarbonization in the iron and steel sector, published by the Japanese Ministry of Economy, Trade, and Industry (METI), is consistent with Japan's emissions reduction targets based on and therefore aligned with the Paris Agreement. The roadmap sets out a pathway to achieve carbon neutrality by accelerating decarbonization through the introduction of innovative technologies starting in the 2040s, assuming the development of a hydrogen supply infrastructure and CCUS.

In 2022, the JFE Group issued transition bonds through a public offering. During the evaluation process for this issuance, the Group's initiatives were certified by a third party as being aligned with METI's roadmap and, by extension, the Paris Agreement.

> METI: Technology Roadmap for Transition Finance in the Iron and Steel Sector
(https://www.meti.go.jp/policy/energy_environment/global_warming/transition/transition_finance_technology_roadmap_iron_and_steel_eng.pdf)

> METI: Transition Finance Case Study
(https://www.meti.go.jp/policy/energy_environment/global_warming/transition/transition_finance_case_study_jfehd_eng.pdf)

Metrics and Targets (Plans and Results for GHG Reduction in the Steel Business)

The JFE Group is promoting the JISF's Commitment to a Low Carbon Society, which focuses on the Three Ecos initiatives and the development of innovative new iron and steelmaking processes. Phase I of the plan was completed in 2020. It was rebranded as the JISF's Carbon Neutrality Action Plan, and the Phase II target (FY2030 target) was revised to a 30% reduction in energy-derived CO_2 emissions in FY2030, compared to FY2013. JFE Steel is aggressively pursuing the achievement of this goal.

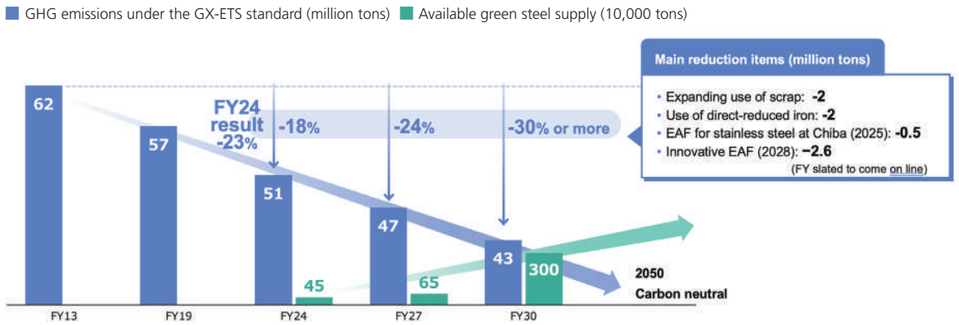
In addition, JISF formulated and announced the Long-term Vision for Climate Change Mitigation, which looks ahead to 2030 and beyond, in 2018, which is intended to realize zero-carbon steel. JFE Steel played a key role in formulating this vision. Furthermore, in 2021, the JISF announced the Basic Policy of the Japan Steel Industry on 2050 Carbon Neutrality sought by the Japanese government, declaring that the Japanese iron and steel industry will boldly take on the challenge of realizing zero-carbon steel.

As the JFE Group, we have declared our intention to reduce GHG emissions in the steel business in FY2030 by at least 30% compared to FY2013 and to achieve carbon neutrality by 2050.

Major Group companies of JFE Steel have formulated GHG reduction targets at the same level as JFE Steel.

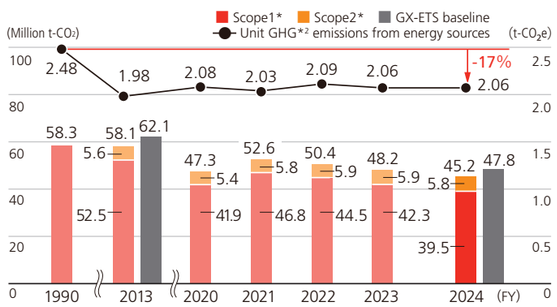
In May 2025, we formulated our long-term vision, JFE Vision 2035, expressing our aspirations for the future, and the Eighth Medium-term Business Plan (FY2025–FY2027) to drive growth strategies toward JFE Group's aspiration. To achieve these plans, we will install an innovative electric arc furnace at the Kurashiki District of the West Japan Works to build a system for the mass supply of green steel. In addition, we will steadily reduce GHG emissions in the steel business by developing ultra-innovative carbon neutral technologies. By uniting all Group companies in Japan and overseas to incorporate efforts to address climate change into our business strategies, the Group will systematically reduce GHG emissions by reflecting the TCFD's principles in its management strategies.

Domestic Steel Business: GHG Emissions Reduction Plan



Steel Business GHG Emissions

GHG Emissions from Energy Sources and Unit GHG Emissions of JFE Steel



*1 FY2013 figure includes data for JFE Bars & Shapes Corporation's Sendai Works.
*2 Under the JISF Carbon Neutrality Action Plan standards, emissions are limited to CO_2 only.

For quantitative data for the JFE Group's GHG emissions, please refer to:
> Environmental Data (P. 255)

FY2030 Initiatives for Achieving GHG Emissions Reduction Targets

Our multi-pronged approach for achieving carbon neutrality by 2050 includes developing ultra-innovative technologies. We have defined the period up to 2030 as a transition phase, to be followed by an innovation phase. In the transition phase, the steel business is promoting energy-saving and high-efficiency improvements in existing processes and the use of electric arc furnace technology. By FY2024, we had authorized investments of approximately 0.4 trillion yen for reducing GHG, and in terms of achieving the FY2030 targets, investments have, for the most part, already been institutionally approved for delivering substantial emission reductions, such as the innovative electric arc furnace at the Kurashiki District of the West Japan Works and the use of direct reduced iron in the blast furnace at the Chiba District of the East Japan Works. We will continue to steadily promote the authorization and execution of necessary financing and investments toward achieving the reduction targets.

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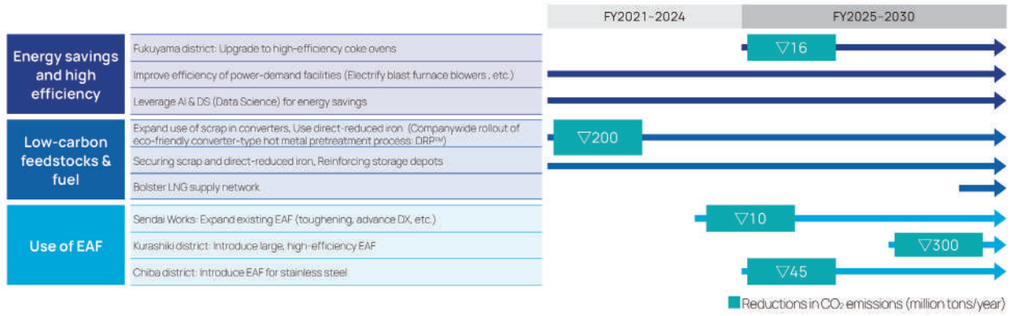
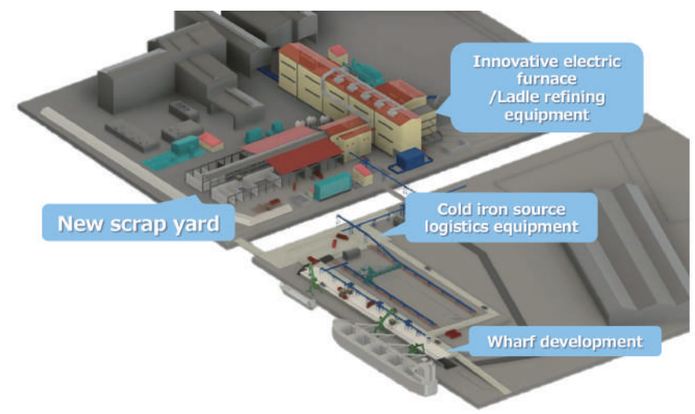


Development of Electric Arc Furnace Process Technology

The electric arc furnace is one of JFE Steel's technology development efforts for carbon neutral steelmaking in which products are manufactured by melting steel scrap and direct-reduced iron in an electric arc furnace. So far, we have managed to reduce GHG emissions from this steelmaking process to one-quarter of the blast furnace-converter method. We are also striving to eliminate GHG emissions generated by the electric arc furnace process in the future by using the aforementioned hydrogen-direct reduced iron as the raw material and non-fossil electricity.

Although the electric arc furnace process has the advantage of reducing GHG emissions, there are two major problems compared to the blast furnace-converter method: the productivity of the electric arc furnace process in general is about 30% lower than that of the blast furnace-converter method, and the use of scrap as the raw material inevitably increases the concentration of impurities, which limits the production of high-quality, high-performance steel products. JFE Steel has also been developing technologies to address these issues. We have theoretically established high-quality and high-efficiency technologies using existing electric arc furnaces and laboratory tests. Consequently, in April 2025, we decided to convert the No. 2 blast furnace at the West Japan Works (Kurashiki District), scheduled for refurbishment in FY2027, into an innovative electric arc furnace. This innovative electric arc furnace will be the largest in the world, enabling us to establish a mass supply system for high-quality, high-performance steel products not possible with conventional large-scale electric arc furnaces. We want to be the first in the industry to do so and secure the top share in the domestic green steel market.

Conceptual image of the innovative electric arc furnace and related facilities at the Kurashiki District



Using Electric Arc Furnaces to Increase the Use of Scrap

JFE Steel completed upgrading electric arc furnace production capacity at the Sendai Works in FY2024 by reinforcing the electric arc furnace, boosting capacity through DX, upgrading cargo handling facilities, and improving the load handling equipment by approximately 140,000 tonnes per year. This is expected to result in a reduction of approximately 0.10 million tonnes of GHG emissions per year.

Furthermore, we will install a new electric arc furnace in the Chiba district for stainless steel production. This will allow the facility to replace part of the feedstock from molten iron from blast furnaces with scrap and thus reduce GHG emissions. This could increase by up to six times the volume of scrap used, and we expect to reduce GHG emissions by a maximum of about 450,000 tonnes per year.

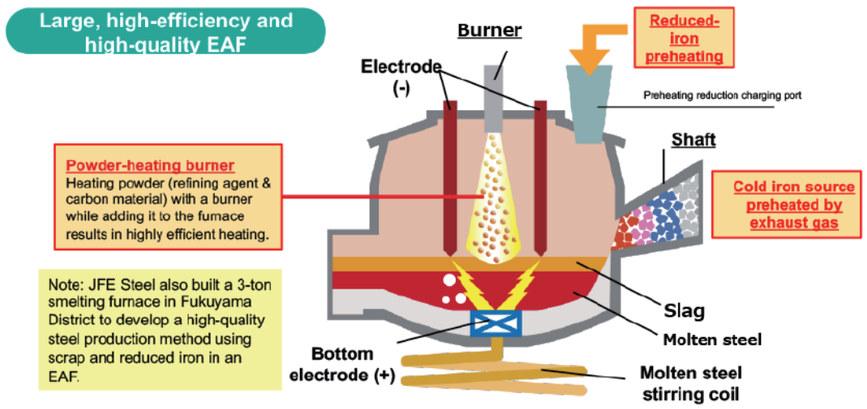
As mentioned above, we will suspend one blast furnace at the Kurashiki District and convert it into an innovative electric arc furnace to further expand the use of scrap.

Overview of Demonstration Tests for Developing Manufacturing Methods of High-Quality Steel Products in Electric Arc Furnaces

We are developing a process that reduces the electric arc furnace's melting power consumption and also enables high-speed melting of cold iron sources (scrap and direct reduced iron). We will verify the following during demonstration tests.

- Optimal methods for preheating and feeding direct reduced iron
- Methods for using heating burners
- Optimal methods for molten steel stirring

Research and Development for Electric Arc Furnaces



Manufacturing Higher-Grade Steel Using the Electric Arc Furnace Process

The electric arc furnace process uses scrap and direct reduced iron as raw materials. The higher concentration of impurities in these materials, such as copper, causes material degradation, including surface defects and reduced workability in steel sheets and deterioration of properties in electrical steel sheets. We are working on two technologies to address the issue, one to remove impurities and another to detoxify impurities, so that we can use the electric arc furnace process to produce high-quality steel products such as steel sheets for automobiles and electrical steel sheets.

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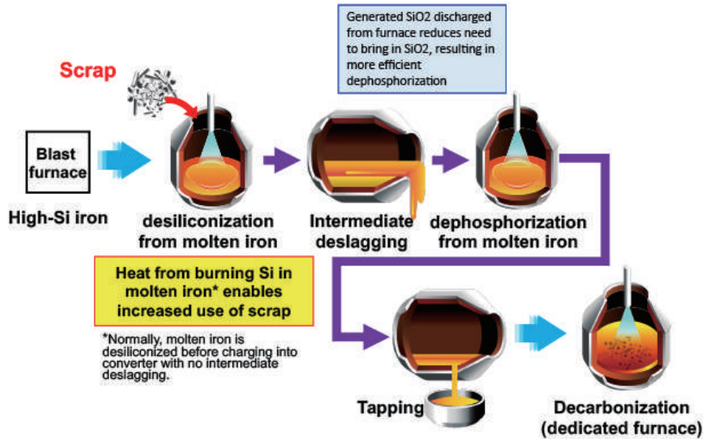
Increased Use of Scrap Iron in Steelmaking

JFE Steel introduced the Double-slag Refining Process (DRP™), an eco-friendly converter-type molten-iron pretreatment process, at all of its sites in 2021, thereby increasing the amount of scrap iron to be used in converters and reducing GHG emissions.

DRP makes full use of silicon in molten iron as a heat source, thereby increasing the amount of scrap iron to be used in converters. It allows reducing the molten-iron blending ratio (molten iron vs. scrap charged into the converter) to 82%, down from 90% through conventional methods. The Company introduced this process in all of its steelmaking facilities, and the increased use of scrap iron in converters enabled us to reduce annual GHG emissions by approximately 1.15 million tonnes in FY2023. We will continue to develop technologies to further expand the use of scrap.

Eco-friendly converter-type molten iron pretreatment process DRP™: Double-slag Refining Process



East Japan Works (Chiba District) to Produce Stainless Steel with Electric Arc Furnace

JFE Steel has decided to install a new electric arc furnace at the No. 4 steelmaking shop at the East Japan Works (Chiba district) in the second half of FY2025 (planned). Scrap melting capacity is expected to increase to approximately 300 kilotonnes per year (planned), up to six times the amount compared to conventional processes, with GHG emissions expected to be reduced by up to about 450 kilotonnes per year. We have defined the period up to 2030 as a transition phase toward carbon neutrality and view the electric arc furnace process as an effective means for reducing GHG emissions. Looking ahead, we will continue our multi-pronged development of ultra-innovative technologies and steadily advance toward realizing carbon neutrality.

Feasibility Study on New Venture Business to Secure Direct Reduced Iron Supply

In the transition phase up to 2030, we expect a shortage in domestic scrap supply. The use of direct-reduced iron is considered an effective way to supplement this in the production of high-quality steel using electric arc furnaces and in the reduction of GHG emissions from blast furnaces.

JFE Steel is conducting detailed feasibility studies with EMSTEEL, the largest steel producer in the UAE, and ITOCHU Corporation to establish a supply chain of direct reduced iron with low carbon emissions. After the business scheme is finalized, we will begin producing direct-reduced iron (approximately 2.5 million tonnes per year) under a joint venture to be established in the UAE. As the largest off-taker, we will secure a long-term and stable supply of direct-reduced iron, mainly for the innovative electric arc furnace at the West Japan Works (Kurashiki District), which is scheduled to begin operation in FY2028.

- Overview of EMSTEEL
  Company name: EMSTEEL
  Representative: HE Engineer Saeed Ghumran Al Remeithi (Group CEO)
  Business: Steel

The memorandum exchange ceremony held in Abu Dhabi, United Arab Emirates, in the presence of then Prime Minister Fumio Kishida (July 17, 2023)

Adoption status of green steel products

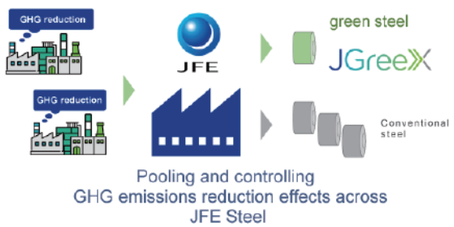
Name origin: JFE + Green + GX
We invited the relevant departments to propose names and selected this name from the suggestions because it clearly expresses being a green steel product provided by JFE Steel.
Logo design:
The logo combines the letter X with an arrow to express our intention to move forward toward carbon neutrality.

In the first half of FY2023, JFE Steel began supplying JGreeX™, a brand of green steel products that significantly reduce GHG emissions in the steelmaking process compared to conventional products. With the current technology, it is difficult to quickly supply green steel products with significantly lower or zero emissions, so the reductions associated with our technologies are allocated to steel products by applying the mass balance approach* and then supplied as green steel products. With regard to the volume of GHG emission reductions and the emission intensity of each product, we have obtained a third-party certification from Nippon Kaiji Kyokai (ClassNK), which verified 1.15 million tonnes of GHG emission reductions in FY2023. In FY2024, public-private initiatives to stimulate demand for green steel products contributed to expanded adoption of JGreeX™ across all sectors.

Reduction of GHG emissions throughout the supply chain is rapidly progressing, and with steadfast efforts, we hope to achieve a reduction of at least 30% in FY2030, while further reducing GHG emissions through the wider application of low-carbon, energy-saving, and high-efficiency technologies. At the same time, we will contribute to the decarbonization of society as a whole by expanding the supply capacity of JGreeX™ to 3 million tonnes per year.

*Consolidate the environmental value of GHG emission reductions from the entire product manufacturing process, allocate the value to some steel products, and regard them as having low GHG emission intensity.

Overview of the steel mass balance approach



STEP.1
Calculate the emissions intensity of any steel product to apply this approach
STEP.2
Identify emissions reduction projects and determine their emissions reduction levels
STEP.3
Issue a reduction certificate based on the determined reduction level, grant the certificate, and supply steel materials.

*This certificate and the GHG emission reductions listed in this certificate do not represent carbon credits and cannot be transferred or sold to third parties.
*The scope of GHG emissions calculation is within the scope of Scope 1, Scope 2 and Scope 3.
*Reduction allocations are within the scope of Scope 1 and Scope 2.

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Overview of green steel JGreeX™

Supply start	First half of FY2023
Supply capacity	Approx. 500 kilotonnes (FY2024)
Target products	All steel products produced by JFE Steel
Certification body	Nippon Kaiji Kyokai (ClassNK)

Overview of green steel JGreeX™ adoption

JGreeX™ Sales Performance (September 2024 Onward)

Application Field	Details	Timing	URL
Construction	Logistics warehouse in Vietnam	November 2024	https://www.jfe-steel.co.jp/en/release/2024/11/241115.html
	Domestic bridge construction	November 2024	https://www.jfe-steel.co.jp/release/2024/11/241108-1.html (Japanese only)
	Bridge construction in Yokohama City	November 2024	https://www.jfe-steel.co.jp/release/2024/11/241108-2.html (Japanese only)
	High-strength bolts for construction	March 2025	https://www.jfe-steel.co.jp/release/2025/03/250326.html (Japanese only)
	Overhead crane	July 2025	https://www.jfe-steel.co.jp/en/release/2025/07/250707.html
Shipbuilding	Dry bulk carrier	September 2024	https://www.jfe-steel.co.jp/en/release/2024/09/240930-2.html
	General cargo ship	June 2025	https://www.jfe-steel.co.jp/en/release/2025/06/250612.html
Plant	Large industrial transformer	February 2025	https://www.jfe-steel.co.jp/release/2025/02/250203.html (Japanese only)
Industrial machinery	Motor surface mounters	September 2024	https://www.jfe-steel.co.jp/en/release/2024/09/240903.html
Steel pipe	Sales to steel pipe and tube trading companies	January 2025	https://www.jfe-steel.co.jp/en/release/2025/01/250129.html
Steel sheets and steel pipes	Memorandum of understanding (MOU) with manufacturer	September 2025	https://www.jfe-steel.co.jp/en/release/2024/09/240924.html
Automotive	Automotive components	June 2025	https://www.jfe-steel.co.jp/en/release/2025/04/250424-2.html

Initiatives for Achieving Carbon Neutrality by 2050

We engage in a multi-pronged approach to developing ultra-innovative technologies, such as carbon-recycling blast furnaces (CR blast furnaces), hydrogen steelmaking (direct reduction), and electric arc furnace process (high-efficiency, large-scale electric arc furnaces), to achieve carbon neutrality by 2050, as announced in the JFE Group Environmental Vision for 2050. We are particularly focused on a technology that combines a CR blast furnace and CCU, which allows us to efficiently mass-produce high-grade steel and reuse the GHG in the blast furnace. This technology is focused on achieving net zero emissions by using the remaining GHG, which cannot be fully reused to manufacture basic chemicals such as methanol.

Demonstration Tests for NEDO Project (GREINS) for Hydrogen Utilization in Iron and Steelmaking Processes

JFE Steel formed a consortium with Nippon Steel Corporation, Kobe Steel, Ltd., and the Japan Research and Development Center for Metals and jointly commissioned the Green Innovation Fund Project (GREINS) of the New Energy and Industrial Technology Development Organization (NEDO) for Hydrogen Utilization in Iron and Steelmaking Processes, and work toward achieving carbon neutrality by 2050.

In order to further advance the development of ultra-innovative technologies to achieve carbon neutrality by 2050, JFE Steel has decided to construct all the necessary facilities for the demonstration tests for the project centrally in the East Japan Works (Chiba district) to increase the efficiency of the development effort. We will work together with consortium members to accelerate the development of ultra-innovative technologies.

Details of the Planned Demonstration Tests

- Carbon-recycling pilot blast furnace (150 m³)
  Start construction in 2023, initiate demonstration tests in May 2025, complete demonstration tests by FY2026.
- Direct reduction compact bench pilot furnace
  Start construction in 2023, initiate demonstration tests in December 2024, complete demonstration tests by FY2026.
- Pilot electric arc furnace (10 t pilot furnace)
  Start construction in 2023, initiate demonstration tests in February 2025, complete demonstration tests by FY2025.

Details for each are as follows.

Carbon-recycling blast furnaces

Technical Features of a CR Blast Furnace

The CR blast furnace incorporates an ultra-innovative technology that converts CO_2 gas through methanation in the furnace exhaust gas into carbon neutral methane, which is then reused as reducing material in the furnace. The technology is expected to reduce CO_2 emissions by 50% compared to conventional blast furnaces and to ultimately help achieve carbon neutrality by leveraging CCU/CCUS. The thermal efficiency of the process can be further enhanced by replacing the air blown into the blast furnace with pure oxygen, allowing the energy used to heat the nitrogen in the air to then be used to heat methane. In addition, the lack of nitrogen facilitates the separation of CO_2, so the equipment necessary to separate CO_2 for methanation can be more compact and efficient while effectively using gas at CCUS.

Overview of the Demonstration Tests

We are planning to develop a process that converts the CO_2 produced in the blast furnace into methane using hydrogen, allowing the carbon to be repeatedly used in the furnace as a reducing agent and thus reducing CO_2 emissions. We will verify the following during demonstration tests. We will verify the following during demonstration tests.

- Methods for blowing a large volume of methane along with oxygen into the furnace
- Applications for the heating burner that uses the circulation gas
- Methods for linking the operations of the furnace and the methanation facility that converts CO_2 from the blast furnace gases to methane

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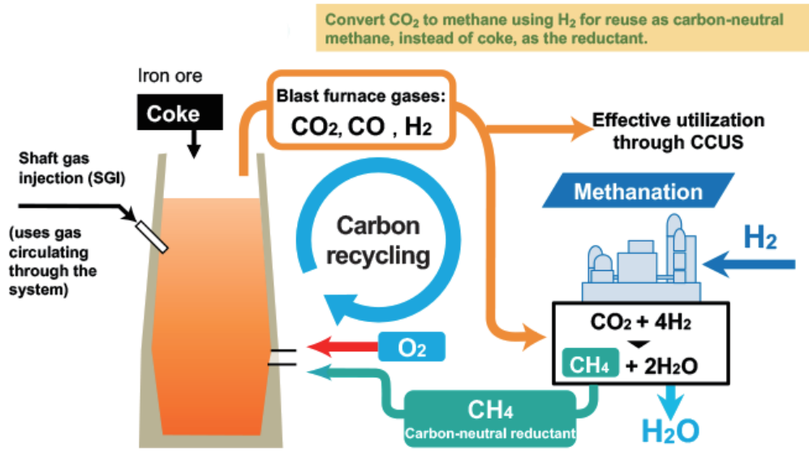
Overview of Carbon-Recycling Direct Furnaces



Development of Direct Hydrogen Reduction Technology (Carbon-Recycling Direct Reduction Process)

Hydrogen reduction ironmaking technology is another steelmaking process that the JFE Group is working on to achieve carbon neutrality. With this technology, the natural gas currently used in direct reduction ironmaking is replaced by 100% hydrogen to eliminate CO_2 emissions when iron ore is reduced.

Technology for Processing Raw Materials

Currently, the only raw material that can be used for direct reduction ironmaking is high-grade iron ore. Its production volume, however, is limited, and we expect it will become even more difficult to obtain in the future if direct reduction ironmaking were to expand worldwide.

To address this, JFE and one of its iron ore suppliers, BHP, are collaborating in the development of a new raw material processing technology for low- and medium-grade ores, which are currently used as raw materials for blast furnaces due to their large production volume. We are hoping that this new technology will allow us to use low- and medium-grade ores as raw materials for direct reduction ironmaking, thus expanding the raw material sourcing for direct reduction ironmaking.

Technology for Pre-Heating Raw Materials, Technology for Heating Hydrogen Gas

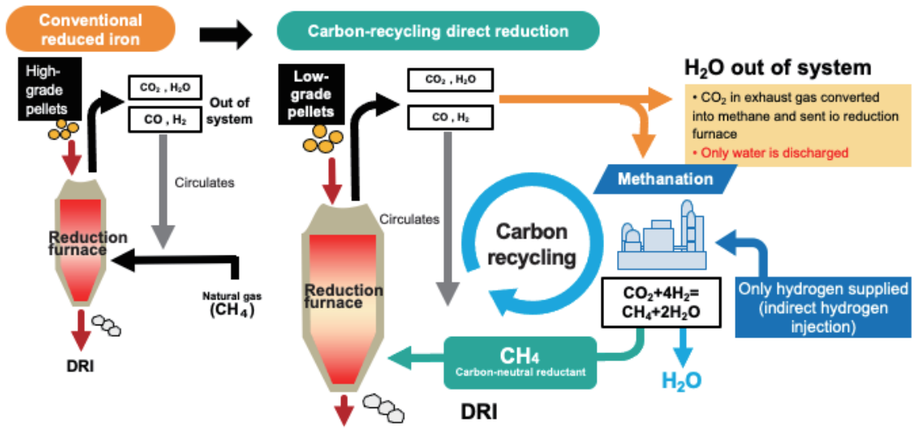
One challenge of hydrogen reduction is that the reduction of iron ore by hydrogen is an endothermic reaction, which means that heat must be applied externally for the reaction to proceed. A sufficient reduction reaction may not take place if there is not enough heat. Thus, technologies for heating raw materials and hydrogen gas must be developed.

Overview of the Demonstration Tests

We are developing a process to convert the CO_2 produced in the direct-reduction furnace into methane using hydrogen, allowing the carbon to be repeatedly used in the furnace as the reducing agent and thus reducing CO_2 emissions. We will verify the following during demonstration tests.

- Optimal methods for recycling CO_2 through methanation
- Methods for using low-grade ores

Carbon-Recycling Direct Reduction Process

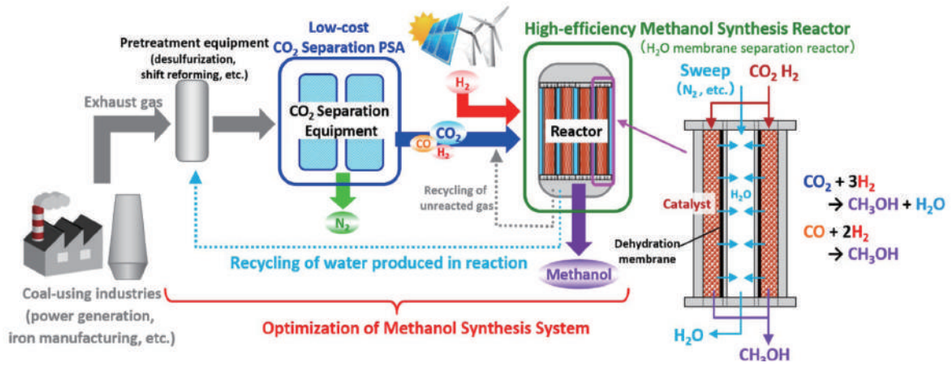


CCUS Initiatives

Development of an Optimal System for Methanol Synthesis Using CO_2

JFE Steel is working on the Optimum System for Methanol Synthesis Using CO_2, an R&D project, in collaboration with the Research Institute of Innovative Technology for the Earth (RITE) (see figure). On-site construction of a test facility commenced in FY2022 in the Fukuyama district of the West Japan Works, with operations scheduled to start in FY2023 and integrated practical application tests to be completed by the end of FY2025. The project focuses on establishing an optimal overall methanol synthetic system, mainly by developing technologies for low-cost CO_2 separation and high-efficiency methanol synthesis. The ultimate goal is to combine this newly established system with carbon-recycling blast furnaces and other ironmaking processes to achieve large-scale CCU process.

Methanol Synthesis Flow Using CO_2



Innovative CO_2 Sequestration Technology through Quick, Large-Quantity Carbonation of Steel Slag

JFE Steel is also collaborating with Ehime University to promote the NEDO project: Innovative CO_2 Sequestration Technology through Quick, Large-quantity Carbonation of Steel Slag. We have already confirmed the process principle, constructed facilities for demonstration testing at the Chiba District of the East Japan Works, and commenced tests in FY2025. Through this research and development, we will sequester the CO_2 generated from ironmaking processes, such as carbon-recycling blast furnaces, and from nearby thermal power plants in slag, while at the same time verifying technologies for recovering sensible heat from high-temperature slag and converting the steel slag to roadbed materials and other products.

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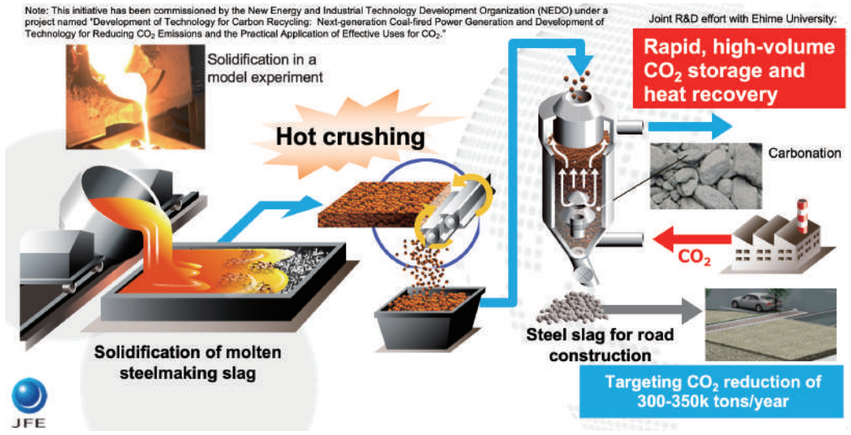
Quick, Large-Quantity Carbonation Flow of Steel Slag



Studies Toward Realizing CCS

In its public solicitation for FY2024, concerning Engineering Design Work for Advanced CCS Projects, the Japan Organization for Metals and Energy Security (JOGMEC) selected the Offshore Sarawak CCS Project (for the Kurashiki District of the West Japan Works) and the Northern Offshore of Peninsular Malaysia CCS Project (for the Chiba District of the East Japan Works), in which JFE Steel participates, and we are promoting studies aimed at realizing CCS. In addition, we are conducting our own study at the Fukuyama District of the West Japan Works. In FY2024, we examined optimal facility configurations and costs for each advanced CCS project, and JFE Steel conducted feasibility studies on CO_2 separation and capture, liquefaction, temporary storage, and shipping facilities (Chiba District: separation and capture only). Going forward, we will advance studies for project implementation at the EPC (Engineering, Procurement, and Construction) phase, on the assumption that government support will be secured.

Overview of CCS Projects under Consideration at Each District

Advanced CCS	Kurashiki: Offshore Sarawak CCS (Malaysia CCS Project)		
Transportation/ Storage Destination	Malaysia	JFE's Capture Volume	**1.3** million tons-CO_2/year

- Japan Petroleum Exploration Co., Ltd.
- JGC Holdings Corporation
- Kawasaki Kisen Kaisha, Ltd.
- JFE Steel Corporation
- Mitsubishi Gas Chemical Co., Inc.
- Mitsubishi Chemical Corporation
- The Chugoku Electric Power Co., Inc.
- Nippon Gas Line Co., Ltd.
- PETRONAS CCS Ventures Sdn. Bhd.

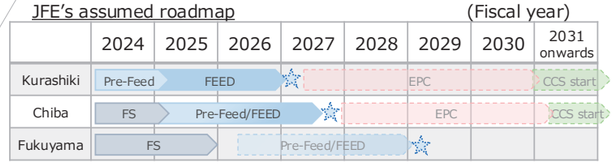
Independent FS	Fukuyama: Setouchi / Shikoku CO_2 Hub Concept		
Transportation/ Storage Destination	Australia	JFE's Capture Volume	**0.7** million tons-CO_2/year

- Sumitomo Corporation
- JFE Steel Corporation
- Sumitomo Osaka Cement Co., Ltd.
- Kawasaki Kisen Kaisha, Ltd.

Advanced CCS	Chiba: Northern Offshore of Peninsular Malaysia CCS		
Transportation/ Storage Destination	Malaysia	JFE's Capture Volume	**0.7** million tons-CO_2/year

- Mitsubishi Corporation
- ENEOS Corporation
- ENEOS Xplora Inc.
- JFE Steel Corporation
- Cosmo Oil Co., Ltd.
- NIPPON SHOKUBAI CO., LTD.
- PETRONAS CCS Solutions Sdn. Bhd.

JFE's assumed roadmap (Fiscal year)



※ For final investment decisions, the concrete government support is necessary (☆)

> JFE Group Environmental Management Strategy, Presentation Material, P. 25
(https://www.jfe-holdings.co.jp/en/common/pdf/investor/climate/environmental-management-strategy250529-01.pdf)

> JFE Steel Carbon Neutrality Strategy Briefing Presentation Material P. 19
(https://www.jfe-steel.co.jp/en/company/pdf/en_carbon-neutral-strategy_231108_1.pdf)

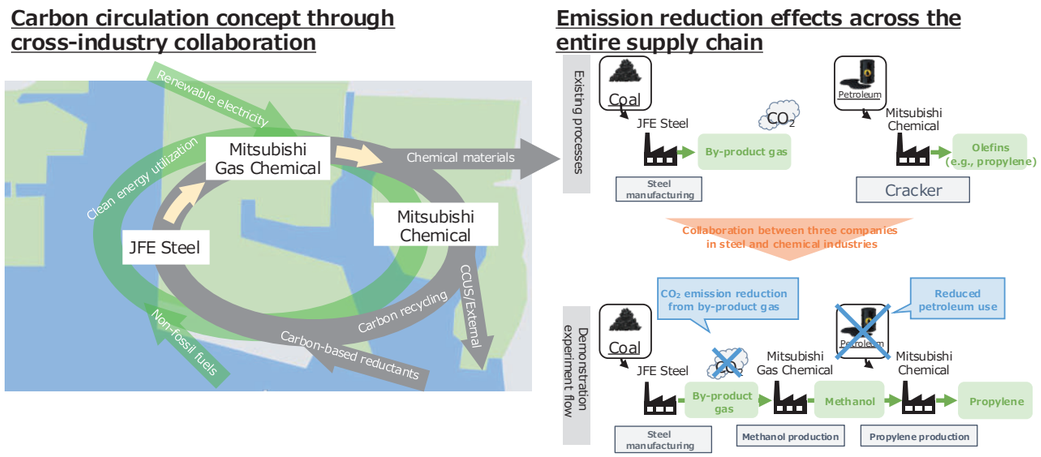
Initiatives for Inter-Company Collaboration at the Mizushima Complex

ENEOS Corporation and JFE Steel are advancing the materialization of joint studies on the utilization of CO_2-free hydrogen at the Mizushima Complex (Kurashiki City, Okayama Prefecture) as a hydrogen procurement initiative.

In addition, JFE Steel Corporation, Mitsubishi Gas Chemical Company, Inc. (Mitsubishi Gas Chemical), and Mitsubishi Chemical Corporation (Mitsubishi Chemical) have signed a memorandum of understanding concerning a demonstration project at the Mizushima Complex (Kurashiki City, Okayama Prefecture).

A new initiative within the Mizushima Complex promotes collaboration among Hard-to-Abate industries (industries where GHG emissions are difficult to reduce). By utilizing CO_2 contained in byproduct gases from steel manufacturing processes to produce valuable chemicals, the project provides a model for collaborative CO_2 utilization, with the aim of launching the demonstration in FY2026. Looking ahead, the initiative intends to develop into a conceptual framework for carbon recycling through the collaboration of the steel and chemical industries. This approach is expected to reduce GHG emissions compared to traditional fossil resource-based methods for chemical production.

Inter-Company Collaboration at the Mizushima Complex



List of Related Initiatives

Reduce CO_2 Emissions at JFE Steel		
Carbon neutrality	Key initiatives	JFE Steel Carbon Neutrality Strategy Briefing Presentation Material P. 19 (https://www.jfe-steel.co.jp/en/company/pdf/en_carbon-neutral-strategy_231108_1.pdf)
		JFE Steel Challenge to Achieve Carbon Neutrality through Green Transformation (https://www.jfe-steel.co.jp/en/movie/#movie-Corporate)
	Demonstration tests	Demonstration Tests for NEDO's Hydrogen Utilization in Iron and Steelmaking Processes project (Japanese only) (https://www.jfe-steel.co.jp/release/2022/06/220615-2.html)
Carbon-recycling blast furnace	Carbon-recycling blast furnace technology	JFE Steel Carbon Neutrality Strategy Briefing: Reducing CO_2 via CR Blast Furnaces (https://www.jfe-steel.co.jp/en/company/pdf/en_carbon-neutral-strategy_231108_1.pdf)
		Challenge Zero: Challenge for development of super-innovative technologies focusing on Carbon-recycling Blast Furnace+CCU (https://www.challenge-zero.jp/en/casestudy/812)
	CCU/CCUS	Challenge Zero: Technology of CO_2 utilization (https://www.challenge-zero.jp/en/casestudy/391)

Reduce CO_2 Emissions at JFE Steel		
New technology to process raw materials for hydrogen direct reduction ironmaking	Development of technology for hydrogen direct reduction	JFE Steel Carbon Neutrality Strategy Briefing: Hydrogen Direct Reduction (https://www.jfe-steel.co.jp/en/company/pdf/en_carbon-neutral-strategy_231108_1.pdf)
	Collaboration with a material supplier	JFE Steels and BHP to address decarbonization in steelmaking process (https://www.jfe-steel.co.jp/en/release/2021/210210.html)
Expanded use of scrap and direct reduced iron	Eco-friendly converter-type molten iron pretreatment process DRP™	Increased Use of Scrap Iron in Steelmaking Process to Reduce CO_2 Emissions (https://www.jfe-steel.co.jp/en/release/2022/220621.html)
		Feasibility Study on Building a Supply Chain of Direct Reduced Iron with Low Carbon Emissions (https://www.jfe-steel.co.jp/en/release/2022/220901.html)
	Feasibility study on new venture business to secure direct reduced iron supply	Collaboration to Establish a Supply Chain of Ferrous Raw Material with Low Carbon Emissions (https://www.jfe-steel.co.jp/en/release/2023/230718.html)
	Development of electric arc furnace process technology	JFE Steel Carbon Neutrality Strategy Briefing: Large, High-efficiency EAFs (https://www.jfe-steel.co.jp/en/company/pdf/carbon-neutral-strategy_231108_1.pdf)
	Adoption of electric arc furnace process technology	JFE Steel's Chiba District Facility to Produce Stainless Steel with Electric-arc Furnace (https://www.jfe-steel.co.jp/en/release/2023/230508-1.html)
		JFE Steel to Introduce Advanced, High-Efficiency, Large-Scale Electric Arc Furnace in Japan (https://www.jfe-steel.co.jp/en/release/2025/04/250410.html)
CO_2 utilization and storage technology	CO_2 utilization technology	Novel Processes for Manufacturing Valuable Materials Using Coal-Derived CO_2 Selected for NEDO Projects (https://www.jfe-steel.co.jp/en/release/2021/211015.html)
	Testing for practical use	JFE Steel Moves Ahead with Testing CO_2-utilization Technologies Aimed at Achieving Carbon Neutrality (https://www.jfe-steel.co.jp/en/release/2022/220620-2.html)
		JFE Steel, Mitsubishi Gas Chemical, and Mitsubishi Chemical Collaborate to Develop a Carbon Recycling Supply Chain at Mizushima Complex (https://www.jfe-steel.co.jp/en/release/2025/03/250324.html)
	Establish CCS value chain	Agreed on Joint Evaluation with JFE Steel Corporation to Establish CCS Value Chain Originated from Japan Aligned with CCS Study in Malaysia (https://www.jfe-steel.co.jp/en/release/2023/230619.html)
		KEPCO and JFE Steel signed an MOU to jointly study possible CCS Projects (https://www.jfe-steel.co.jp/en/release/2023/231019.html)
		The Chugoku Electric Power and Nippon Gas Line Participate in the Joint Evaluation to Establish a CCS Value Chain Originated from Japan for the CCS Project in Malaysia (https://www.jfe-steel.co.jp/en/release/2024/02/240226.html)

Initiatives for Greater Contribution to Reducing GHG in Society as a Whole

The JFE Group is promoting a variety of GHG reducing initiatives, such as offshore wind power generation projects and renewable energy-related fields, with a focus on the engineering business. In addition, in fields where demand is growing for eco-products such as electrical steel sheets and ultra-high-tensile steel sheets, we are collaborating with Group companies and others to maximize overall effectiveness.

Initiatives in the Engineering Business Contributing to GHG Reduction

Demand is expected to rise for power generation plants using renewable energy sources that do not emit carbon. Through the engineering business, the JFE Group is handling the design, procurement, construction, and operation of renewable energy generation plants, including biomass, geothermal, solar, and onshore wind power. We are also working to increase the amount of power generated at waste treatment facilities in order to promote recycling and the effective use of resources.

Furthermore, we are actively engaged in the retailing of electricity, which uses these renewable energies as the main power source, supporting the establishment and operation of new regional electricity companies that focus on local production and consumption of energy using renewable sources, and in expanding the Multisite Energy Total Service (JFE-METS), which optimizes energy use for multiple sites within the same corporate group through centralized management.

As new initiatives for carbon neutrality, we are developing a technology to safely and efficiently transport large amounts of hydrogen, ammonia, and CO_2, and working on demonstrating a process that separates and collects CO_2 for reuse from the exhaust gas of waste treatment facilities.

New initiatives for material recycling include bottle-to-bottle, an effort for recycling collected PET bottles for use as raw material for bottles; recycling waste plastics by directing unsorted post-use plastics to either material recycling or chemical recycling, depending on their properties; and recycling solar panels that are discarded due to age-related deterioration.

The following key initiatives contributed to reduced GHG.

Large-Scale Biomass Power Generation

Construction work for the Tahara Biomass Power Plant, one of the largest woody biomass combustion power plants in Japan, with an output of 112,000 kW

Tahara Biomass Power LLC, a joint venture between JFE Engineering Corporation, Chubu Electric Power Co., Inc., Toho Gas Co., Ltd., and Tokyo Century Corporation, has started construction work on the Tahara Biomass Power Plant. The plant, to be constructed in Tahara, Aichi Prefecture, is one of the largest woody biomass power plants in Japan, with an output of 112,000 kW, and is scheduled to start operations in September 2025.

Food Waste Recycling Power Generation

Completion of Hokkaido's largest food biogas power plant —Contributing to Sapporo city's zero carbon goals through local "double recycling loop"

SAPPORO BIO FOOD RECYCLING CORPORATION, a subsidiary of J&T Recycling Corporation, of the JFE Engineering Group, constructed a new plant in Sapporo to update and expand the capacity of its food recycling power generation plant. The new plant accepts up to 100 tonnes of food waste per day and generates electricity using methane gas produced by microbial fermentation, with an output of 1,980 kW and an annual expected power generation of approximately 16,420 MWh. The electricity generated is sold through Urban Energy Corporation, a power retailing subsidiary of JFE Engineering, to promote local production and consumption of renewable energy. Furthermore, all fermentation residues generated during the treatment process are converted into fertilizer. These efforts are helping to realize a local production and consumption-based "double recycling loop" that converts food waste into clean electricity and fertilizer.

> Recycling Food Waste (P. 129)

Multisite Energy Total Service (JFE-METS)

The House Foods Group has agreed to adopt the Multisite Energy Total Service at 18 sites across 8 group companies, driving CO_2 reduction.

JFE Engineering has signed a basic agreement with House Foods Group Inc. to provide JFE-METS. JFE Engineering has signed a basic agreement with House Foods Group Inc. to provide JFE-METS. We will install a gas cogeneration system at the House Foods Shizuoka Plant and use JFE-METS to supply surplus electricity from the system and electricity provisioned by the JFE Group to 18 sites across 8 companies in the House Foods Group nationwide. The service is expected to reduce CO_2 emissions by approximately 16.3% and energy consumption by approximately 21.5% (compared to FY2022) at these sites. Operations commenced in April 2024.

CCUS

Contract received for the construction of CO^2 liquefaction, storage and loading/unloading facilities, a large-scale, long-distance, lower cost transportation system for liquid CO^2 to realize a CCUS society.

JFE Engineering has received an order from Japan CCS Co., Ltd. to construct its CO_2 liquefaction, storage, and loading/unloading facilities (EPC project). The EPC project is for constructing part of the facilities to be used in the NEDO project: Research, Development, and Demonstration of CCUS Technology / Large-scale CCUS demonstration testing at Tomakomai / Demonstration testing on CO_2 Transportation. We will be involved in the design and construction of onshore facilities capable of liquefying and storing 10 kilotonnes per year of CO_2 separated and recovered from coal combustion gas supplied by the Maizuru plant of The Kansai Electric Power Co., Inc.

PET Bottle Recycling (Bottle-to-Bottle)

Kyoei J&T Recycling Corporation's West Japan PET Bottle MR Center to start full commercial operation.

Kyoei J&T Recycling, a subsidiary of JFE Engineering, after starting the operations of the flake manufacturing plant in October 2021, has completed construction of the pellet production line in April 2022 and commenced full-scale commercial operations at the PET bottle recycling raw material manufacturing plant (West Japan PET Bottle MR center) in Tsu, Mie Prefecture. With an annual processing capacity of 60 kilotonnes (approximately 10 million bottles per day), the plant can recycle approximately 10% of the total number of PET bottles shipped nationwide.

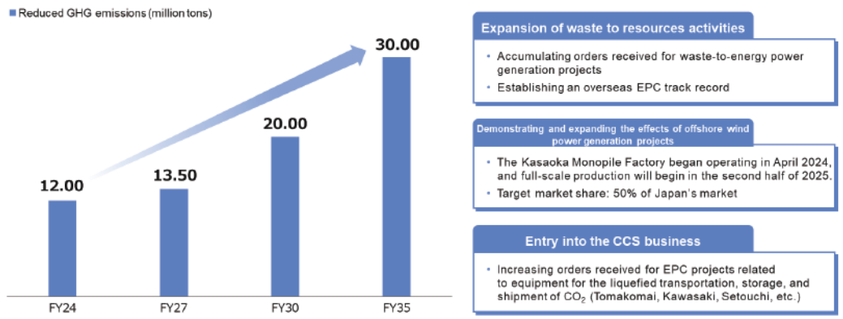
By producing flakes and pellets from used PET bottles and supplying them to bottle manufacturers, we contribute to the production of plastic bottles using 100% recycled materials, which generates 63% less CO_2 than the production of crude oil-derived pellets.

Metrics and Targets (Plans and Results for Contribution to GHG Reduction in the Engineering Business)

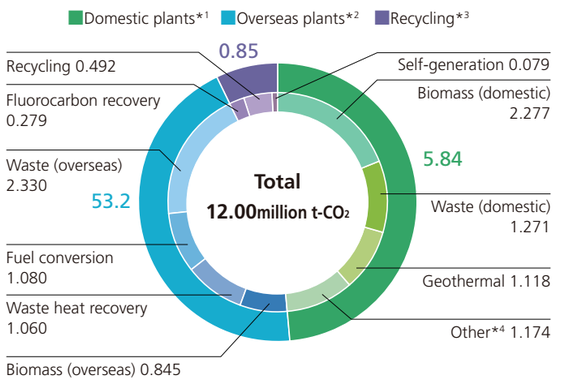
JFE Engineering contributes to GHG emissions reductions in society as a whole through its business operations, such as expanding renewable energy generation and constructing and operating plastic and food recycling plants. In FY2024, the Company contributed to reducing 12 million tonnes of GHG emissions (a 4% increase compared to FY2023) across society. JFE Engineering will further expand its business and contribute to GHG emissions reductions of 13.5 million tonnes in FY2027, 20 million tonnes in FY2030, and 30 million tonnes in FY2035.

With regard to JFE Engineering's CO_2 emissions, we set a KPI of reducing CO_2 emissions at our plants and offices by 40% in FY2024 compared to FY2013. Since FY2021, we have introduced on-site solar power PPAs and zero-emission electricity plans at the Yokohama head office and low-emission electricity at the Tsu Works. We consequently achieved a 63% reduction in FY2024 compared to FY2013. At the same time, we are promoting energy-saving activities at our plants and offices. We will continue to steadfastly conduct business in ways that are environmentally sound, including expanding the use of renewable energy.

Engineering Business GHG Reduction Contribution Plan



JFE Engineering's Equivalent Contribution to CO_2 Reduction (FY2024)



*1 Data cover: JFE Engineering
*2 Data cover: JFE Engineering and Standardkessel Baumgarte GmbH (SBG), a German subsidiary of JFE Engineering Corporation
*3 Data cover: J&T Recycling Corporation and JFE Urban Recycle Corporation
*4 Others: Digestion gas, geothermal, solar, wind, waste heat recovery, fuel conversion, energy service, and logistics products

For quantitative data for the JFE Engineering Group's CO_2 emissions, please refer to:

> Environmental Data (P. 255)

EN JFE Engineering's Commitment through Its Business

Under its corporate purpose to "Create, Care, Connect The Foundations of Life — Just For the Earth," JFE Engineering is seeking to expand its contributions to GHG reductions, focusing on the key fields of waste to resource*1 and carbon neutrality*2. As part of our climate change initiatives, the following are some examples of carbon neutral business activities.

*1 Primarily promotes waste-to-energy power generation and recycling (food, plastics), etc.
*2 Primarily promotes renewable energy power generation and hydrogen/ammonia and CCUS, etc.

EN The Energy Forest Project (Demonstration Project for Creating Stable and Effective Supply Systems of Woody Biomass Fuel)

The town of Yuni, located in Hokkaido, and JFE Engineering are jointly carrying out an Energy Forest Project, which will continue until the end of FY2028. This project, named the JFE Forest NEXTGATE Project and drawn up by JFE Engineering, was selected by NEDO (New Energy and Industrial Technology Development Organization), a national research and development agency, for inclusion in the FY2023 Demonstration Project on Development of New Fuel Sources Such as Fast-growing Trees on August 3, 2023. JFE Engineering is specifically engaged in pioneering research for creating a large "energy forest," involving the silviculture of trees that grow well and fast in a subarctic climate (clean larch and Sakhalin willow) on land owned by the town of Yuni.

The town of Yuni is seeking to nullify CO_2 emissions by 2050 under the Yuni Zero Carbon City declaration. JFE Engineering is working with the town of Yuni to contribute to carbon neutrality and prevent global warming, thereby fulfilling its corporate purpose, "Foundation of Life—Just For the Earth."

> The Town of Uni and JFE Engineering Enter into an Agreement Concerning the Energy Forest Demonstration Project
(Japanese only) (https://www.jfe-eng.co.jp/news/2024/20240520.html)

EN Aqua Connect Namie Corporation Launches Hydroelectric Power Generation Business at the Ukedogawa Hydro Power Plant

Aqua Connect Namie Corporation, a company established through the joint investment of JFE Engineering with The Tokyo Electric Generation Co., Ltd. and the Ukedogawa Land Improvement District (the town of Namie in the district of Futaba, Fukushima Prefecture), launched its power generation business at the Ukedogawa Hydro Power Station in May 2024, becoming the first hydrogen power generation business for JFE Engineering. The business was established to take advantage of the agricultural water supplied from the Ogaki Dam to the ward of Odaka in the city of Minamisoma and to the towns of Namie and Futaba in the district of Futaba.

The Ukedogawa Hydro Power Station, with its waterwheel and power generator located at the foot of the Ogaki Dam, generates power by using the energy produced from the difference in water levels. All the power generated at this station is sold through the Feed-in Tariff System. Aqua Connect Namie Corporation is committed to operating the station safely and stably while supporting farmers in the Ukedogawa area. The company will thereby contribute to carbon neutrality and a sustainable future.

Celebrating the completed construction of the Ukedogawa Hydro Power Station

> Aqua Connect Namie Corporation Launches Power Generation Business at the Ukedogawa Hydro Power Station (Japanese only)
(https://www.jfe-eng.co.jp/news/2024/20240521.html)

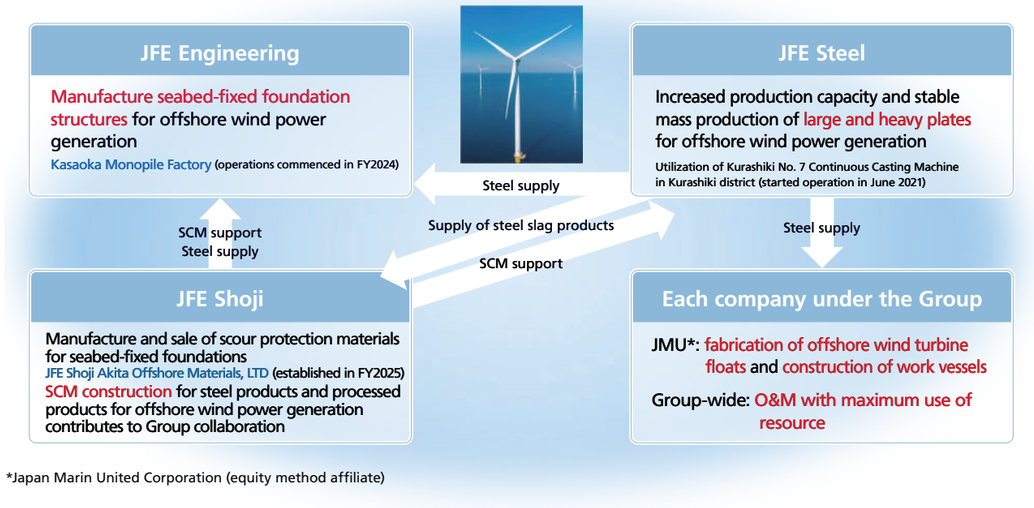
Offshore Wind Power Business Initiative

The JFE Group has positioned its offshore wind power business as a key initiative. With engineering as the core business, the Group is leveraging its diverse businesses to create synergies and deliver new added value. Specifically, we are commercializing the manufacture of offshore wind power generation foundations (monopiles, jackets) as well as O&M* services, establishing an integrated supply chain covering materials, foundation manufacturing, and O&M. We will continue to take advantage of the comprehensive strengths of the Group to commercialize this business, thereby significantly contributing to the JFE Group's efforts to achieve carbon neutrality and make progress toward the government's goal of realizing carbon neutrality.

*Operation and maintenance. Applies repair and diagnostic technologies.

Commercialization of Offshore Wind Power Business

- By commercializing our manufacturing of foundation structures (monopiles), we will become the forerunner in the business of offshore wind-power generation and establish a supply chain across the entire Group, including foundation manufacturing and O&M.
- We will strive to expand business in the field of renewable energy by leveraging the JFE Group's collective strengths (synergies), with JFE Engineering as the main player.



*Japan Marin United Corporation (equity method affiliate)

Technologies of Group Companies

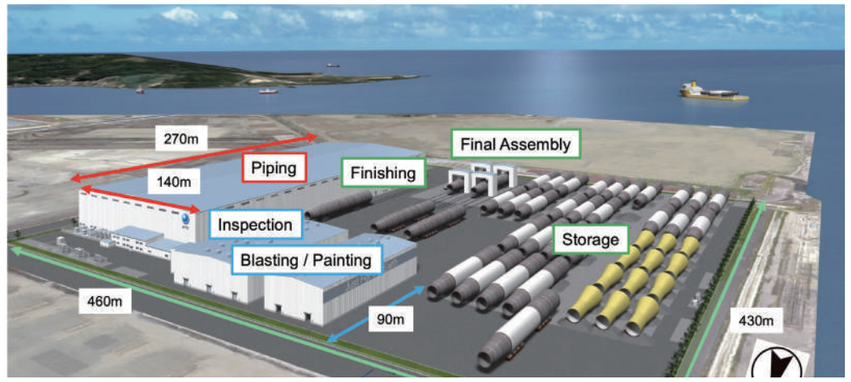
Category	Company	Details
Foundation structures	JFE Engineering	Seabed foundations (monopiles, jackets, etc.)
	Japan Marine United	Floating foundations (semi-submersible)
	JFE Steel	High-quality, large and heavy steel plates, high-strength steel (reduced using HBL series steel plates)
	JFE Shoji	Manufacture and sale of scour protection materials for seabed-fixed foundations
Construction	Japan Marine United	SEP vessels (self-elevating platform)
	JFE Engineering	JFE-RAPID (cable laying method)
		Battery systems for power storage
	GECOSS	Stands for large steel structures
	JFE Steel	Natural stone substitute materials (use of steel slags)
O&M (operation and maintenance)	JFE Engineering	Technologies for remote monitoring and operation
	JFE Advantech	Vibration measurement equipment and systems, sea monitoring tools (water quality, sea conditions)
	Japan Marine United	Offshore support vessels (work vessels)
	JFE Plant Engineering	Wind turbine maintenance (diagnosis and repair)
	JFE Technos	Technologies and expertise in planning, constructing, and maintaining onshore turbines
	JFE Techno-Research	Equipment evaluation and analysis for corrosion, fatigue, vibration, etc., diagnosis of remaining service life, strength and durability testing and evaluation techniques for large structures
Supply chain	JFE Shoji	Contribution to optimizing offshore wind power generation project execution

EN Operation of Monopile Manufacturing Base

JFE Engineering has completed construction of the monopile manufacturing plant in Kasaoka, Okayama Prefecture and operations commenced in April 2024. Monopiles are the foundational structural components for offshore wind power generation and are extremely large steel structures, approximately 10 m in diameter, 100 mm thick, and 100 m long. The plant is the only one in Japan capable of manufacturing such large structures. It was designed for production efficiency, implementing manufacturing processes based on the experiences gained in the manufacturing of large steel structures at the Tsu Works. The plant site includes extensive grounds and a quay from which manufactured structures can be directly shipped, as well as state-of-the-art equipment such as large-diameter bending machines and welding machines for extra-thick plates. When operating at full capacity, the plant is capable of manufacturing up to 100,000 tonnes annually, and it is expected to significantly contribute to the establishment of a domestic supply chain in the offshore wind power generation business and to the realization of carbon neutrality.

Overview of the Kasaoka Monopile Factory

Construction site	Kasaoka City, Okayama Prefecture (JFE Steel West Japan Works Fukuyama area)	Investment amount	Approximately 40 billion yen* (plant building, mechanical equipment, quay reinforcement) *Includes the facility reinforcement cost of the Tsu Works.
Construction start	June 2022	Site area	Approximately 20 ha (includes storage area)
Operation start	April 2024	Production capacity	Approximately 80,000–100,000 tonnes per year (Approx. 50 sets)
Length of shipping quay	200 m (quay total length: 400 m)	Quay depth	–11 m



Layout of Kasaoka Monopile Plant

Kasaoka Monopile Factory

Monopile prototype
(approx. 10 m diameter × 60 m length, approx. 1,000 tonnes)

EN Offshore Wind Power Generation, a Foray into O&M through a Remote Integrated Management System

For more than 25 years since 1996, JFE Engineering has been involved in EPC for onshore wind-power stations (131 generators at 25 sites) in addition to equipment supply and associated maintenance services. JFE Engineering will fully leverage its deep, extensive expertise in onshore wind power generation as well as technologies owned by other JFE Group companies to grow and advance its O&M services for offshore wind power plants.

In October 2023, JFE Engineering launched a 20-year O&M contract for offshore wind power facilities (three generators with the max output of 7,495 kW) off the coast of Nyuzen in Toyama Prefecture. These facilities were built under Japan's first offshore wind energy project in a general sea area. JFE Engineering adopted a remote integrated management system for this project, the first of its kind in the nation for an offshore wind power project. The use of the system is allowing the company to provide systematic and preventive maintenance services and facilitate sensor management and data analysis for failure detection and diagnosis.

Nyuzen offshore wind power station (Photo by VENTI JAPAN, Inc.)

Message from the CEO | Value of Steel | JFE Group's Sustainability | Environment | Social | Governance | ESG Data | External Evaluations and Awards | Editorial Policy | Guidelines Content Index
Executive Summary | Environmental Management | Initiatives to Address Climate Change Issues | Initiatives to Transition to a Circular Economy | Biodiversity Conservation and Nature Positive

EN Demonstration Research on Cost Reduction for Floating Offshore Wind Power Generation

JFE Engineering through a consortium in which it participates, has been selected for the Southern Akita Floating Offshore Wind Demonstration Project Aimed at Overseas Expansion via Cost Reductions, proposed under under the Green Innovation Fund* Project/Cost Reductions for Offshore Wind Power Generation/Floating Offshore Wind Power Demonstration Project (Phase 2), publicly solicited by the New Energy and Industrial Technology Development Organization (NEDO).

The consortium consists of MOWD as the leading company; Akita Floating Offshore Wind Corporation, a special purpose company in which Marubeni has invested; Tohoku Electric Power Co., Inc.; Japan Marine United Corporation; TOA CORPORATION; TOKYO SEIKO ROPE MFG. CO., LTD.; Kanden Plant Corporation; JFE Engineering Corporation; and NAKANIHON AIR Co., Ltd.

Offshore wind is expected to become a major power source of renewable energy due to its potential for large-scale generation capacity, cost reductions, and positive contributions to the local economy. In particular, the use of floating offshore wind is expected to grow rapidly as its power generation facilities can be installed in a wider range of sea areas, allowing for cost reductions at an early stage. NEDO's "Cost Reductions of Offshore Wind Power Generation" project aims to establish a technology to commercialize floating offshore wind power generation at an internationally competitive cost level by fiscal year 2030 under specific conditions.

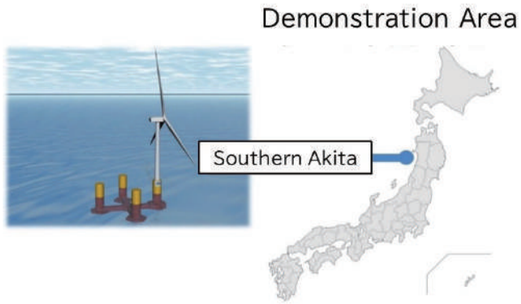
The project plans to deploy two 15 MW wind turbine on-site approximately 400 meters offshore from the southern coast of Akita Prefecture. The project period will span July 2024 to March 2031, with commercial operation scheduled to begin in autumn 2029.

JFE Engineering will pursue cost reductions for floating offshore wind power generation to both expand introduction and develop the domestic industry by establishing a domestic supply chain and human resource development toward realizing carbon neutrality.

*A fund established by NEDO under the Ministry of Economy, Trade and Industry to support companies committed to ambitious goals toward achieving carbon neutrality by 2050, providing continuous support for research, development, demonstration, and social implementation for up to ten years.

Project Overview (Planned)

Project name	Southern Akita Floating Offshore Wind Demonstration Project Aimed at Overseas Expansion via Cost Reductions
Demonstration site	Southern coast of Akita Prefecture (approx. 25 km offshore, water depth approx. 400 m)
Turbine output	Over 15 MW
Number of turbines	2
Floating type	Semi-submersible
Project period	July 2024–March 2031

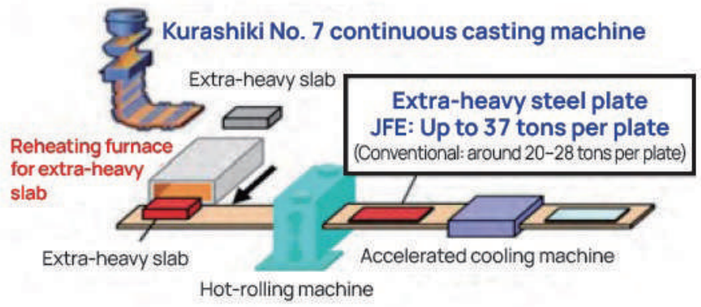


ST Manufacture and Supply of Large and Heavy Steel Plates for Offshore Wind Power Generation

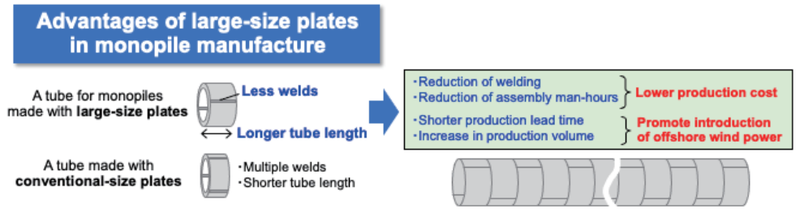
The large and heavy steel plate J-TerraPlate™, produced with the No. 7 continuous caster of the Kurashiki Plant at the JFE Steel's West Japan Works, has been increasingly adopted for monopile foundations for offshore wind power generation. Offshore wind turbines have recently grown in size, requiring larger monopiles and other foundational structures to support them. The monopiles are manufactured by welding ultra-thick steel plates, resulting in increased welding workloads that require monopile manufacturers to improve the efficiency of the operations. Using larger and heavier steel plates makes it possible to reduce the volume of welding operations, compared to conventional small-size plates, and also helps to raise process efficiency while lower manufacturing costs.

We have been investing in equipment at the plate mills and other facilities to manufacture and supply steel plates of up to 37 tonnes (previously limited to around 20 to 28 tonnes per plate in general), the largest in Asia and capable of supporting wind turbines in harsh offshore environments over the long term and in large quantities using the extra-large slabs produced with the state-of-the-art No. 7 continuous casting machine. As a result, we have established a production system for the growing global demand for large and heavy steel plates accompanying active offshore wind development worldwide.

Manufacturing Process of Large and Heavy Steel Plates for Offshore Wind Power Generation



Advantages of Using Large and Heavy Steel Plates for Monopiles



SH Manufacture and Sale of Scour Prevention Materials for Offshore Wind Power Generation

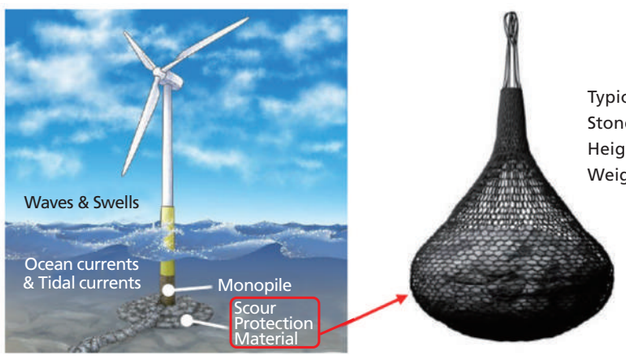
JFE Shoji established JFE Shoji Akita Offshore Materials, LTD. (JAOM), a joint venture with quarry operators, construction companies, and financial institutions in Akita Prefecture, in Oga City, Akita, to manufacture and sell scour prevention materials for offshore wind power generation.

When monopiles are driven into the seabed for offshore wind power generator projects, "scour" forms around the monopile due to waves and tidal currents, causing turbines to tilt. JAOM will base itself in Akita, where offshore wind power is expanding, to manufacture and stockpile scour prevention materials made from local natural stone and artificial stone* produced by JFE Steel, on a just-in-time basis within construction schedules.

Furthermore, the company will also pursue businesses through the expanded use of steel slag products and stone products for purposes such as forming fishing reefs and seaweed beds toward restoring the marine environment and mitigating global warming. JAOM hopes to contribute through this business to the development of Japan's offshore wind power industry and the realization of carbon neutrality and a sustainable society.

*Artificial stone manufactured by mixing steelmaking slag, a byproduct of the steelmaking process, with ground granulated blast furnace slag (a raw material for blast furnace cement) and water, then hydrating and solidifying. This artificial stone, produced by JFE Steel under the brand name Frontier Rock™, contains a high level of iron and has excellent properties for algae adhesion.

Conceptual Diagram of Scour Protection Material



Typical size of material per 8t bag
Stone size Head-sized
Height Approximately 3m in diameter
Weight Around 8tonnes

SH Building a Supply Chain for the Offshore Wind Power Generation Industry

Carbon neutrality initiatives are expanding worldwide to address concerns over climate change. To achieve carbon neutrality by 2050, Japan approved the Seventh Strategic Energy Plan at a Cabinet meeting in 2025, which sets targets for FY2040: a 73% reduction in greenhouse gas emissions, renewable energy accounting for 40–50% of the electricity mix, and wind power accounting for around 4.8% compared to 1.1% in FY2023.

As for offshore wind power generation, the industry is planning projects that will achieve 10 GW capacity by 2030 and 30-45 GW by 2040. Steadfast efforts are also being made to adopt a large number of internationally competitive technologies, such as the adoption of a demonstration project for a floating offshore wind power generation system under the Green Innovation Fund.

JFE Shoji is collaborating with a local enterprise that manufactures the windmill foundations in Taiwan, which is leading in the offshore wind power generation market, and have been achieving progress regarding supply chain of steel materials for foundation structures. Looking ahead, the company will capitalize on the knowledge acquired and contribute to the realization of carbon neutrality by establishing a supply chain that supports the domestic production of goods and the local economy while also meeting customer demand in the offshore wind power generation industry in Japan.

Eco-Products and Eco-Solutions Contributing to GHG Reduction

We provide a wide range of eco-products and eco-solutions for reducing GHG by efficiently using resources and optimizing energy use through environmentally sound technological innovations.

ST Automatic Measurement Device for Crater end position in Continuous Casting to Realize High-Quality Steel Plate

Our Crater end position Measurement Device for Continuous Casting, developed in-house, received the Minister of Economy, Trade and Industry Award at the 59th Machinery Promotion Award, organized by the Japan Society for the Promotion of Machine Industry (Chairman: Kazuaki Kama). The annual Machinery Promotion Award recognizes companies, universities, research institutions, and developers that are significantly advancing the progress and development of industrial machinery technology in Japan through outstanding R&D and the practical application of results, thereby further promoting technological development in the machinery industry. This marks our 13th Machinery Promotion Award and our third Minister of Economy, Trade and Industry Award.

1. Award-winning technology

Automatic Measurement Device for Crater end position in Continuous Casting to Realize a High-Quality Heavy Plate

2. Overview of development

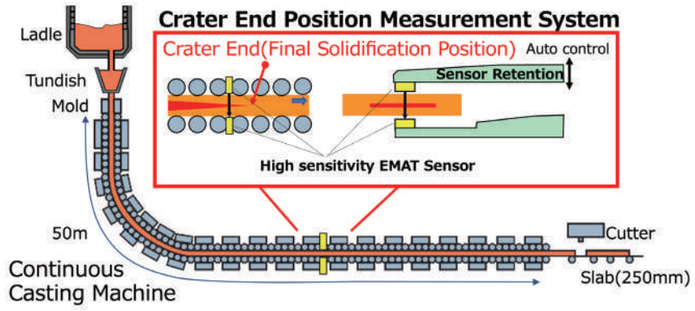
We developed the Crater end position Measurement Device, which automatically measures the crater end position in the continuous casting process (see figure). Although the crater end position in continuous casting is an extremely important index in terms of productivity and quality, it had previously been difficult to ascertain continuously and accurately . By applying the electromagnetic ultrasonic method, which enables non-contact ultrasonic transmission and reception together with Halbach array (a special magnet arrangement) and digital signal processing, we significantly improved sensitivity, achieved non-contact ultrasonic measurement, and developed a measurement technology that combines longitudinal ultrasonic waves and transverse ultrasonic waves for the crater end position. In addition, we developed an automatic control mechanism that maintains a constant distance between the hot slab and the sensor, preventing sensor contact and damage. This made it possible to automatically measure the crater end position of continuously cast slabs with surface temperatures exceeding 900°C.

The device has already been introduced to improve operations at the steelmaking plant of the West Japan Works (Fukuyama District).

This technological development made it possible to grasp the crater end position in continuous casting and control it at the appropriate position, thereby suppressing center segregation and enabling the manufacture of steel materials with improved resistance to hydrogen-induced cracking. In addition, it allowed for the manufacture of high-grade steel plates, including steel products for pipelines used in harsh corrosive environments. Customers have adopted high-grade steel plates manufactured using this device as steel materials for natural gas development pipeline projects in Southeast Asia*. We will continue to contribute to reducing environmental impact through these high-grade steel materials.

> *JFE Steel Completes First Shipment of UOE Steel Pipe for Sour Linepipe Requiring Stringent Surface-hardness Specifications(May 30, 2024)
(https://www.jfe-steel.co.jp/en/release/2024/05/240530.html)

Fig. Crater End Position Measurement System



> Automatic Measurement Device for Crater end position in Continuous Casting to Realize High-Quality Steel Plate Receives the Minister of Economy, Trade and Industry Award at the 59th Machinery Promotion Award (Japanese only) (https://www.jfe-steel.co.jp/release/2024/12/241220-2.html)

ST Development of Steel Material for Sour Gas Transmission Line Pipe Containing High Concentrations of Hydrogen Sulfide

Steel material for natural gas transmission line pipe containing high concentrations of hydrogen sulfide, developed by JFE Steel, received the 71st (FY2024) Okochi Memorial Production Prize from the Okochi Memorial Foundation (Chairman: Hiroo Yamazaki, Professor Emeritus of The University of Tokyo). The Okochi Memorial Production Prize is awarded for achievements that significantly contribute to academic progress and industrial development by producing outstanding and original research results in the fields of production engineering and production technology. The award ceremony was held on March 25 at the Industry Club of Japan (Marunouchi, Tokyo).

1. Award-winning achievement

Development of Steel Material for Sour Gas Transmission Line Pipe Containing High Concentrations of Hydrogen Sulfide

2. Overview of development

Steel grade sour service pipe is suitable for pipelines that transport natural gas with high concentrations of hydrogen sulfide. It has recently become necessary to control and reduce the hardness of the pipe's extreme surface to prevent sulfide stress cracking*1, which can develop in hardened micro layers at the pipe internal surface when transporting high H2S "sour" gas*2. In addition, complete inspection and full quantity assurance of extreme surface hardness are now required for the thick steel plates used to manufacture the pipes, a requirement that has been formalized in IOGP specifications*3. Finally, to improve material safety and conserve resources, development of new center segregation control technologies is required to avoid fracture accidents caused by hydrogen-induced cracking (HIC) originating from center-segregation in the steel plate.

In response, we have developed a surface hardness control technology for both high strength and low surface hardness with a low-alloy design through advanced cooling control and a surface hardness full-surface inspection technology that enables full-quantity quality assurance by a unique non-destructive inspection. These advances strengthen resistance to sulfide stress cracking under high hydrogen sulfide environments and contribute to stable manufacturing, including quality assurance in mass production. We also worked to develop a center segregation control technology by optimizing the light reduction position using a new sensor, called a crater end meter, during slab casting, thereby achieving stabilizing steel quality by improving resistance to hydrogen-induced cracking*4.

Going forward, we will continue to improve safety, economy, and reliability by providing high-performance, high-grade steel material for sour gas transmission line pipe containing high concentrations of hydrogen sulfide, while also protecting the global environment and responding to the diverse needs of our customers.

*1 Phenomenon in which hydrogen flows into steel in a sour gas environment, deteriorating the steel and creating cracks under stress. Higher hydrogen sulfide concentrations and stress increase the likelihood of cracks.
*2 Natural gas containing hydrogen sulfide.
*3 International Association of Oil & Gas Producers (an international gas producers association led by oil majors)
*4 Phenomenon in which hydrogen that has entered steel accumulates at inclusions such as MnS, and cracks occur; cracks propagate in hardened areas due to center segregation.

> 71st (FY2024) Okochi Memorial Production Prize Awarded – Development of Steel Material for Sour Gas Transmission Line Pipe Containing High Concentrations of Hydrogen Sulfide – (Japanese only) (https://www.jfe-steel.co.jp/release/2025/02/250218.html)

ST Development of Blast Furnace Automatic Operation Technology Contributing to Decarbonization of the Steel Industry

JFE Steel achievements in developing blast furnace automatic operation technology for advancing the decarbonization of the steel industry have been recognized with the Science and Technology Award (Development Category) of the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology in FY2025.

1. Award-winning project

Development of Blast Furnace Automatic Operation Technology Contributing to Decarbonization of the Steel Industry

2. Project overview

This award-winning project features a technology for automating blast furnace operation using a cyber-physical system (CPS). In the steel industry, high efficiency and stable operation are extremely important for reducing CO_2 emissions and improving labor productivity. On the other hand, manual operation drawing upon the knowledge and experience of skilled operators has been necessary in light of the inability to directly observe or measure the internal state of the blast furnace and the significant variation in operating conditions due to fluctuations in the properties of raw materials charged into the blast furnace. We therefore constructed a digital twin based on our own model using sensor data collected from the actual process. The system uses a CPS for real-time monitoring and future prediction of equipment conditions and automatically executes optimal operating actions for controlling hot metal temperature and permeability, which are important in blast furnace operation. In this system, the physical model representing furnace reactions and heat transfer phenomena enables real-time prediction of hot metal temperature up to 12 hours into the future. We also established a permeability control method using anomaly prediction technology based on statistical methods applied to furnace pressure measurement data. This system has been put into use at blast furnace sites, leading to improved labor productivity and reduced CO_2 emissions.

The technology has also received the Sawamura Award of The Iron and Steel Institute of Japan (FY2020), the Technology Award of the Society of Instrument and Control Engineer (FY2020), the Outstanding Technological Development Award of The Society of Chemical Engineers, Japan (FY2020), and the Okochi Memorial Production Award (FY2023). Going forward, we will promote the CPS for the BF process and other processes and aspire to implement the system across the entire steelmaking process to realize innovative productivity improvements and stable operation.

> FY2025 Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology – Science and Technology Award (Development Category) – Awarded: Development of Blast Furnace Automatic Operation Technology Contributing to Decarbonization of the Steel Industry (Japanese only) (https://www.jfe-steel.co.jp/release/2025/04/250408-1.html)

ST Hot Repair Technology for Coke Batteries

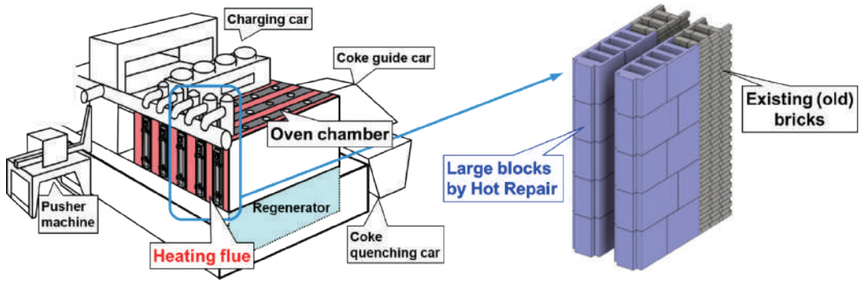
JFE Steel and its partner MEGATECH Corporation have received an order for the Hot Repair Engineering Service of Coke Battery from Ouro Branco/Minas Gerais Works, Gerdau S. A., which is one of our Solution Business products and technologies. This is JFE's first opportunity to apply this technology as a Solution Business for domestic and overseas customers.

The effective repair and replacement of old coke batteries is important in the use of blast furnaces for producing steel. We have long been developing various coke battery repair technologies to extend battery life, based on our experience in operating multiple coke batteries. Gerdau's favorable impression of the more than 200 applications of the Hot Repair of Coke Battery technology in our steelworks led to this order.

We will actively provide its technologies and expertise for improving operation under the JFE Resolus™ brand of products and technologies under its Solution Business and develop sound customer relationships for the future.

*Features of Hot Repair Technology for Coke Batteries
1) Partial and selective repair of required ovens, either full rebuilding of batteries or green field projects, which require large investment.
2) JFE has developed a measurement and visualization technology for oven walls using a laser scanner that can quantitatively evaluate and visualize wall damage such as deformation and erosion to precisely identify the area to repair.
3) Large pre-casted zero-expansion blocks achieve shorter repair periods and stronger walls.
4) This technology can minimize production loss during repair work since ovens outside the repair area can continue coke production.
5) High-performance insulation material can provide a safer work environment for repair personnel.

Outline of Coke Hot Repair Technology



Coke oven battery overview

Detail of Heating Flue (red in left figure) and newly installed large blocks

Overview of GERDAU

- Company Name:Gerdau S.A.
- Head Office: Belo Horizonte, Minas Gerais, Brazil
- Chairman: Guilherme Chagas Gerdau Johanpeter
- Business: Steel production, sales, and scrap collection
- Established: 1901

Overview of MEGATECH

- Company Name: MEGATECH Corporation
- Head Office: Chiba Port Side Tower 26F, 1-35, Tonyacho, Chuo-ku, Chiba City, 260-0025, Japan
- Chairman and Representative Director: Nagao Shigeru
- Business: Coke oven repair, plant design, fabrication, and construction
- Established: Established as Sanyo Industry Ltd., in 1971, and renamed as MEGATECH Co., Ltd in 2000

JFE Resolus

> First Implementation of Coke Hot Repair Engineering Service developed by JFE (https://www.jfe-steel.co.jp/en/release/2024/10/241029.html)

Initiatives for Achieving Carbon Neutrality in the Keihin Waterfront Areas

JFE Holdings has released OHGISHIMA 2025 , the JFE Group's conceptual plan for the reuse of land currently occupied by JFE Steel's East Japan Works (Keihin District), following the suspension of blast furnace operations and other upstream processes there, and in accordance with Kawasaki City's land use policy. The concept is to create fields of innovation and enterprise that will address the complex challenges involved in the pursuit of carbon neutrality. Through implementation of its OHGISHIMA 2050 plan, the JFE Group aims to convert the land for use on projects that will offer significant public benefit and help address some of the key challenges Japan faces. By attracting new industries and creating jobs that will benefit the country over the next 100 years, the JFE Group hopes to contribute to the sustainable development of local communities and society as a whole.

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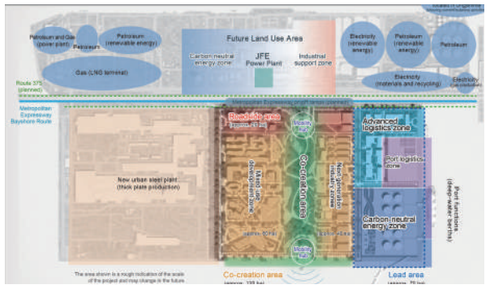
Artist's impression of the Ohgishima district as envisioned in 2050



Land use zoning in Ohgishima

Initiatives for Developing a Hydrogen Supply Hub in the Carbon-Neutral Energy Zone

The Lead Area of the Ohgishima district has been designated as a Carbon-neutral Energy Zone, where hydrogen supply facilities will be deployed. Dramatically improved access to these facilities will support carbon neutrality and innovation across the entire district. The location has been selected as the construction site for a liquefied hydrogen receiving terminal under the "Commercial demonstration of Liquefied Hydrogen Supply Chain," under the Green Innovation Fund Project of NEDO, being undertaken by Japan Suiso Energy, Ltd. (JSE). A land lease agreement between JFE Steel and JSE was concluded in July 2024, the transfer of the land commenced in April 2025, and construction of the hydrogen receiving terminal began in May 2025. Preparations are steadily underway toward starting commercial demonstration operations in FY2028.

The hydrogen to be supplied in the future to Ohgishima will be used to generate green electricity at JFE's in-house power plant, which will in turn be supplied to ongoing factory operations. Surplus power will also be supplied to JSE in the leading area, advanced logistics operators, and a data center in the northern part of Ohgishima that is under consideration for joint commercialization with Mitsubishi Corporation. In addition, we envision using hydrogen also as a green fuel in the reheating furnaces of the plate mill.

Starting from Ohgishima, the JFE Group plans to play a role in building a stable, economical supply chain for hydrogen and other decarbonized fuels and to contribute to realizing carbon neutrality throughout society, including the Keihin waterfront area.

Artist's impression of the hydrogen base (courtesy of Japan Suiso Energy Ltd.)

Construction commencement of the hydrogen base (May 2025)

Adapting to Climate Change (Contribution to Achieving Societal Resilience)

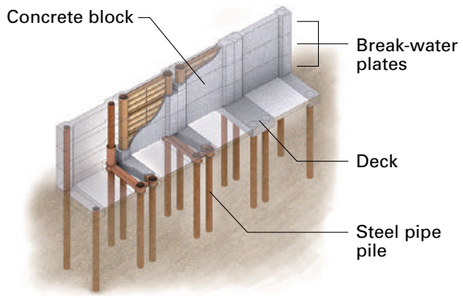
Contributions to Disaster Prevention and Mitigation and Increased National Resilience

The JFE Group is not only focused on reducing CO_2 emissions (climate change mitigation); we also intend to contribute to the resilience of society in general by adapting to climate change. With infrastructure such as hybrid tide embankments and permeable steel slit dams, the Group will contribute to preventing and mitigating disaster-related damage to infrastructure that is critical to daily life and economic activities and to strengthening their resilience.

Hybrid Tide Embankments

Hybrid tide embankments are made of steel and concrete. Because of their hybrid structure, they require shorter construction time and less space.

Concrete blocks for hybrid tide embankments are precast at a JFE Group factory, while steel pipe piles for foundations are installed at the construction site, thereby reducing the time required for on-site construction by about 60%. This arrangement does not require large amounts of materials, equipment, or workers on site, so it does not interfere with other construction work. Furthermore, compared to a conventional embankment structure, the land area occupied by the embankment can be reduced by about 80%, saving considerable space. We will continue to apply and advance our technology to further contribute to disaster prevention in the region.



Cross section

Hybrid tide embankments

> JFE Engineering Infrastructure Using Steel Structures (Japanese only) (https://www.jfe-eng.co.jp/products/bridge/co01.html)

Permeable Steel Slit Dams

A permeable steel slit dam is a steel pipe structure installed in a river to trap debris flows.
Made of strong steel pipes to withstand the impact of driftwood and huge debris, it has large openings to let water and sediment to pass through, which prevents the water level from rising upstream during floods and also ensuring that debris does not flow downstream. Since it does not block the flow of water, unlike a dam, it can be shaped to the slope of a riverbed to protect the ecosystem. The JFE Group is working to expand the use of permeable steel slit dams by reducing installation costs and shortening the construction period through structural innovations.

Permeable steel slit dams

Terre Armée Method

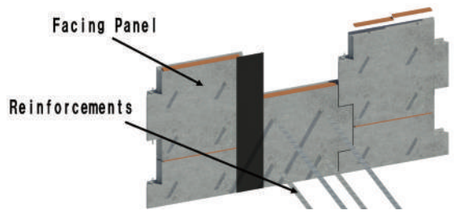
The Terre Armée method involves reinforced soil wall construction in which layers of steel reinforcements are laid within an embankment to create a vertically strong structure with excellent earthquake resistance.
The robust yet flexible structure formed by interaction between the embankment and the reinforcements helps suppress sediment-related disasters from increasingly severe natural hazards (heavy rainfall and major earthquakes) and supports the maintenance of critical lifelines.

JFE Shoji Terre One Corporation, a subsidiary of JFE Shoji, is working to commercialize low-carbon facing panels that use blast furnace slag generated by JFE Steel as facing materials for the Terre Armée method. This is expected to reduce CO_2 emissions by 70% compared to ordinary concrete, differentiating the product as an environmentally friendly solution.

Going forward, we will contribute to building disaster-resistant roads and communities by promoting the Terre Armée method and expanding sales of other products that contribute to disaster prevention and mitigation and strengthen national resilience.

External view of the Terre Armée method

Internal structure of the Terre Armée method



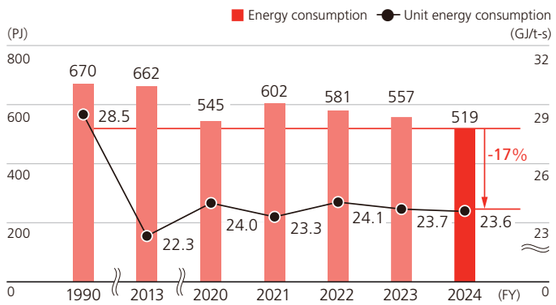
Initiatives to Reduce Energy Consumption

Reducing energy consumption is a core initiative of our response to climate change. The JFE Group is working to improve energy efficiency in our business activities and reduce GHG emissions by introducing renewable energy and optimizing facilities.

Initiatives in the Steel Business

In addition to introducing high-efficiency facilities, we have been working to reduce energy consumption in the steelmaking process by actively applying digital solutions (DS) and IoT technologies. These initiatives improve production efficiency and optimize energy use, representing important steps toward building a sustainable manufacturing framework. Going forward, we will continue pursuing technological innovation and on-site improvement to further enhance energy efficiency.

Energy Consumption and Unit Energy Consumption of JFE Steel



Note: FY2013 figure includes data for the Sendai Works of JFE Bars & Shapes Corporation.

ST Fuel and Power Operation Guidance System for Steelworks

JFE Steel developed a fuel and power operation guidance system for steelworks and succeeded in saving energy and reducing CO_2 as well as fuel and power by optimizing the fuel, steam, and electric power used in the steelmaking process.

Previously, operators determined various factors such as the distribution of byproduct gas to each process, amount of fuel (heavy oil, city gas, etc.) and electricity to purchase, and the amount of byproduct gas stored, taking into account energy demand and supply (amount generated and used) as well as the operating conditions of power generation facilities, to minimize cost and energy loss. However, it was difficult to use this method to accurately estimate the change in energy demand and supply. The guidance system (diagram 1) developed by JFE Steel uses voluminous real-time measurement data (1) obtained through a cyber physical system (CPS)* and the precise production plans of each factory to predict future demand and supply with high accuracy (2), and by taking into account information such as in-house power generation capacity (3), fuel and power simulation allows for the calculation of the optimal operating conditions with the lowest possible purchase from external sources (4), and the results are fed back to guide the operator (5). The system's development was awarded the Academic Award (Technical Division) of the 2022 Japan Institute of Energy Award. JFE Steel established the JFE Digital Transformation Center (JDXC™) to promote CPS within the manufacturing process and other digital transformation initiatives to achieve innovative production improvements as well as stable operations. We remain committed to realizing a sustainable society by adopting digital transformation to address the various issues identified at production sites.

*A system that brings together a vast amount of sensor information about physical space as big data in cyberspace and generates value by feeding back in real time the results analyzed by various measures for application in the physical space.

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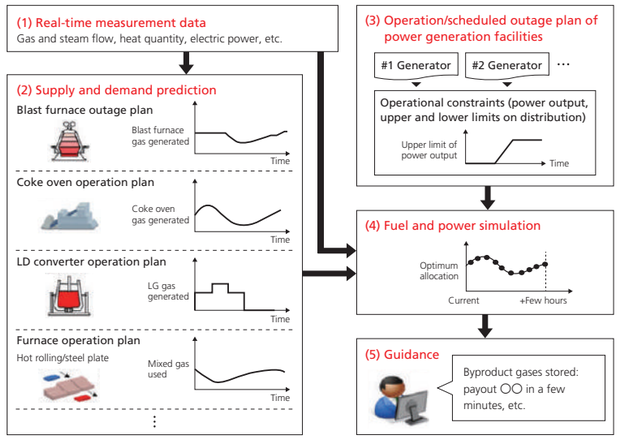
Guidance System Overview



> JFE Steel receives Academic Award (Technical Division) of the 2022 Japan Institute of Energy Award (Japanese only)
(https://www.jfe-steel.co.jp/release/2023/03/230301.html)

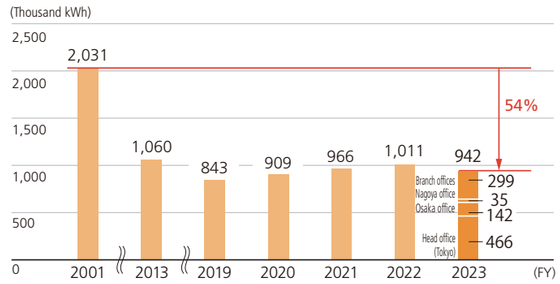
Initiatives in the Trading Business

Under the environmental strategies formulated in 2001, JFE Shoji is continuously implementing initiatives to reduce paper and electricity consumption and strictly manage waste separation as part of its energy reduction efforts.

In terms of reducing paper consumption, the company continues to use recycled paper to conserve natural resources, and we also ensure that documents are printed in black and white using both sides of the paper. We are also promoting paperless meetings through the use of large monitors and web conferencing systems. Consequently, the amount of paper used per employee is on a downward trend. As for electricity consumption, JFE Shoji is reducing its environmental impact by introducing motion-sensor lighting and energy-saving equipment through office renovations, implementing leave-on-time days, improving operational efficiencies through robotic process automation (RPA), and other measures.

Furthermore, the company has established a new goal in the domestic operating companies to reduce CO_2 emissions by installing solar panels and purchasing electricity derived from renewable energy sources. Going forward, in addition to procuring renewable energy-derived electricity through solar panel installation, we will begin procuring non-fossil certificates derived from additional renewable energy by introducing off-site PPAs. Domestic group companies reduced CO_2 emissions in FY2024 by 32.4% compared to FY2019 through ongoing efforts to reduce electricity usage and a decline in emission factors.

Electric Power Consumption by JFE Shoji



For quantitative data for the JFE Shoji Group's CO_2 emissions, please refer to:
> Environmental Data (P. 255)

Policy Engagement

Basic Approach to Policy Engagement on Climate Change Issues

The JFE Group has identified climate change as a top priority and formulated both the JFE Group Environmental Vision for 2050 to achieve carbon neutrality by 2050 and its long-term JFE Vision 2035. To realize these aspirations, JFE Steel is focusing on the early implementation of ultra-innovative technologies and expanding the supply of green steel. However, long-term technology development, investment in the construction of large-scale decarbonization infrastructure, and ensuring investment predictability by creating demand for green steel and other Green Transformation (GX) products require bold and powerful industrial policies from the government as well as collaboration with society, including stakeholders. We therefore actively recommend policies through the Company and related organizations and disclose the results of our lobbying activities.

In particular, JFE Steel not only seeks to enhance corporate value but also contributes to the realization of carbon neutrality, which in turn will contribute to sustainable development worldwide. Accordingly, the Company makes recommendations regarding Japan's climate change policies as well as GX and energy policies, taking into account the Paris Agreement, and proactively engages in and contributes to activities through industry associations.

In addition, each Group company participating in industry associations and initiatives regularly informs the Group's thinking, direction, stance, and influence, and reviews its proposals and participation. Key decisions are discussed at the Group Management Strategy Committee and further deliberated and decided at the Board of Directors.

Stance on Major Policies

The JFE Group views government GX policies as a key framework for realizing a sustainable society. We support the GX2040 Vision and are developing our business activities and environmental strategies in alignment with the directions of these policies. Our stance on GX policies and specific initiatives are described below.

GX Policies

The government's GX2040 Vision presents long-term directions and policy guidelines to enhance investment predictability for GX as a national strategy toward achieving both a decarbonized society and industrial development.

In the steel business, bold and powerful government support is required for long-term technology development, increased operating costs associated with process transitions, and infrastructure development to meet higher electricity demand. Also essential are support systems for building hydrogen and ammonia supply chains as decarbonized fuel infrastructure, promoting CCUS, and creating markets that properly value GX products, such as green steel. We will strive Companywide and through industry associations to recommend policies and promote public understanding to ensure the directions set forth in this vision are advanced as concrete policies.

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Energy Policy

The principle of "S+3E" in the government's 7th Strategic Energy Plan stands for safety as a major premise, energy security as the highest priority, and improvement of economic efficiency and compatibility with the environment, in concert with policies calling for the transition of renewable energy into a mainstay power source and for maximizing the use of nuclear power.

The reduction of byproduct gas previously used as an energy source will significantly boost electricity demand in the steel business's decarbonization efforts, particularly in process transitions at integrated blast furnace steelworks. Therefore, the stable, medium- to long-term supply of decarbonized power, realization of internationally competitive industrial electricity prices, and the development and rebuilding of transmission infrastructure will be essential. The construction of hydrogen and ammonia supply chains as decarbonized fuel infrastructure is also necessary. We will work Companywide and through industry associations to recommend policies and promote public understanding to ensure that concrete policies are advanced in line with this plan.

Carbon Pricing

The government's growth-oriented carbon pricing scheme calls for the full-scale launch of the GX-ETS emissions trading system (GX-ETS) in FY2026 and the introduction of a fossil fuel surcharge system in FY2028. Under this policy package, the government is committed to large-scale support for technology development and capital investment for decarbonization while gradually introducing carbon pricing. We support this policy that encourages taking on the challenge of developing innovative technologies for carbon neutrality.

We will make the necessary policy recommendations Companywide and through industry associations based on this scheme to introduce effective systems for developing and implementing innovative technologies in the Japanese steel industry while maintaining and enhancing international competitiveness. In addition, we believe that ensuring investment predictability for GX requires that both the introduction of carbon pricing as well as policies to create markets for GX products proceed in tandem.

Creation of GX Product Markets

Products arising from the transition into decarbonization processes (defining GX products as those producing reduced GHG emissions over their life cycle through decarbonization investments) typically carry higher costs, so it is unlikely that demand will spontaneously emerge through market forces alone. Coordinated action will be needed to create a market environment that recognizes GX value. Specific measures include public-private initiatives to stimulate demand and mechanisms that ensure that GX value is recognized and incentivized throughout the entire supply chain. These steps are essential to support widespread adoption of GX products.

For the steel industry in particular, from the perspective of ensuring the necessary investment predictability for decarbonization, the actual emission reductions from the Company's own efforts must be understood and recognized as GX value, which in turn will depend upon promoting understanding and creating transparent and reliable communication guidelines. JFE Steel is recommending policies and raising public awareness to ensure the advance of concrete initiatives by both the public and private sectors to expand GX product markets while also actively participating in rule and standard-setting efforts in domestic and international industry associations and global initiatives.

Initiatives to Materialize Demand Creation Measures

JFE Steel is collaborating through its participation in industry associations to take concrete action for boosting green steel demand by recommending policies and engaging in activities to raise awareness targeting the government and relevant organizations.

In March 2024, the Ministry of Economy, Trade and Industry (METI) published the Interim Summary of the Study Group on GX Product Markets for Demand Creation Contributing to Industrial Competitiveness Enhancement and Emission Reduction. This report suggests "Reduced Emissions of Product" as a new GX value and emphasizes the importance of monetizing actual emission reductions resulting from a company's efforts.

At the Study Group on Green Steel for Green Transformation hosted by METI in November 2024, we made recommendations on the need to create demand for green steel as well as the required policy support. The summary report of this study group confirmed a common understanding of the need for early action to create demand and clarified the definition of "Green Steel for GX." It also established a policy direction in which the government places priority on policies such as preferential procurement and purchase support for steel products that reflect the value of emission reductions in the steelmaking process. Specifically, beginning in FY2025, these policies will be implemented by reflecting the criteria for products subject to preferential procurement under the Act on Promoting Green Procurement and by reflecting additional criteria for subsidies to promote the introduction of clean energy vehicles.

In addition, as a result of activities in the Rules Working Group of the GX League in which JFE Steel participated, a framework for the GX Acceleration Declaration was launched, whereby companies voluntarily declare their procurement of GX products and disclose and evaluate the content. Based on this initiative, JFE Steel has declared its procurement of GX products and is actively promoting the creation of private sector demand as well.

- **METI: Interim Summary of the Study Group on GX Product Markets for Demand Creation Contributing to Industrial Competitiveness Enhancement and Emission Reduction (Japanese only)** (https://www.meti.go.jp/shingikai/energy_environment/gx_product/20240326_report.html)
- **METI: Consolidated Summary of the Study Group on Green Steel for Green Transformation** (https://www.meti.go.jp/english/press/2025/pdf/0123_001a.pdf)

GX Acceleration Declaration

- **METI: GX Acceleration Declaration Framework Newly Launched as Effort to Encourage Companies Proactively Engaging in Creation of a Market for GX** (https://www.meti.go.jp/english/press/2024/1206_001.html)
- **JFE Steel GX Acceleration Declaration (Japanese only)** (https://www.jfe-steel.co.jp/release/2024/12/241220-3.html)

Initiatives for Setting Rules and Standards in Japan and Overseas

The Japan Iron and Steel Federation (JISF) has taken the lead globally by formulating and publishing guidelines for green steel that reflect the value of reduced emissions. At the World Steel Association, guidelines on steel products using the Chain of Custody* approaches were also formulated and published based on the JISF guidelines. JFE Steel is actively participating in and promoting rulemaking in these industry organizations.

In addition, discussions on standardization are also progressing at international organizations such as the International Organization for Standardization (ISO), the GHG Protocol, and the Science Based Targets initiative, and JFE Steel is involved either on its own behalf or through industry associations.

*A framework for tracking and recording how products and raw materials move and are managed through the supply chain.

- **Japan Iron and Steel Federation: Guidelines on Green Steel (Japanese only)** (https://www.jisf.or.jp/business/ondanka/kouken/greensteel/documents/JISFGSguidelinev3.1final.pdf)
- **World Steel Association: GHG chain of custody approaches in the steel industry** (https://worldsteel.org/climate-action/chain-of-custody/)

Lobbying Activities and Outcomes

The JFE Group is contributing to the realization of a carbon-neutral society by advancing the development of ultra-innovative technologies and the transformation of the steelmaking process. At the same time, it is actively engaging in policy formation to enhance the sustainability of society as a whole. In particular, we hope to accelerate decarbonization and industrial competitiveness through constructive lobbying efforts that reflect the realities of the industry regarding national strategies such as GX and energy policies and by ensuring their inclusion in institutional design.

Specific outcomes of these activities include the incorporation of the Group's recommendations into policies such as the GX2040 Vision and the 7th Strategic Energy Plan, as well as the receipt of government support such as subsidies for capital investment and research and development supporting the social implementation of innovative technologies. We also regard these initiatives as part of our social responsibility that extends beyond corporate boundaries, contributing to the building of a sustainable future.

Public Policy Engagement and Outcomes

The role of companies in realizing a sustainable society goes beyond business activities alone. As a member of the industrial sector, the JFE Group is actively involved in policy formation that contributes to the construction of a decarbonized society and actively engages in policy advocacy to promote effective institutional design.

The 8th GX Implementation Council

In February 2023, the cabinet approved the Basic Policy for the Realization of GX to simultaneously achieve three goals through GX: decarbonization, stable energy supply, and economic growth. In July of the same year, the cabinet also approved the Strategy for Promoting Structural Transition based on Decarbonization (GX Promotion Strategy). Growth-oriented Carbon Pricing (CP) Concepts is the decarbonization initiative based on this strategy and is currently being actively pursued toward its realization and implementation.

At the 8th GX Implementation Council, held in November 2023, JFE Steel's President Kitano (then-Chairman of the Japan Iron and Steel Federation) explained the efforts being made by the Japanese steel industry to achieve carbon neutrality, and he called for long-term government support measures corresponding to the support provided by the government in Europe, the U.S., and China for the huge research and development and capital investment costs. He also expressed the need for long term government support for converting to innovative processes and dealing with the increase in operational costs for non-fossil fuels, electricity, and other sources, as actions for stimulating demand for green steel materials with high environmental value through, for example, public procurement, measures to ensure the international competitiveness of industrial electricity prices, and support for building new infrastructures, including a hydrogen supply chain and a CCS scheme.

These recommendations were reflected in the GX2040 Vision, approved by the cabinet in February 2025, in the form of visualizing GX value and active procurement of GX products and services, and positioned as concrete policies encouraging the formation of GX markets. The vision also clearly stated that GX investment will be advanced for hard-to-abate, high-emission industries such as steel, including conversion to innovative electric arc furnaces and introduction of steelmaking processes utilizing hydrogen.

- **Cabinet Secretariat: the 8th GX Implementation Council (Japanese only)** (https://www.cas.go.jp/jp/seisaku/gx_jikkou_kaigi/dai8/index.html)

56th Meeting of the Advisory Committee for Natural Resources and Energy's Strategic Policy Subcommittee

The 56th Meeting of the Advisory Committee for Natural Resources and Energy's Strategic Policy Subcommittee was held on June 6, 2024 to embark on formulating Japan's 7th Strategic Energy Plan. At this meeting, JFE Holdings' President Kitano gave a presentation entitled Energy Policy to Help JFE Steel Achieve Decarbonization, during which he recommended policies to promote the use of green steel products and energy policies to reduce uncertainty from the business environment related to GX.

The president announced a plan to make an investment decision during FY2024, assuming government support, on the process conversion to an innovative electric arc furnace under consideration at the Kurashiki District of the West Japan Works of JFE Steel, and expressed the intention to build a mass production system for high-quality, high-function green steel products that could not be produced with conventional electric arc furnaces. He also emphasized that policies to promote the use of green steel products are indispensable for Japanese manufacturing to enhance its international competitiveness in this area, in addition to measures supporting capital investment and operating costs. Challenges include the development and reconstruction of transmission infrastructure, establishing a stable supply system for decarbonized power sources, and developing a supply infrastructure for non-fossil fuels such as hydrogen and ammonia. He called for the government to proactively deploy policies and promote decarbonization as a national GX strategy to seize this opportunity to revitalize the Japanese economy.

These recommendations, in addition to the GX2040 Vision described above, were also confirmed to have influenced policy formulation, as the 7th Strategic Energy Plan, approved by the Cabinet in February 2025 explicitly stated the necessity of securing electricity supply capacity and strengthening power grids (including intra-regional trunk systems), developing supply infrastructure for non-fossil fuels, and promoting policies for introducing decarbonization technologies.

> Agency for Natural Resourced and Energy: 56th Meeting of the Advisory Committee for Natural Resources and Energy's Strategic Policy Subcommittee (Japanese only)
(https://www.enecho.meti.go.jp/committee/council/basic_policy_subcommittee/2024/056/)

Study Group on Green Steel for GX

At the 3rd meeting of the Study Group on Green Steel for GX, hosted by the Ministry of Economy, Trade and Industry in November 2024, Hiroyuki Tezuka, Fellow of JFE Steel, spoke about the necessity of green steel, the status of formulating green steel guidelines in Japan and the World Steel Association, and policy advocacy activities at COP29 and other forums. He also introduced the status of rulemaking for the dissemination of green steel and emphasized the importance of assigning environmental value to emission reductions during the carbon-neutral transition period.

As mentioned above, as a result of these proposals, the summary of the Study Group clarified the definition of "green steel" for promoting GX and confirmed the government's policy to prioritize measures such as preferential procurement and purchasing support for steel products that reflect the value of emission reductions in the steelmaking process. Specifically, beginning in FY2025, these policies will be implemented through updates to the criteria for products subject to preferential procurement under the Act on Promoting Green Procurement, as well as to the additional criteria for subsidies promoting the introduction of clean energy vehicles. These institutional reforms are driving market formation and demand expansion for green steel and represent an example of GX efforts by JFE Steel and the steel industry being reflected in national policy.

> 3rd Study Group on Green Steel for Green Transformation (November 25, 2024) (Japanese only)
(https://www.meti.go.jp/shingikai/mono_info_service/green_steel/pdf/003_04_00.pdf)

Overview of Government Support

Efforts to achieve carbon neutrality require both the research and development of innovative technologies and large-scale capital investment, which are beyond the capacity of companies to pursue on their own. The JFE Group is actively using policy support frameworks established under Japan's GX initiatives to accelerate decarbonization.

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Adoption under the Energy and Manufacturing Process Conversion Support Program for Industries in a Hard-to-Abate Sector

Realizing a carbon-neutral society in Japan while also reviving economic growth will depend upon reliably linking research and development outcomes to domestic capital investment. In particular, the practical application of decarbonization technologies in the steel industry requires massive investment accompanied by process conversion, without prospects for increased revenue through higher production volumes. For this reason, we have repeatedly emphasized the extreme difficulty for private companies to make such investment decisions on their own.

In light of this, the government established the Energy and Manufacturing Process Conversion Support Program for Industries in Hard-to-Abate Industries to subsidize a portion of the capital investment required for fuel conversion in in-house power generation facilities and the conversion of manufacturing processes that meet requirements such as CO_2 reduction effects, in industries such as steel, chemicals, paper and pulp, and cement. This program uses GX transition bonds and aims to support both the practical realization of carbon neutrality and the strengthening of industrial competitiveness.

In addition, the tax credit for promoting domestic production in strategic sectors was introduced to promote domestic production in strategically important industries, including GX. The system is intended to enhance industrial competitiveness by providing tax credits to support fields such as green steel, where initial investment as well as production and sales costs are high. In regard to the innovative electric arc furnace (high-efficiency, large-scale electric arc furnace) that we have been considering for introduction at the Kurashiki District of the West Japan Works during the transition period toward carbon neutrality, our project was selected under this program on December 20, 2024, and officially approved following the subsidy grant decision on April 9, 2025. In addition to the innovative electric arc furnace, new installations will include secondary refining equipment, cold iron logistics facilities, wharf development, and power receiving and distribution facilities. The total investment will amount to 329.4 billion yen, with government support capped at 104.5 billion yen. We plan to commence production in the first quarter of FY2028 and will promptly advance construction of the innovative electric arc furnace. Furthermore, we will enhance our supply capacity for green steel and strive to achieve both emission reductions and business growth by also using the support of the tax credit for promoting domestic production in strategic sectors.

Adoption Status for the Green Innovation Fund Projects

The JFE Group is fully leveraging the New Energy and Industrial Technology Development Organization (NEDO)'s Green Innovation Fund project, and we are conducting research and development in collaboration with other companies in the industry toward realizing carbon neutrality. JFE Steel is working on a NEDO project called Utilizing Hydrogen in Steelmaking Processes (GREINS), while JFE Engineering is focusing on carbon neutrality in the material cycles and waste management sector as well as on lowering the cost of offshore wind power generation.

Utilizing Hydrogen in Steelmaking Processes (GREINS)

JFE Steel formed a consortium with Nippon Steel Corporation, Kobe Steel, Ltd., and the Japan Research and Development Center for Metals and jointly commissioned the Utilizing Hydrogen in Steelmaking Processes (GREINS) project to achieve progress toward carbon neutrality by 2050. The project scale is approximately 573.7 billion yen*1, and the four companies involved are receiving a total of approximately 449.9 billion yen*2 of financial support.

*1 Source: Project summary document (May 24, 2024) on NEDO's Utilizing Hydrogen in Steelmaking (GREINS) project
*2 This includes incentives subject to change depending on project progress and other factors at each stage gate.

COURSE50

In the area of developing hydrogen reduction technologies that use in-house hydrogen, we intend to achieve a 30% reduction of CO_2 emissions through hydrogen reduction along with separation and capture of CO_2 from blast furnace gases. The first facility is expected to come online by 2030, followed by other plants by 2050. JFE Steel is in charge of examining the combustion behavior of pulverized coal and reduction furnace gas and evaluating the entire process.

- Project scale: Approx. 72.7 billion yen*1, Financial support scale: Approx. 43.6 billion yen*2 (total for the four companies)

*1 The project scale is calculated based on the level of financial support and the subsidy rate.
*2 This includes incentives subject to change depending on project progress and other factors at each stage gate.

Carbon-Recycling Blast Furnaces

In the area of developing low-carbon technologies using CO_2 contained in externally sourced hydrogen or blast furnace exhaust gas by developing and combining these technologies with other low-carbon techniques, such as using biomass and direct reduced iron as raw materials, we hope to achieve a greater than 50% reduction of CO_2 emissions from the blast furnace steelmaking process by 2030 through the use of medium-scale test blast furnaces, which are larger than one-fifth the size of a full-scale furnace. JFE Steel is in charge of developing carbon recycling blast furnace operation technology and elemental technology as well as overall process evaluation and review, and in May 2025, a small-scale test blast furnace was fired up and began operation.

- Project scale: Approx. 285.3 billion yen*1, Financial support scale: Approx. 238.6 billion yen*2 (total for the four companies)

*1 Project scale is based on the level of financial support and subsidy rate.
*2 This includes incentives subject to change depending on project progress and other factors at each stage gate.

Direct Reduction Compact Bench Pilot Furnace

In the area of developing direct hydrogen reduction technology, we intend to demonstrate the method using medium-scale test blast furnaces, which are larger than one-fifth the size of a full-size furnace, applying a technology for directly reducing the CO_2 emissions of low-grade iron ore with hydrogen by more than 50%, compared to the current blast furnace method, by 2030. JFE Steel is in charge of examining operational fluctuations and wide-ranging methanation reaction characteristics using the new bench pilot furnace, investigating reduction pulverization and gas composition that both suppresses clustering and achieves a high reduction rate, evaluating the microstructure using high-precision equipment, determining gas composition and the level of iron ore reduction and carbonization, and optimizing shape and forming. The bench test began operation in December 2024 and successfully produced direct reduced iron continuously from low-grade pellets using 100% hydrogen.

- Project scale: Approx. 136.9 billion yen*1, Financial support scale: Approx. 114.1 billion yen*2 (total amount for the four companies)

*1 Project scale based on the level of financial support and subsidy rate.
*2 This includes incentives subject to change depending on project progress and other factors at each stage gate.

Pilot Electric Arc Furnaces

In a project for developing impurity removal technology for electric arc furnaces using direct reduced iron, demonstrations of a large scale electric arc furnace process (processing capacity of approximately 300 tonnes) will be conducted to verify its control of the concentration of impurities (components affecting the product) to the same level as standard blast furnace methods (phosphorus 150 ppm, nitrogen 40 ppm or less), toward the goal of manufacturing high-grade steel suitable for car body panels and other components with the directly reduced iron made from low-grade iron ore. JFE Steel is in charge of evaluating and examining the new heat sources and scrap iron preheating using a small-scale test electric arc furnace with a capacity of 10 tonnes and developing technologies for dephosphorization and denitrification of molten steel using an ex-core refining furnace with a capacity of 3 tonnes. The small-scale pilot electric arc furnace began operation in February 2025, and development is making progress toward the stage gate scheduled for the end of FY2025.

- Project scale: Approx. 40.4 billion yen*1, Financial support scale: Approx. 30.6 billion yen*2 (total for the four companies)

*1 Project scale is calculated based on the level of financial support and subsidy rate.
*2 This includes incentives subject to change depending on project progress and other factors at each stage gate.

> NEDO: A new research focus under the Green Innovation Project: Hydrogen Utilization in Iron and Steelmaking Processes (Japanese only)
(https://www.nedo.go.jp/news/press/AA5_101738.html)

> NEDO: Hydrogen Utilization in Iron and Steelmaking Processes
(https://green-innovation.nedo.go.jp/en/project/utilization-hydrogen-steelmaking/)

> Consortium of the Green Innovation Fund Project: Utilizing Hydrogen in the Steelmaking Process (https://www.greins.jp/en/)

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Carbon Neutrality in the Material Cycles and Waste Management Sector

A project titled "Achieving Carbon Neutrality in the Waste and Resource Circulation" is underway as part of the Green Innovation Fund project administered by the New Energy and Industrial Technology Development Organization (NEDO). According to NEDO, this project is intended to minimize atmospheric emissions of carbon dioxide, methane, and other gases from waste incineration and landfill disposal, and to stably and efficiently recover carbon from waste to achieve net zero GHG emissions. It also involves development and demonstration for realizing a carbon-neutral carbon circulation system that circulates and supplies biomass-derived carbon as an industrial resource, with the goal of creating a model for social implementation.

JFE Engineering, together with Sekisui Chemical Co., Ltd., proposed a project titled Waste-to-Chemical technology development for Green Ethanol production by integration of Advanced Gasification and Biochemical Conversion technologies, in response to NEDO's call for proposals under the Green Innovation Fund Project/Achieving Carbon Neutrality in Waste and Resource Circulation, and the proposal was selected.

For details on this project, please refer to:
> Development of a Waste Chemical Recycling Technology through the Use of the Green Innovation Fund (p. 130)

Efforts to Lower the Cost of Offshore Wind Power Generation

A project on "Cost Reductions for Offshore Wind Power Generation" is underway as part of the Green Innovation Fund project administered by the New Energy and Industrial Technology Development Organization (NEDO). According to NEDO, the aim is to achieve early cost reductions, primarily in floating offshore wind power generation, and to promote wider introduction, drawing on knowledge gained from this project and previous demonstration initiatives.

Through the consortium in which it participates, JFE Engineering jointly proposed and was selected for NEDO's Green Innovation Fund Project/Cost Reductions for Offshore Wind Power Generation/Floating Offshore Wind Power Demonstration Project (Phase 2) under the theme: "Southern Akita Floating Offshore Wind Demonstration Project Aimed at Overseas Expansion via Cost Reductions."

For further details, please refer to:
> Demonstration Research on Cost Reduction for Floating Offshore Wind Power Generation (P. 79)

Funding Methods through Green/Transition Finance

JFE Holdings has established the Green/Transition Finance Framework and issued transition bonds through a public offering in 2022, which was selected as the first model example in the iron and steel sector under METI's Transition Finance Model Projects in FY2021. Achieving carbon neutrality will require significant, long-term investments in capital and R&D. JFE Holdings will continue to leverage transition financing and diversify its funding methods.

Formulated the Technology Roadmap for Transition Finance in the Iron and Steel Sector

The technology roadmap for Transition Finance toward decarbonization in the iron and steel sector, published by the Japanese Ministry of Economy, Trade, and Industry (METI), outlines a path for accelerating decarbonization and achieving carbon neutrality by introducing innovative technologies, with the same assumption that social infrastructure such as hydrogen supply and CCUS will be in place by the 2040s. In the process of drawing up this roadmap, JFE Steel's Fellow, Hiroyuki Tezuka, a member of the Japan Iron and Steel Federation's Energy Technology Committee, participated as a specialist in the task force formulating the roadmap. The roadmap is aligned with Japan's nationally determined contribution (NDC) based on the Paris Agreement and is therefore aligned with the agreement.

Green/Transition Finance Framework

The JFE Group developed this framework based on the "Green Bond Principles 2021" of the International Capital Market Association (ICMA), the "Green Loan Principles 2023" of the Loan Market Association (LMA), the Asia Pacific Loan Market Association (APLMA), the Loan Syndication & Trading Association (LSTA), the "Green Bond Guidelines (2022)," the "Green Loan Guidelines (2022)" of the Ministry of the Environment, the "Climate Transition Finance Handbook 2023" of the ICMA, and the "Basic Guidelines on Climate Transition Finance (May 2021)" of the Financial Services Agency, the Ministry of Economy, Trade and Industry, and the Ministry of the Environment. Since our initiatives have been certified by a third-party organization as being aligned with METI's roadmap, this framework of the JFE Group is also aligned with the Paris Agreement.

- **METI: Technology Roadmap for Transition Finance in the Iron and Steel Sector** (https://www.meti.go.jp/policy/energy_environment/global_warming/transition/transition_finance_technology_roadmap_iron_and_steel_eng.pdf)
- **METI: Transition Finance Case Study** (https://www.meti.go.jp/policy/energy_environment/global_warming/transition/transition_finance_case_study_jfehd_eng.pdf)
- **Green/Transition Finance Framework (Japanese only)** (https://www.jfe-holdings.co.jp/common/pdf/release/2024/01/240119.pdf)
- **Transition Finance Report—Funds Raised, Allocated, and Their Impact (Japanese only)** (https://www.jfe-holdings.co.jp/common/pdf/sustainability/environment/climate/impact_report_2024.pdf)

Participation in External Initiatives

The JFE Group is taking responsible action toward realizing a sustainable society in response to global environmental issues such as climate change. As part of this effort, we are actively participating in major domestic and international initiatives, enhancing our ability to respond to climate change through the sharing of knowledge and collaboration. The following are the main initiatives in which we participate.

Participation in the GX League

The Ministry of Economy, Trade and Industry has established the GX League, a forum that invites companies to work on GX; take up the challenge of GX in cooperation with the government, academic, and economic sectors; discuss how to transform the overall economic and social system; and drive the creation of new markets. Understanding that the league's objectives aligned with the JFE Group's overall approach to addressing climate change, JFE Steel has been taking part in the GX League since its establishment.

In working with the GX League, JFE Steel has been actively participating in the Rule Working Group (WG), a forum for public-private rulemaking to foster new markets and pursuing the creation and expansion of the market for GX products.

FY2023 Initiatives

JFE Steel participated in the Working Group for Adding Value to Green Products, and in December 2023, the WG published the document: How to Add Value to Green Products. The document recognizes that, in terms of corporate investment in decarbonization, it is critically important to quantify and communicate the value of emission reductions achieved through a company's own initiatives and ensure that this value is recognized in global markets. It also presents draft guidelines for enhancing the added value of green products and outlines pioneering projects, including JFE Steel's JGreeX initiative, and introduces methods for measuring and calculating green value, allocating it effectively, and utilizing it in economic activities. Furthermore, reflecting the concepts presented in the document, the Interim Summary of the Study Group on the GX Product Market Contributing to Demand Creation for Strengthening Industrial Competitiveness and Achieving Emission Reductions, published by the Ministry of Economy, Trade and Industry in March 2024, suggested "Reduced Emissions of Product" as a new GX value.

- **Final Report for the GX League (Japanese only)** (https://gx-league.go.jp/action/wg/)
- **Document on how to Add Value to Green Products (full version, in Japanese only)**
- **Document on how to Add Value to Green Products (summary version, in Japanese only)**

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FY2024 Initiatives

JFE Steel participated in the GX Product Social Implementation Promotion WG. Following work group discussions in December 2024, the Ministry of Economy, Trade and Industry recently established the GX Acceleration Declaration to support companies engaged in creating the GX market. This framework is intended to visualize companies proactively working on the social implementation of GX products and services and establish a self-declaration mechanism for appropriately evaluating these efforts. Companies make voluntary declarations on procuring GX products as well as disclosing and evaluating their content.

JFE Steel was among the first to make a declaration after the framework was established. In addition to supplying green steel, we declared the procurement of GX products on the demand side as well, thereby playing a role in stimulating demand.

- **METI: GX Acceleration Declaration Framework Newly Launched as Effort to Encourage Companies Proactively Engaging in Creation of a Market for GX** (https://www.meti.go.jp/english/press/2024/1206_001.html)
- **JFE Steel GX Acceleration Declaration (Japanese only)** (https://www.jfe-steel.co.jp/release/2024/12/241220-3.html)

Investment in the GX Acceleration Agency

The GX Acceleration Agency is a certified corporation established in April 2024 by the Ministry of Economy, Trade and Industry, as stipulated in the Act on Promoting a Smooth Transition to a Decarbonized Growth-oriented Economic Structure. In order to achieve GX investment of over 150 trillion yen over the next 10 years, the GX Acceleration Agency will provide financial support as debt guarantees, operate a carbon emissions trading system, and collect fossil fuel surcharges. JFE Holdings invested in the GX Acceleration Agency at the time of its establishment.

- **GX Acceleration Agency** (https://www.gxa.go.jp/en/)

TCFD Consortium

The TCFD Consortium was established in 2019 as a forum for companies and organizations that support the TCFD recommendations to discuss effective climate-related disclosures and ways for financial institutions to make appropriate investment decisions based on them.

Guidance on Climate-related Financial Disclosures 2.0 (TCFD Guidance 2.0) and TCFD Guidance 3.0 were published as outcomes of the consortium in 2020. In 2021, the consortium also published the Transition Plan Guidebook, which outlines the basic concepts and approaches to transition plans as part of the implementation of TCFD recommendations.

JFE Holdings supports the recommendations of the final TCFD report and participates in this consortium.

United Nations Global Compact

The JFE Group has signed the United Nations Global Compact, the world's largest sustainability initiative advocated by the United Nations, and has declared its support. We are committed to complying with and implementing the Ten Principles of the Global Compact and promoting the SDGs in order to realize a sustainable society. The JFE Group is also a member of the Global Compact Network Japan, the local network of the Global Compact. Having identified "Contribute to resolving climate change issues" as a material issue, the JFE Group is working to reduce CO_2 emissions. We also draw on the decarbonization initiatives of other participating companies to further advance efforts to reduce CO_2 emissions across the JFE Group and society as a whole.

SPEED Research Group

The SPEED (Special Project on Eco-innovation and Eco-business for Sustainable Development) Research Group contributes to the development of eco-innovations and eco-businesses through industry-academia-government collaboration and international cooperation. JFE Holdings participates in this research group and is involved in activities such as information sharing and opinion exchange with government, universities, research institutions, and companies.

EN Japan Climate Leaders' Partnership (JCLP)

JFE Engineering is a member of the Japan Climate Leaders' Partnership (JCLP). Established in 2009, the JCLP is a coalition of Japanese corporations that encourage the industrial community to fully recognize the urgency of climate change and take more decisive action to create a sustainable, decarbonized society. Companies fulfill their corporate responsibility by demonstrating leadership in the transition to a decarbonized society. The Company is participating in the Decarbonization Consortium, JCLP's platform for encouraging information sharing and collaboration between companies and is actively engaged in creating opportunities to learn from companies at the frontline of decarbonization efforts, and collaborating with other companies to create new solutions.

Japan's Steel Industry Initiatives

Japan Iron and Steel Federation (JISF) Initiatives

Long-term Vision for Climate Change Mitigation

JFE Steel is proactively engaged in a variety of activities as a member of the Japan Iron and Steel Federation (JISF). The JISF has been focusing on achieving the goals for 2020 under its Commitment to a Low Carbon Society (renamed the Carbon Neutrality Action Plan in FY2021). Furthermore, in November 2018, the JISF formulated and published its Long-term Vision for Climate Change Mitigation for 2030 and beyond, with JFE Steel playing a central role in its development. This document lays out the industry's challenge for realizing zero-carbon steel and explains the pathway for achieving the 2°C scenario for steelmaking and the necessity of ultra-innovative technologies to achieve the 1.5°C scenario. Also, on February 15, 2021, the JISF announced the "Basic Policy of the Japan steel industry on 2050 Carbon Neutrality sought by the Japanese government," declaring that the Japanese iron and steel industry will boldly accept the challenge of realizing zero-carbon steel.

> Relevance with the JISF's Long-term Vision for Climate Change Mitigation (P. 115)

JISF's Carbon Neutrality Action Plan

In February 2021, the JISF declared that the Japanese steel industry will boldly take on the challenge of realizing carbon neutrality. The Plan on Commitment to a Low Carbon Society was amended and renamed as the Carbon Neutrality Action Plan, and the Phase II target (2030 target) was revised. In the Eco Process of the plan, an ambitious 2030 target was set taking into account new perspectives such as the expansion of scrap use as well as the maximum introduction of best available techniques (BATs) based on energy efficiency already among the highest in the world.

Regarding Eco Product, which is intended to reduce GHG emissions at the product use stage, high-performance steel is expected to play a particularly major role in the promotion of offshore wind power and electrification of automobiles, which are among the 14 fields of the government's Green Growth Strategy. Accordingly, the Japanese initiative will accelerate practical global warming measures from a global perspective by making visible the conventional quantitative evaluation of the five types of high-performance steel.

As for Eco Solutions, the JISF will develop a system for introducing appropriate technology for transferring and spreading the production process for decarbonized steel in the Asian regions, where steel production is expected to expand. Furthermore, regarding Innovative Technology Development, the JISF will take on the challenges of technologies such as direct hydrogen reduction and high-performance steel production using electric arc furnaces under the Green Innovation Fund, in addition to COURSE 50 and ferro-coke.

Overview of the Carbon Neutrality Action Plan

Eco Process
Cut energy-related CO_2 emissions (total volume) in FY2030 by 30% compared to the FY2013 level by adopting BATs to promote energy conservation, using waste plastics, adopting innovative technologies that are currently under development and scheduled to be in use around 2030, and using raw fuel with less CO_2 emissions.

Eco Product
Contribute to CO_2 emissions reduction by domestically and internationally supplying high-performance steel. This steel will reduce CO_2 emissions when used in the final product. The reduction potential in 2030 is estimated to be approximately 42 million t-CO_2 for the five steel products that have been quantitatively evaluated for their contribution to reducing emissions.

Eco Solution
Contribute to reducing CO_2 emissions worldwide by transferring and spreading the Japanese steel industry's advanced energy-saving technologies and facilities to the world's steel industry. Estimated contribution on CO_2 emissions reduction is 80 million t-CO_2 in 2030.

Innovative Technology Development
Contribute to carbon neutrality by boldly developing technologies in the following four areas.
- Hydrogen reduction technology using in-house hydrogen
- Low-carbon technology using CO_2 contained in externally sourced hydrogen or blast furnace exhaust gas
- Direct hydrogen reduction technology
- Impurity removal technology for electric furnace using direct reduced iron

Assessment of the FY2023 Carbon Neutrality Action Plan (Phase II) Results (JISF)

Total volume of energy-related CO_2 emissions in FY2023 was 148.35 million tonnes, a decrease of 46.08 million tonnes, or 23.7%, compared to FY2013. The achievement rate of the FY2030 target (to reduce by 30% from FY2013) has reached 79.0%. Energy-related CO_2 emissions and energy consumption are both declining, given continued energy saving efforts.

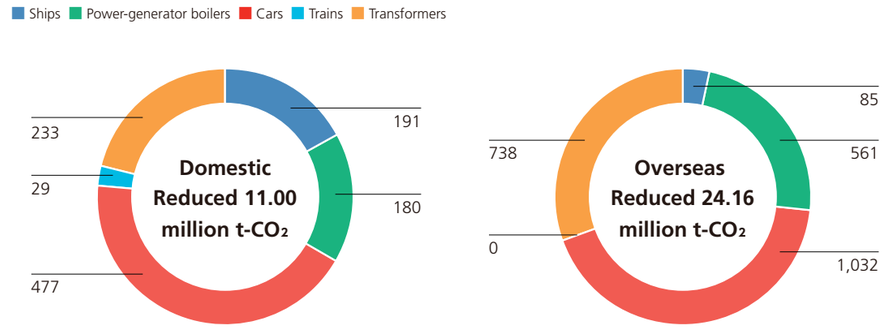
While the energy efficiency of the Japanese steel industry is among the highest in the world, vigorous efforts are made to promote greater energy savings by having businesses engaged in this effort draw upon subsidies to promote investment in saving energy and other actions.

Reduced CO_2 Emissions through High-Performance Steel Materials (Effects of Eco-Products)

The Japan Iron and Steel Federation (JISF) estimates the CO_2 emissions reduction impact of using high-performance steel materials. It is estimated that the use of five major high-performance steel materials in cars, transformers, ships, power generation boilers, and trains in Japan and overseas* (FY2023 production: 3.85 million tonnes, 4.7% of crude steel production) helped reduce CO_2 emissions by 35.16 million tonnes (11.00 million tonnes in Japan, 24.16 million tonnes overseas) in FY2023.

*Calculations made by the Institute of Energy Economics, Japan. The five materials are steel sheets for automobiles, grain-oriented electrical steel sheets, thick steel sheets for shipbuilding, steel tubes for boilers, and stainless steel sheets. FY1990 is the reference point for domestic reduction figures, with FY2003 as the reference point for the overseas reduction figures for automobiles and ships, FY1998 for steel pipes for boilers, and FY1996 for electrical steel sheets.

CO_2 Reduction Resulting from the Use of Five High-Performance Steel Materials in Japan and Overseas (FY2023)



Related Links

- The Japan Iron and Steel Federation (JISF): Climate Change Policy page (https://www.jisf.or.jp/en/activity/climate/index.html)
- The Japan Iron and Steel Federation (JISF): LCA of Steel Products page (https://www.jisf.or.jp/en/activity/lca/index.html)
- The Japan Iron and Steel Federation (JISF): Publication of ISO 20915 (https://www.jisf.or.jp/en/activity/lca/iso/index.html)
- The Japan Iron and Steel Federation (JISF): Publication of JIS Q 20915 (https://www.jisf.or.jp/en/activity/lca/iso/index.html)
- The Japan EPD Program by SuMPO (https://ecoleaf-label.jp/en/)

Industry-Academia Collaboration Initiatives

The JFE Group is actively engaged in joint research and collaboration with universities to strengthen scientific and practical responses to climate change. We are incorporating the latest knowledge and technologies through partnerships with academic institutions and advancing efforts toward realizing a sustainable society. Below are some of the main initiatives we are pursuing in collaboration with universities.

The University of Tokyo and 16 Organizations Announce Launch of Joint Research Initiative to Achieve a Carbon-Neutral Society Establishment of the Social Collaboration Program "Materials for Future Energy Infrastructure Trust (MEIT)"

JFE Steel, JFE Engineering, and 16 organizations including the University of Tokyo, IHI Plant Services Corporation, INPEX CORPORATION, ENEOS Xplora Inc, Kanadevia Corporation, Kawasaki Heavy Industries, Ltd., Kobe Steel, Ltd., JERA Co., Inc., TOKYO GAS NETWORK Co., Ltd., Namura Shipbuilding Co., Ltd., NIPPON STEEL ENGINEERING CO., LTD., NIPPON STEEL PIPELINE & ENGINEERING CO., LTD., NIPPON STEEL CORPORATION, Nippon Kaiji Kyokai (ClassNK), and Mitsubishi Heavy Industries, Ltd. have jointly established the Social Collaboration Program*, Materials for Future Energy Infrastructure Trust (MEIT), to scientifically elucidate and standardize the material reliability of energy infrastructure that supports a carbon-neutral society. The joint research will commence on May 1, 2025. JFE Steel, Kobe Steel, Ltd., NIPPON STEEL CORPORATION, and Nippon Kaiji Kyokai serve as the managing institutions for this program.

The purpose of the program is to evaluate the reliability of materials used in energy infrastructure and storage systems for decarbonized energy carriers such as liquefied hydrogen and ammonia, as well as in liquefied and high-pressure CO_2 in carbon capture and storage (CCS) projects. Through these efforts, the initiative seeks to accelerate the development of energy infrastructure for a carbon-neutral society, meet domestic demand, and strengthen international competitiveness.

*A collaborative research framework between the University of Tokyo and 16 organizations, operated with joint research expenses borne by the companies under contractual agreements with the university. This program facilitates interdisciplinary collaboration among researchers and the formation of research teams to address comprehensive societal challenges, thereby overcoming the limitations of conventional one-on-one collaborations between researchers and companies.

Overview of the Social Collaboration Course

As society transitions to carbon neutrality, energy infrastructure is shifting significantly from fossil fuels to new systems based on hydrogen and ammonia. This includes liquefied hydrogen tanks, ammonia tanks, CO_2 tanks, and high-pressure CO_2 pipelines, all of which require material reliability evaluations to ensure long-term safety and economic viability. The program will establish material selection criteria, post-weld heat treatment omission standards, and fracture prevention criteria to optimize infrastructure construction costs and promote international standardization that contributes to a sustainable energy society.

Program Name: Social Collaboration Program "Materials for Future Energy Infrastructure Trust (MEIT)"
Period: May 1, 2025–April 30, 2030
Joint Research Topics:

- Development of fracture evaluation technologies and standards for large-scale liquid ammonia tanks (stress corrosion cracking prevention and omission of post-weld heat treatment).
- Development of fracture evaluation technologies and standards for large-scale liquid CO_2 tanks (omission of post-weld heat treatment).
- Establishment of rapid ductile fracture prevention standards for high-pressure CO_2 pipelines in CCS projects.
- Enhancement of reliability and evaluation technologies for next-generation materials (cost-effective stainless steel and low-nickel steel) for large-scale liquid hydrogen tanks.

Collaborating Faculty: School of Engineering, University of Tokyo

- The University of Tokyo and 16 Organizations Announce Launch of Joint Research Initiative to Achieve a Carbon-Neutral Society Establishment of the Social Collaboration Program "Materials for Future Energy Infrastructure Trust (MEIT)" (https://www.jfe-steel.co.jp/en/release/2025/05/250519.html)

ST JFE Steel and Tohoku University's Collaborative Research Laboratory for Green Steel

In February 2022, JFE Steel and Tohoku University jointly established the Collaborative Research Laboratory for Green Steel within the university's Graduate School of Engineering to research eco-friendly steel materials and production methods for the carbon-neutral era. The Collaborative Research Laboratory is managed under a cross-divisional system and develops collaborations across a wide range of fields, including the development of steelmaking processes and materials. This will facilitate a multifaceted approach to resolving issues related to low-carbon steelmaking processes and to discover innovative development themes from new perspectives. Furthermore, we will dispatch young researchers to nurture highly specialized human resources who will lead the next generation of the steelmaking industry.

Collaborative Research Wing, Materials Development, Graduate School of Engineering, Tohoku University

- JFE Steel and Tohoku Univ. Establish Collaborative Research Lab for Green Steel (https://www.jfe-steel.co.jp/en/release/2022/220203.html)

EN JFE Engineering Carbon Neutrality Collaborative Research Center Established at the Institute of Science Tokyo

JFE Engineering and the Institute of Science Tokyo*1 opened the JFE Engineering Carbon Neutrality Collaborative Research Center (CRC) at the Institute's Laboratory for Zero-Carbon Energy under the former Tokyo Institute of Technology (currently the Institute of Science Tokyo) on July 1, 2022. The purpose of the CRC is to promote new technologies for realizing a carbon-neutral society. The two parties are comprehensively and jointly working on technical developments in carbon neutrality, transcending the boundaries of a typical individual joint research framework in a multilayered approach to generate innovation across the wide range of fields required for realizing a carbon-neutral society.

The CRC will promote the development of new technologies to help realize a carbon-neutral society by combining JFE Engineering's engineering technologies related to plant and infrastructure construction in the fields of energy and the environment with the Institute of Science, Tokyo's advanced academic knowledge across a wide range of areas. The CRC will also continue collaborating with a variety of organizations through the Tokyo Tech GXI*2, an industry-academia partnership project run by the Institute of Science Tokyo.

*1 Tokyo Institute of Technology and Tokyo Medical and Dental University were integrated in October 2024.
*2 Intended to promote research activities that will initiate a Green Transformation (GX) society, strengthen startups, and substantiate industry-society collaboration.

Laboratory for Zero-Carbon Energy, Institute of Integrated Research
(Ookayama North No. 1 Campus)

> JFE Engineering and Tokyo Institute of Technology establish JFE Engineering Carbon Neutrality Collaborative Research Center (Japanese only) (https://www.jfe-eng.co.jp/news/2022/20220629.html)

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Global Scale Initiatives

Global Actions to Address Global Warming

ISO 14404 is an international standard proposed by the Japan Iron and Steel Federation (JISF) to the International Organization for Standardization (ISO) as a methodology for the globally unified calculation of CO_2 intensity from iron and steel production, to ultimately assess the energy efficiency of steelworks. The Japanese steel industry is addressing global warming through international public-private collaborations, including ISO 14404-based assessment of steelworks in developing countries and recommending specific technologies best suited to India and ASEAN countries. It is continuing this effort together with the Ministry of Economy, Trade and Industry (METI) in order to enhance ISO 14404 so it can be applied to steel manufacturing facilities with more complex structures.

JFE Steel is also addressing global warming by participating in international activities, such as the Japan-India Public and Private Collaborative Meeting, the Japan-ASEAN Steel Initiative, and the Japan-China Steel Industries Exchange. In addition, JFE Steel is a member of the World Steel Association's Climate Action Data Collection Programme, which uses ISO 14404 as the standard for measurement and calculation.

> WSA: Climate Action Data Collection Programme (https://worldsteel.org/climate-action/climate-action-data-collection/)

WSA Climate Action Data Collection Programme certification

Efforts to Assess the Environmental Impact of the Excellent Recyclability of Steel Products

Accurately evaluating the environmental impact of products requires assessment and quantification of impact over their entire life cycles, from raw resource mining to material production, product manufacture, use, and final disposal. Life cycle assessment (LCA) is one evaluation method.

After final products such as automobiles and buildings finish their mission in society, all of their steel components can be recycled and reused. Closed-loop recycling is an excellent characteristic of steel materials. From the perspective of LCA, steel can be viewed as having an extremely low environmental impact compared to other materials.

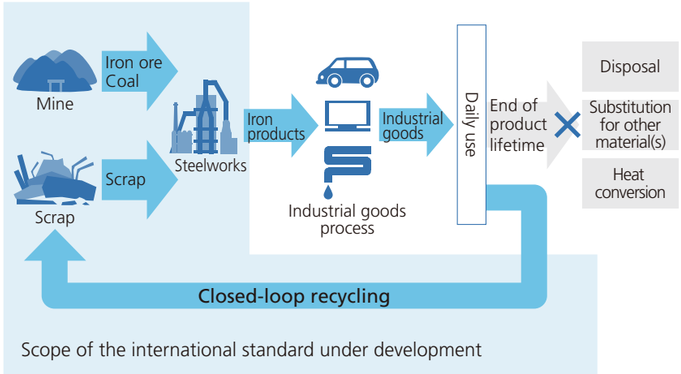
JFE Steel played a major role in the development of ISO 20915 (Life Cycle Inventory Calculation Methodology for Steel Products) and JIS Q 20915 (Life Cycle Inventory Calculation Methodology for Steel Products), initiatives led by the Japan Iron and Steel Federation (JISF), which takes into account the impact of recycling and provides life cycle inventory (LCI) calculation methods specific to steel products.

In addition, 15 Japanese manufacturers of blast furnaces and electric arc furnaces joined forces to calculate the Japanese average for LCI of different steel products. Calculations based on their FY2018 operational data were also published.

JFE Steel acquired SuMPO EPD certification for 36 product types under the SuMPO Environmental Label Program under the Sustainable Management Promotion Organization (SuMPO). These cover three types of tinplate steel sheets for cans, nine flat steel products, nine construction steel products, three types of steel plates (steel plates for marine structures and wind power, shipbuilding steel plates, and UOE pipes), four steel pipe products, and eight bar and wire rod products. We will continue to make use of SuMPO EPD labels to help customers protect the environment and strengthen communications with them.

> Value of Steel (P. 4)

Life Cycle of Steel Materials



Japan-Korea Green Steel Joint SeminarProducts

The 2nd Japan-Korea Green Steel Joint Seminar was held in Tokyo on October 23, 2024, jointly organized by the Japan Iron and Steel Federation and the Korea Iron and Steel Association. The seminar was attended by representatives from both countries, including Masaaki Izumiyama, Chairman of the International Environmental Strategic Committee, the Japan Iron and Steel Federation (Nippon Steel Corporation), and Kwang-young Lee, Executive Managing Director of the Korea Iron and Steel Association, as well as guests of honor, including Manabu Nabeshima, Director of the Metals Division of the Ministry of Economy, Trade and Industry of Japan, and Seungjin Ko, Senior Deputy Director/Team Leader of the Steel Division, Metals and Ceramics Policy Division, Ministry of Trade, Industry and Energy of the Republic of Korea. A total of 53 participants, mainly from government organizations, steel companies, and academia in both Japan and South Korea, exchanged opinions on wide-ranging topics related to carbon neutrality in the steel industry.

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Public and Private Collaborative Meeting between Indian and Japanese Iron and Steel Industry

The Japan Iron and Steel Federation has held the Public and Private Collaborative Meeting between Indian and Japanese Iron and Steel Industry annually since 2011 with support from the Ministry of Economy, Trade and Industry, and JFE Steel attends this meeting every year. The purpose of this meeting is to apply the technology and experience of Japan's steel industry, which boasts the world's highest energy efficiency, to recommend policies on energy conservation and environmental protection to the Indian steel industry and promote the transfer of energy-saving and environmental protection technologies from Japan.

The FY2024 meeting was held in New Delhi, India, on January 21, 2025, with support from the Economic Research Institute for ASEAN and East Asia (ERIA). The meeting was moderated by Hiroyuki Tezuka, Secretary of the International Environmental Strategy Committee of the Japan Iron and Steel Federation and Fellow of JFE Steel. Participants included Shumpei Takagi, Deputy Director of the Metals Division of the Ministry of Economy, Trade and Industry of Japan; Vinod Kumar Tripathi, Additional Secretary of the Ministry of Steel of India; and Nuki Agya Utama, Director of Energy Policy and Head of the Asia Zero Emission Center at ERIA. About 40 participants, mainly from government organizations and steel companies in both Japan and India, engaged in lively discussions on topics related to carbon neutrality in the steel industry of both countries. JFE Steel will continue to play a major role in this meeting and contribute to CO_2 reduction in India by transferring Japanese energy-saving technologies.

ASEAN-Japan Steel Initiative

In May 2014, the Japan Iron and Steel Federation and the ASEAN Iron and Steel Council (AISC) signed a memorandum of understanding to promote regional collaboration the areas of the environment, standardization, and trade. The ASEAN-Japan Steel Initiative (AJSI) was launched as a public-private environmental effort to strengthen cooperation in environmental and energy saving efforts in ASEAN countries. As part of its activities, the initiative developed a Technologies Customized List (electric arc furnaces) as well as a Technologies Customized List (blast furnaces), which include energy-saving, environmental protection, and recycling technologies for electric arc furnaces and blast furnaces suitable for the ASEAN steel industry.

On November 20, 2024, the AJSI Seminar was held in person for the first time in about four and a half years, as an AJSI activity. The event was co-hosted with the Economic Research Institute for ASEAN and East Asia (ERIA) and held as part of the Southeast Asia Iron and Steel Institute (SEAISI) event "2024 ASEAN Iron and Steel Forum: Sustainable Steel and Green Construction" in Bangkok, Thailand, from November 18 to 21. Participants included Koji Takahashi, Director of the Metals Division of the Manufacturing Industries Bureau, Ministry of Economy, Trade and Industry of Japan, Naoto Okura, Director of Research and Policy Design at ERIA, and Wee-Jin Yeoh, Secretary General of SEAISI.

At the seminar, representatives from Japan and ASEAN countries introduced initiatives and prospects for policies and technologies for carbon neutrality as well as challenges and initiatives faced by steel manufacturers.

Japan-China Steel Industry Environmental Protection and Energy Conservation Technology Conference

This conference has been held since 2005, based on the memorandum of understanding that was signed at the Japan-China Steel Industry Environmental Protection and Energy Conservation Technology Conference, held in Beijing in July 2005 with the participation of top executives from both countries' steel industries. The purpose of the conference is to raise the level of environmental conservation and energy saving in both countries through information exchanges between technical experts from steel manufacturers in Japan and China. The importance of this conference has been growing as it helps to promote not only sound development of the steel industry in both countries but also the effective use of resources and environmental conservation.

The FY2024 event was held in Wuhan, China, in March 2025, with roughly 80 participants from both countries' steel industries. Representatives from both sides presented the status of actions toward carbon neutrality, energy conservation, CO_2 reduction, and environmental protection, and actively exchanged information and opinions on topics of shared interest in both countries' steel industries, such as green steel. JFE Steel will continue to participate in this conference to contribute to global carbon neutrality, energy saving, environmental action, and the sustainable development of the steel industry.

Lecture Events (Japan)

The JFE Group delivers lectures at various events to increase awareness of our efforts to combat climate change.

- Lecture: "JFE Group Environmental Vision for 2050 — Toward the Realization of Carbon Neutrality" at the Japan Auto Parts Industries Association
  Date: July 9, 2025
  Lecturer: Hiroyuki Tezuka (Fellow, JFE Steel Corporation)

- Lecture: "JFE Steel's Initiatives for Achieving Carbon Neutrality and the Challenges" at the 8th Japan-France Green Finance Forum
  Date: April 17, 2025
  Lecturer: Hiroyuki Tezuka (Fellow, JFE Steel Corporation)

- Lecture: "JFE Steel's Initiatives for Achieving Carbon Neutrality and the Challenges" at the JPI (Japan Planning Institute) Seminar
  Date: April 8, 2025
  Lecturer: Hiroyuki Tezuka (Fellow, JFE Steel Corporation)

- Lecture: "Latest Technology in Energy and Environment in the Steel Industry and Measures against Global Warming" in the Institute of Science Tokyo's Advanced Course in Science and Technology in Energy and Environment
  Date: December 18, 2024
  Lecturer: Ikufumi Sumi (Leader, Global Environment Team, Green Transformation Strategy, JFE Steel Corporation)

- Lecture: "The Path to Decarbonization of Steel — Green Steel Contributing to the Green Transition" at the Kyoto University Graduate School of Management Energy Industry Seminar
  Date: November 27, 2024
  Lecturer: Ikufumi Sumi (Leader, Global Environment Team, Green Transformation Strategy, JFE Steel Corporation)

- Lecture: "Carbon Neutrality Initiatives" at the Bingo Urban Roundtable Lecture Meeting
  Date: October 31, 2024
  Lecturer: Hiroyuki Tezuka (Fellow, JFE Steel Corporation)

- Lecture: "JFE Steel's Initiatives for Achieving Carbon Neutrality and the Challenges" at the APAC Financial Institutions Summit 2024 - Banking
  Date: October 2, 2024
  Lecturer: Hiroyuki Tezuka (Fellow, JFE Steel Corporation)

- Lecture: Green Steel Guidelines, published under "Steel Industry Green Steel Initiatives" on the Japan Iron and Steel Federation's website
  Date of publication: April 2025 URL: https://www.jisf.or.jp/business/ondanka/kouken/greensteel/documents/JISFGSguidelinev3.1final.pdf

Lectures Held Overseas

The JFE Group provides lectures at various events to raise awareness overseas of our efforts to address climate change.

- Lecture: "Fuel, Power, and Steam Supply-Demand Guidance System at Steelworks" at the 15th Japan-China Steel Advanced Technology Exchange Meeting for Environmental Protection and Energy-saving Meeting
  Date: March 13, 2025

- Lecturer: Katsunari Suzuki (Cyber-Physical System R&D Department, Steel Research Laboratory, JFE Steel Corporation)
  Lecture: "Efforts to Promote Green Steel — JISF Green Steel Guidelines, worldsteel Chain of Custody Guidelines" at the Japan-India Public and Private Collaborative Meeting
  Date: January 21, 2025
  Lecturer: Yoshitsugu Suzuki (Global Environment Team, Green Transformation Strategy, JFE Steel Corporation)

- Lecture: "Global Steel Decarbonization Initiatives — Necessity of Green Steel and Methodology of GHG Emission Assessment" at the ASEAN Japan Steel Initiative (AJSI) Seminar
  Date: November 20, 2024
  Lecturer: Yoshitsugu Suzuki (Global Environment Team, Green Transformation Strategy, JFE Steel Corporation)

- Lecture: "The Path to Decarbonization of Steel — Green Steel Contributing to the Green Transition" at the COP29 Japan Pavilion, Side Event Hosted by the Japan Iron and Steel Federation Conference: COP29
  Date of presentation: November 19, 2024
  Lecturer: Hiroyuki Tezuka (Fellow, JFE Steel Corporation)
  URL: https://www.jisf.or.jp/news/topics/20241018.html

Evaluation of Alignment with Major Organizations

The JFE Group participates in various industry and economic organizations with the aims of realizing a sustainable society and enhancing corporate value. Through these affiliations, we pursue policy recommendations, share information, and address industry-wide challenges while fulfilling the social responsibilities associated with the business activities of our operating companies. The evaluation of alignment between the policies of major organizations in which the JFE Group participates and JFE's stance is presented below along with the results.

Summary of Evaluation Results

We evaluated the consistency of the main recommendations and activities published by each organization with our aforementioned views and stance. As a result, we confirmed that the policies, stances, and policy recommendations clarified by each organization are aligned with our own views and stance. Going forward, we will continue to encourage constructive dialogue and exchanges of opinions with these organizations to ensure that our views and stance are reflected in the activities conducted by the organizations we belong to as members.

Organization / Policy	GX Policies	Energy Policy	Carbon Pricing	Creation of GX Product Markets
The Japan Iron and Steel Federation	Aligned	Aligned	Aligned	Aligned
World Steel Association	Aligned	Aligned	Position yet to be expressed	Aligned
Keidanren (Japan Business Federation)	Aligned	Aligned	Aligned	Aligned

The Japan Iron and Steel Federation

Purpose: To promote the sound production, distribution, consumption, and trade of steel, thereby contributing to the development of the Japanese economy and the improvement of people's livelihoods.
Participation of JFE Group Officers: Vice Chairman, Masayuki Hirose, Representative Director, President and CEO of JFE Steel Corporation

Item	Result	Basis / Reference URL, etc.
GX Policies	Aligned	In 2021, the Federation announced the Basic Policy of the Japan steel industry on 2050 Carbon Neutrality, in which it declared its agreement with the ambitious national policy of achieving carbon neutrality in 2050 and its own bold commitment to take on the challenge of realizing carbon neutrality in the steel industry. It has also requested the establishment of a national strategy for decarbonization, financial support to commercialize and implement the results of technology development, fostering public understanding that achieving decarbonization will involve significant costs, and building mechanisms for sharing such costs across society. > **Basic Policy of the Japan steel industry on 2050 Carbon Neutrality aimed by the Japanese government (Feb. 2021)** (https://www.jisf.or.jp/en/activity/climate/documents/CN2050_eng_201210215.pdf)
Energy Policy	Aligned	In its comments on the draft 7th Strategic Energy Plan, the federation recognized it as a realistic plan that squarely addresses changes in the energy situation while maintaining the S+3E perspective, and that reemphasizes the importance of stable supply and economic efficiency. It also valued the fact that resource-poor Japan will have a number of options, including renewable energy, nuclear power, and decarbonized thermal power, moving away from the conventional binary view of renewables versus nuclear. It has also stated that the integration of energy policy and industrial policy is an extremely important perspective in advancing GX, and that specific policies are needed to promote decarbonization on the premise of strengthening industrial competitiveness and ensuring inexpensive and stable energy supply. > **Comments on the Draft 7th Strategic Energy Plan (Japanese only)** (https://www.jisf.or.jp/news/topics/documents/7jienekian-ikenr.pdf)
Carbon Pricing	Aligned	In its comments on the draft GX2040 Vision, the Federation valued the Growth-oriented Carbon Pricing Concept for clearly indicating the timing of introduction and the basic framework of emission trading schemes and other systems. It stated that designing the GX-ETS system requires appropriately reflecting differences in timelines and marginal abatement costs for decarbonization by sector and designing a system that supports GX promotion in the Japanese steel industry while sustaining domestic production capacity and maintaining and strengthening international competitiveness. In addition to introducing carbon pricing, the federation has also underlined the urgency of creating a GX product market to ensure investment predictability for GX. > **Comments on the Draft GX2040 Vision (Japanese only)** (https://www.jisf.or.jp/news/topics/documents/GX2040visionan-ikenr2.pdf) > **Explanation Materials by The Japan Iron and Steel Federation — Working Group on Carbon Pricing toward GX (1st Meeting) (Japanese only)** (https://www.cas.go.jp/jp/seisaku/gx_jikkou_kaigi/carbon_pricing_wg/dai1/siryou4.pdf)
Creation of GX Product Markets	Aligned	The federation considers the creation of a GX market essential for increasing the predictability of decarbonization investments. In its comments on the draft GX2040 Vision, it valued the extensive descriptions regarding GX market creation, particularly the immediate implementation of initiatives such as visualization of GX value, public procurement, and private procurement. It has also expressed that the government's proactive initiatives, including the creation of initial demand, are extremely important for GX market creation, that clear policy directions for steadily expanding market size are required, and that more concrete measures such as regulatory and institutional measures for procurement are necessary to enhance investment predictability and that the government should present a more specific roadmap. > **Comments on the Draft GX2040 Vision (Japanese only)** (https://www.jisf.or.jp/news/topics/documents/GX2040visionan-ikenr2.pdf)

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World Steel Association

Purpose: To promote sustainability, safety, technological innovation, and human resource development in the steel industry and contribute to the overall development of the industry through international collaboration and the provision of information.
Participation of JFE Group Officers: Member of the Executive Committee — Masayuki Hirose, Representative Director, President and CEO of JFE Steel Corporation

Item	Result	Basis / Reference URL, etc.
GX Policies	Aligned	In its policy paper "Climate change and production of iron and steel," worldsteel expressed its full support for the goals of the Paris Agreement and declared that it would realize industrial and social transformation by reducing CO_2 emissions from steel production. > **Climate change and production of iron and steel (Sept. 2024)** (https://worldsteel.org/wp-content/uploads/Climate_PP_September-2024-1.pdf)
Energy Policy	Aligned	The same policy paper recommended the utilization of low-carbon energy, such as renewable energy, nuclear power, and fossil fuels with mitigation technologies such as CCS as a technological option for the steel industry's climate change measures. > **Climate change and production of iron and steel (Sep. 2024)** (https://worldsteel.org/wp-content/uploads/Climate_PP_September-2024-1.pdf)
Carbon Pricing	Position yet to be expressed	
Creation of GX Product Markets	Aligned	The policy paper also noted that steel products using low-carbon technologies will be more expensive than conventional products and therefore require policy support to compete in the market. It also pointed to rising demand from customer companies for low-carbon steel products. To meet this demand, worldsteel proposed a method for allocating GHG emission reduction value to specific products (chain of custody, or CoC) and published principles and guidelines to enhance transparency and clarity regarding the application of this method. > **Principles "Chain of custody approaches in the steel sector"** (https://worldsteel.org/wp-content/uploads/worldsteel-chain-of-custody-principles.pdf) > **worldsteel guidelines for GHG chain of custody approaches in the steel industry** (https://worldsteel.org/wp-content/uploads/worldsteel-chain-of-custody-guidelines-1.pdf)

Keidanren (Japan Business Federation)

Purpose: To draw out the vitality of companies, individuals supporting companies, and local communities as a comprehensive economic organization, thereby contributing to the autonomous development of the Japanese economy and the improvement of people's livelihoods.
Participation of JFE Group Officers: Chairman of the Tax System Committee — Yoshihisa Kitano, Representative Director, President and CEO of JFE Holdings, Inc.

Item	Result	Basis / Reference URL, etc.
GX Policies	Aligned	In its 2022 publication "Toward Green Transformation (GX)," Keidanren expressed the view that to realize carbon neutrality by 2050, Japan as a whole must create a "virtuous cycle of the economy and environment" and promote Green Transformation (GX), representing the transformation of the entire economic and social system. It also recommended that the government formulate a GX Policy Package as a grand design for GX. **Toward Green Transformation (GX) (May 2022)** (https://www.keidanren.or.jp/en/policy/2022/043_point.pdf)
Energy Policy	Aligned	In its 2024 proposal "Recommendations for Revising the Strategic Energy Plan," Keidanren stated that ensuring safety is the fundamental premise, and that the principles of (a) energy security and stable supply, (b) economic efficiency, and (c) environmental compatibility (S+3E) must be upheld. It emphasized the need to pursue an optimal mix of diverse energy sources suited to Japan's characteristics, to further expand the introduction of renewable energy that meets the three requirements of low cost, stable supply, and business discipline, and to maximize the use of nuclear and atomic energy. **Recommendations for Revising the Strategic Energy Plan (Oct. 2024) (Japanese only)** (https://www.keidanren.or.jp/policy/2024/071_honbun.pdf)
Carbon Pricing	Aligned	In its comments on the public consultation for the "Basic Policy for the Realization of GX," Keidanren evaluated the government's growth-oriented carbon pricing concept as a key step for achieving more than 150 trillion yen in public and private GX investment while reducing and curbing emissions. It also requested that, while fully considering technological developments and the opinions of the business community, specific system design should proceed in a way that contributes to maintaining and strengthening industrial competitiveness. **Comments on the Public Consultation for the Basic Policy for the Realization of GX (Jan. 2023) (Japanese only)** (https://www.keidanren.or.jp/policy/2023/004.html)
Creation of GX Product Markets	Aligned	In its comments on the public consultation for the GX2040 Vision (Draft), Keidanren stated that creating a GX market is indispensable for enhancing the predictability of GX investment. It proposed that, in addition to measures such as visualization of GX value and demand-stimulating initiatives, a specific roadmap should be formulated that specifies the timing of introducing various regulatory and institutional measures. It also emphasized that the cost increases associated with the production of GX products should be reliably reflected in product prices, and that consumers who purchase such products should accept these cost increases so that they can be fairly and equitably distributed across society as a whole. **Comments on the Public Consultation for the GX2040 Vision (Draft) (Jan. 2025) (Japanese only)** (https://www.keidanren.or.jp/policy/2025/010.html)

Scenario Analysis in Line with the TCFD Recommendations

Initiatives

The JFE Group intends to achieve carbon neutrality by 2050, and it leverages the scenario analysis in line with the TCFD recommendations to identify and assess climate change-related risks and opportunities and to strengthen the resilience of its organizational strategy. Please refer to the Initiatives to Address Climate Change Issues page for governance, strategy, risk management, metrics, and targets for climate change-related issues in line with the TCFD recommendations.

Initiatives to Address Climate Change Issues (P. 53)

Timeline of Milestones Related to Climate Change Developments and JFE's Key Initiatives

1997 Kyoto Protocol adopted at COP3 in Kyoto
2008 JISF's Voluntary Action Plan launched
2013 JISF's Commitment to a Low Carbon Society launched
2015 Paris Agreement adopted at COP21
2017 TCFD published the final report of its recommendations
2018 JISF announced the Long-term Vision for Climate Change Mitigation, Zero Carbon Steel
2019 JFE Group announced its endorsement for the final report of the TCFD recommendations
JFE Group published a scenario analysis in line with the TCFD recommendations
2020 Keidanren launched the Challenge Zero initiative
Ministry of Economy, Trade and Industry published a list entitled Companies Taking on the Zero-Emission Challenge
JFE Group published its targets in its medium- to long-term vision (target for 2030 and achieving carbon neutrality by 2050)
Prime Minister Suga declared Japan will achieve carbon neutrality by 2050
2021 JISF announced the Basic Policy of the Japan Steel Industry on 2050 Carbon Neutrality Aimed by the Japanese Government
JFE Group published its roadmap for achieving carbon neutrality in 2050 in the JFE Group Environmental Vision for 2050
Japanese government formulated the Green Growth Strategy Through Achieving Carbon Neutrality in 2050
2022 JFE Group announced that the CO_2 emissions reduction target for FY2030 for JFE Steel has been revised upward to 30% or more compared to FY2013
JISF published the "Evaluation of the Phase I Target (FY2020 Target)" and Phase II (FY2030 target) of reducing the total volume of energy-related CO_2 emissions by 30% in its "Activities to Combat Global Warming—Report of JISF's Carbon Neutrality Action Plan (Commitment to a Low Carbon Society) (March 2022)"
2023 The Act Concerning the Promotion of a Smooth Transition to a Decarbonized Economic Structure (GX Promotion Act) was enacted
2025 Japanese government published GX2040 Vision
JFE Group announced its long-term vision JFE Vision 2035 and the Eighth Medium-term Business Plan (FY2025–FY2027)

The Challenge Zero (Innovation Challenges Toward a Net Zero Carbon Society) is a new joint initiative by Keidanren (Japan Business Federation) and the Japanese government for proactively publicizing and supporting companies and organizations that pursue innovative actions toward realizing a decarbonized society as the long-term goal of the Paris Agreement.
The JFE Group endorses the Challenge Zero declaration and will rise to the challenge of pursuing innovation.

The Ministry of Economy, Trade and Industry (METI), in collaboration with Keidanren and the New Energy and Industrial Technology Development Organization (NEDO), has been tackling a project called the Zero-Emission Challenge. The project is preparing a list of companies generating innovation toward realizing a decarbonized society and providing investors and other stakeholders with useful information on them. The JFE Group was designated as one of approximately 600 listed and unlisted companies in the Zero-Emission Challenge, announced at the TCFD Summit 2021 as part of Japan's efforts toward achieving a decarbonized society.

The JFE Group publishes information on specific initiatives through the following website.

> Challenge Zero (https://www.challenge-zero.jp/en/member/34)

> Zero-Emission Challenge (https://www.meti.go.jp/english/press/2021/1005_002.html)

Scenario Analysis

Tools and Methods

Scenario analysis is used to portray an accurate understanding of climate-related risks and opportunities and assess implications to the current business strategy, thereby enabling an organization to establish strategies that reflect the results of the assessment. As our business could be significantly affected by climate change, we have created both a 1.5°C scenario and a 4°C scenario. In setting the 1.5°C scenario, we also took into account the 2°C / below 2°C scenarios*1.

All scenarios are based on those developed by the International Energy Agency (IEA). Analysis was conducted under the assumption that major emitting countries implement uniform carbon pricing to increase the feasibility of achieving the 1.5°C target.

Our goal under the long-term scenario analysis is to achieve carbon neutrality by 2050. We conducted risk assessments that take into account the 1.5°C scenario (IPCC 1.5°C Special Report) in steelmaking and the necessity of ultra-innovative technology to achieve the Shared Socioeconomic Pathways (SSP) for carbon neutrality by 2050.

Selected Scenario		1.5°C Scenario	4°C Scenario
Reference Scenario	Transition Risks	Transition scenarios developed by the IEA • IPCC Special Report on Global Warming of 1.5°C*2 • NZE2050	Transition scenarios developed by the IEA • Stated Policies Scenario (STEPS)*3 • Reference Technology Scenario (RTS)*4
	Physical Risk	Climate change projection scenario developed by the Intergovernmental Panel on Climate Change (IPCC) • Representative Concentration Pathways (RCP) Scenario*5 • Shared Socioeconomic Pathways (SSP)*6	
How Society will Look		Dynamic policies will be adopted and technical innovations will progress to limit the average temperature rise by the end of this century to 1.5°C and realize sustainable development. Assume a society in which our business is affected by social changes accompanying transition to a decarbonized society. • Worldwide/industry-wide uniform carbon pricing*7 • Increase in the ratio of sales of electric vehicles to overall vehicle sales	Despite new policies implemented in each country based on approaches under the Paris Agreement, the average temperature will rise by about 4°C by the end of this century. Assume a society in which our business is affected by temperature rise and other climate change. • Increase in the occurrence of flooding • Sea level rise

*1 The Sustainable Development Scenario (SDS) and the 2℃ Scenario (2DS) are used for the 2°C / below 2°C scenarios.
*2 Source: IEA's Net Zero by 2050 — A Roadmap for the Global Energy Sector
*3 Source: IEA's World Energy Outlook 2024
*4 Source: IEA's Energy Technology Perspectives 2017
*5 Source: IPCC Fifth Assessment Report
*6 Source: IPCC Sixth Assessment Report
*7 When carbon pricing varies by country, a gap opens in international competitiveness between industries in countries with strict CO_2 regulations and those in countries with less strict regulations. This results in carbon leakage, where production and investment shrink in stricter countries (reducing CO_2 emissions) while expanding in more lenient countries (increasing CO_2 emissions). Accordingly, it is assumed that carbon pricing will be introduced in developed countries and some developing countries.

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Scope of Business and Period for Analysis

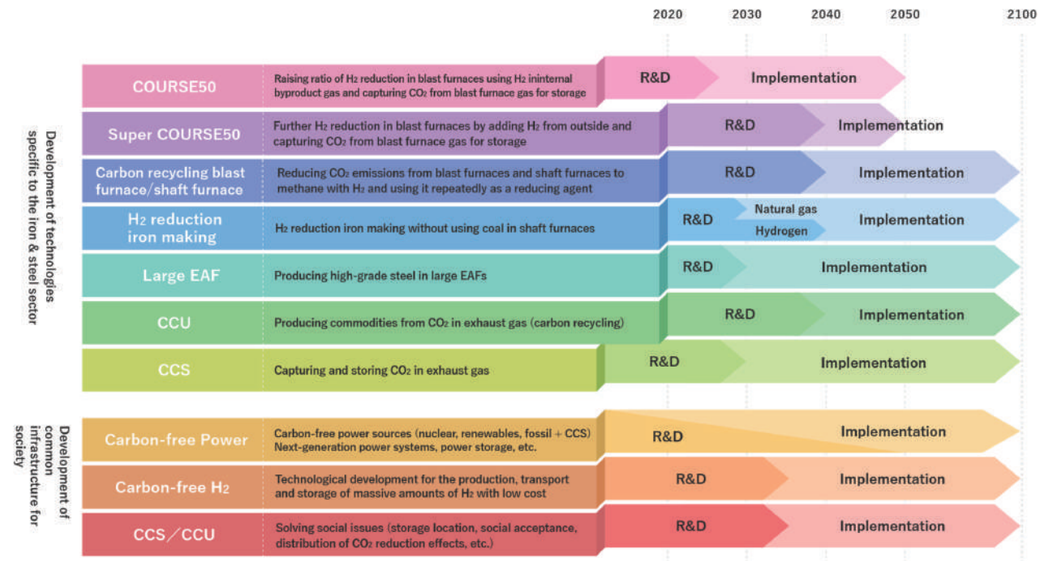
This analysis covers the following businesses: the steel business by JFE Steel, the engineering business by JFE Engineering, the trading business by JFE Shoji, and businesses carried out by some of the other Group companies. The period covered is up to 2050.

Relevance with the JISF's Long-term Vision for Climate Change Mitigation

The Japan Iron and Steel Federation (JISF) has been working toward its Commitment to a Low Carbon Society, and Phase I of this initiative ended in FY2020. From FY2021, the effort was rebranded as the Carbon Neutrality Action Plan, and the Phase II target (FY2030 target) was revised. In November 2018, the JISF also formulated and published the Long-term Vision for Climate Change Mitigation for 2030 and beyond. JFE Steel played a central role in the formulation of this long-term vision. The vision represents the industry's challenge toward realizing zero-carbon steel and lays out the prospect of achieving the 2°C scenario for steelmaking and necessity of ultra-innovative technologies to achieve the 1.5°C scenario. Furthermore, on February 15, 2021, the JISF announced the "Basic Policy of the Japan Steel Industry on 2050 Carbon Neutrality Aimed by the Japanese Government," which declares that the Japanese iron and steel industry will boldly accept the challenge of realizing zero-carbon steel.

The JFE Group's scenario analysis is intended to ensure resiliency in our Group's business strategy during the intermediate stages of these long-term challenges.

Efforts to Achieve Zero Carbon Steel



> JISF: Challenges for Carbon Neutrality (https://www.carbon-neutral-steel.com/en/)

Process to Identify Key Factors that Impact the Business

STEP 1: Examine the entire value chain from a holistic perspective and sort out factors that impact the businesses under analysis (for more information on risks and opportunities in the value chain, please refer to: > JFE Group Value Chain (P. 29)

STEP 2: Examine all factors at an overview level and identify key factors by taking into account the level of impact and stakeholder expectations and concerns

	1.5°C Scenario	4°C Scenario
Impact on Procurement		❺ Unstable raw materials procurement due to increased occurrence of climatic hazards
Impact on Direct Operation	❶ Decarbonization of iron and steelmaking process ❷ Increased needs for effective utilization of steel scrap	❻ Damage to production bases and offices caused by climatic hazards
Impact on Product and Service Demand	❸ Change in demand for automotive steel, etc. ❹ Increase in demand for solutions to enhance decarbonization	❼ National resilience

Level of Impact × **Expectations and concerns of stakeholders** → **Axis for identifying key factors**

Axis for identifying key factors: • Level of impact (possibility of risks and opportunities arising × Level of impact if manifested)
• Expectations and concerns of stakeholders

Results of Scenario Analysis

Climate change is a critical business concern for the JFE Group from the perspective of business continuity. Our steel business, which emits 99.9% of the Group's total CO_2 emissions, has been developing and applying energy-saving and CO_2 emissions reduction technologies to the steelmaking process to address decarbonization risks. At the same time, given rising demand for effective use of steel scrap, we are working to convert the steelmaking process from blast furnaces to electric arc furnaces and secure cold iron sources. Going forward, we will continue to develop processes to further reduce environmental impact, and by globally deploying our diverse technologies, we will view climate change as an opportunity and contribute to addressing related issues.

The JFE Group has developed and maintains a variety of eco-friendly products and technologies, including high-performance steel materials that contribute to energy savings when uses by customers, as well as renewable energy power generation, thereby responding to the growing demand for decarbonization solutions. Going forward, with automobiles expected to become increasingly lighter and more electrified, we will further enhance the performance of JFE's high tensile strength steel sheets and electrical steel sheets to meet the changing demand for automotive steel and contribute to the realization of a low-carbon society.

It is also important to prepare for physical risks such as unstable raw material procurement due to frequent meteorological disasters and the damage they cause. The JFE Group is strengthening its resilience to address these risks.
At the same time, we will continue to develop and disseminate the necessary technologies for achieving the long-term goal of keeping the global average temperature increase well below 2°C compared to pre-industrial levels and limiting it to 1.5°C. We will also contribute to national resilience by supplying and constructing steel for social infrastructure in preparation for the anticipated intensification of meteorological disasters.

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Analysis Results

	Changes in Society	Risks/Opportunities		Expectations and Concerns of Stakeholders for the JFE Group	Strategies/Initiatives	Financial Impact (Estimate for 2030)*	
						Details	Amount/Scale
1.5/C Scenario Key Factor ❶ **Decarbonization of Iron and Steelmaking Process**	Increasing social demand for decarbonized iron and steelmaking process	Implement innovative technology to realize decarbonization at a large scale	Opportunity	JFE will lead in the business of supplying steel materials with high environmental value by implementing innovative technologies such as electric arc furnaces	• Deploy existing low-carbon technologies • Introduce large-scale electric arc furnaces capable of manufacturing high-quality steel • Increase use of low-carbon direct reduced iron • Develop and implement innovative technologies • Conduct studies for the practical application of CCUS • Expand supply capacity for JGreeX™ • Lobby to create demand for steel materials with high environmental value • Collaborate with companies in the JISF to promote steel materials with high environmental value	Increased sales of steel materials for their environmental added value	+120 to 150 billion yen per year
			Transition risk	More investment will be needed to implement innovative technologies	• Strengthen the revenue base • Secure funds for investment/technological development • Lobby for government support • Expand sales of JGreeX™	GX-related investment amount between 2023–2030	Approx. −0.6 trillion yen
		Introduction of carbon pricing	Transition risk	• Financial burden will increase due to carbon pricing • Emission reduction targets will be more aggressive and stricter due to environmental changes	• Establish reliable CN technologies • Engage with policymakers to achieve CN	Increased carbon pricing burden	For every 1% reduction in emissions not achieved −10 billion yen per year
1.5/C Scenario Key Factor ❷ **Increased Needs for Effective Utilization of Steel Scrap**	Increasing interest for electric arc furnace method for its lower CO_2 emissions	Higher competition and prices for cold iron sources (scrap and reduced iron)	Transition risk	The cost of purchasing cold iron sources will increase	• Collaborate with customers/users to collect scraps • Establish technologies for using low-grade/difficult-to-use scrap • Participate in the reduced iron supply chain project • Expand scrap trading volume • Reduce manufacturing cost • Pass the cost to steel product prices	Increased cost of purchasing cold iron sources	Up to approx. −30 billion yen per year
		Increased electricity demand due to switching from blast furnace process to electric arc furnace process	Transition risk	Increase in the electric power consumption in the steel manufacturing process (Increase in the electric power consumption due to a decrease in bi-product gas)	• Reduce manufacturing cost • Pass the cost to sale prices • Secure a stable supply of electricity • Lobby for steel product prices	Increase in the electric power consumption by the process transition (equivalent to approx. 0.5 nuclear power plants)	Approx. −50 billion yen
1.5/C Scenario Key Factor ❸ **Change in Demand for Automotive Steel**	Shift in demand for automobiles	Changes in the product mix due to EV production, etc.	Opportunity	Sales will increase for electrical steel sheets used in EV motors	• Strengthen production capacity for electrical steel sheets • Establish processing bases and supply chain structure for steel sheets globally	Increased sales of electrical steel sheets	Production capacity for top-grade non-oriented electrical steel sheets for main xEV motors will be tripled compared to FY2024
			Opportunity	Sales will increase for high-tensile steel due to improved collision safety performance	• Expand production capacity for ultra-high-tensile strength steel sheets	Increased sales due to rise in orders for ultra-high-tensile strength steel sheets	The new hot-dip galvanizing line (CGL) will increase annual production capacity for ultra-high-tensile strength steel sheets used in vehicles by 360,000 tonnes
			Transition risk	Sales will decrease for steel materials due to a shift away from internal combustion engines and a shift toward using multi materials	• Develop high-performance products	Decreased sales of steel sheets for automobiles	Minimal impact
1.5/C Scenario Key Factor ❹ **Increase in Demand for Solutions to Enhance Decarbonization**	Transition to decarbonized society	Increase in demand for decarbonization solutions businesses	Opportunity	Renewable energy-related businesses will expand	• Expand the business undertaking the entire construction and operation of renewable energy power plants (offshore wind, geothermal, solar, etc.) • Develop and implement CCUS solutions and commercialize green hydrogen and ammonia-related technologies	Sales of JFE Engineering's CN-related business	Approx. 31 billion yen per year
			Opportunity	Waste-to-resource-related businesses will expand	• Expand the business undertaking the entire construction and operation of plants that make optimal use of waste (waste-to-energy power generation, recycling, etc.)	Segment profits of JFE Engineering's waste-to-resource-related business	Approx. 37 billion yen per year
			Opportunity	Business of disseminating eco solutions (advanced energy-saving technologies developed and applied in Japan) to developing countries will expand	• Support solutions business for low-carbon steelmaking technologies	Increased sales of overseas solutions business	Tens of billions of yen
4°C Scenario Key Factor ❺ **Unstable Raw Materials Procurement due to Increased Occurrence of Climatic Hazards**	Increasingly devastating climate hazards caused by temperature rise	Raw materials procurement becomes unstable	Physical risk	• Sales will decrease due to reduced production • Raw material cost will increase	• Establish alternative procurement and dispersed supplier bases, engage in stockpiling • Acquire raw material rights	Decreased sales of steel materials due to raw material shortages	For every 1% decrease in annual sales volume Approx. −30 billion yen/year
4°C Scenario Key Factor ❻ **Damage to Production Bases and Offices Caused by Climatic Hazards**	Increasingly devastating climate hazards caused by temperature rise	Damage to manufacturing bases from typhoons, heavy rain, and droughts	Physical risk	Sales will decrease due to reduced production	• Implement measures against flood and drought damage at manufacturing bases	Decreased production and sales due to flood and drought	No impact, as measures have already been taken
4°C Scenario Key Factor ❼ **National Resilience**	Increasingly devastating climate hazards caused by temperature rise	Strengthen infrastructures and disaster resiliency	Opportunity	Contribute to infrastructure reinforcement and longer service life	• Strengthen infrastructure reinforcement and longer service life-related businesses in Japan and overseas • Strengthen sales of infrastructure-related steel materials	Increased segment profit in JFE Engineering's infrastructure construction business	Assuming the 1.5°C scenario, 12 billion yen per year, with further increase

Note: Assessment results are estimated outcomes based on scenario analysis and do not represent actual performance.

Overview of Scenario Analysis Assessment and JFE Group's Focus

Timeframe: short term (2027) ⇒until 2027 medium term (2035) ⇒until 2035, long term (2050) ⇒until 2050 (final)

FOCUS Key Factor (1) Decarbonization of Iron and Steelmaking Process

Implementation of innovative technologies to realize large-scale decarbonization

Supply steel materials with high environmental value through implementation of innovative technologies such as electric arc furnaces

short term (2027) Medium term (2027)

JFE Steel has actively sought to improve efficiency and decarbonize the iron and steelmaking processes by developing energy-saving technologies and has established process technologies boasting the world's top energy efficiency. Taking advantage of the increasing public demand for decarbonized iron and steelmaking processes, we have the capacity to supply steel products with high environmental value, manufactured by deploying the low-carbon technologies we have developed across our steelworks.

The global drive toward decarbonization is intensifying, and with rising demand to reduce GHG emissions across entire supply chains, interest is rapidly growing for low-GHG emission steel products, particularly in industries such as automotive. In the IEA's Net Zero by 2050 Scenario, the share of steel production using the electric arc furnace method is projected to increase to 37% by 2030 and 53% by 2050. Going forward, demand is expected to expand for steel products made with the electric arc furnace method, which emits fewer GHG emissions.

During this transition, JFE Steel will introduce innovative electric arc furnaces capable of producing high-performance, high-quality steel materials that could previously only be manufactured using the blast furnace process. In addition, we will cut overall GHG emissions from the steelmaking process by using direct reduced iron with low carbon emissions.

Since the first half of FY2023, we have been supplying JGreeX™, a brand of green steel products that significantly reduces GHG emissions in the steelmaking process compared to conventional products. Since it is not immediately possible to achieve zero GHG emissions, we allocate the reductions created by our emission-reduction technologies to selected steel products by applying the mass balance approach and supply them as steel products with environmental value. Going forward, we will contribute to the decarbonization of society by expanding our capacity to supply JGreeX™. To broaden public recognition of these efforts, we are actively lobbying to stimulate demand for steel products with environmental value, while promoting adoption in collaboration with other JIFS member companies.

long term (2050)

Over the long term, to achieve carbon neutrality by 2050, as stated in the JFE Group Environmental Vision for 2050, we are pursuing the development of carbon-recycling blast furnaces (CR blast furnaces), utilization of hydrogen through the direct hydrogen reduction method, and manufacturing methods for high-quality steel using the electric arc furnace method. In particular, the technology that combines a CR blast furnace with CCU is an ultra-innovative technology for achieving net zero CO_2 emissions by drastically reducing CO_2 emissions from the blast furnace process, enabling efficient mass production of high-grade steel and allowing the reuse of CO_2 in the blast furnace. As for the CO_2 that cannot be fully reused in the blast furnace, we are also studying the practical application of carbon capture, utilization, and storage (CCUS) technologies to pursue further reduction potential.

More investment needed to implement innovative technologies short term (2027) medium term (2035)

The introduction of electric arc furnaces and ultra-innovative technologies carries the risk of increased investment burden to achieve carbon neutrality. At JFE Steel, decisions on the necessary capital investments to achieve the FY2030 GHG reduction target are nearly complete, with about 0.4 trillion yen in GHG reduction investments decided between FY2021 and FY2024. In addition, we estimate that about 0.6 trillion yen of investments will be required by 2035.

Sustaining these large-scale investments will require that we strengthen our revenue base and secure funds for investment and technology development. JFE Steel is promoting research and development using external funds such as the Green Innovation Fund while also lobbying to obtain government support.

In addition, through the expanded sales of JGreeX™, a green steel product that significantly reduces GHG emissions, we will encourage the market penetration of environmentally valuable products and achieve profitability while protecting the environment. With these initiatives, we will pursue sustainable growth toward realizing a decarbonized society and securing long-term competitiveness.

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long term (2050)

Although the measures to be taken under the 2°C and 1.5°C scenarios will not significantly differ, we must consider scale and scope. In the case of the 1.5°C scenario, it will be necessary to further accelerate the development and implementation of decarbonization technologies, which will require even greater research and development and capital investment expenditures. In addition, the development of infrastructure to stably supply inexpensive, abundant green hydrogen and electric power will be a prerequisite. In addressing these issues, it will be necessary for society as a whole to consider how to share the costs and for the government to formulate long-term strategies for the supply of green hydrogen and electric power, in collaboration with society.

Financial burden will increase due to carbon pricing, and emission reductions targets will be more aggressive and stricter due to environmental changes

short term (2027) medium term (2035) long term (2050)

Various carbon pricing systems are being introduced around the world, and in Japan an emissions trading system (GX-ETS) based on the GX Promotion Act is scheduled to be fully introduced starting in FY2026 to help achieve the global goal of carbon neutrality by 2050. In Europe, discussions are progressing on the Carbon Border Adjustment Mechanism (CBAM); ahead of full implementation in 2026, a transitional period began on October 1, 2023, imposing reporting obligations on the relevant operators, and we are complying with this requirement.

Carbon pricing systems in Japan and overseas vary in unit price and the approach to taxable items, and there are currently many uncertainties. It will be necessary to appropriately anticipate impacts while monitoring future developments. On the other hand, such systems can also become important mechanisms for ensuring that steel products with environmental value are properly recognized and reflected in market pricing.

JFE Steel is proactively engaging in carbon neutrality, including making necessary recommendations to the government to ensure that the carbon pricing system is appropriately designed. In addition to its involvement in the design of such systems, the Company will continue research and development to establish reliable carbon neutrality technologies and reduce emissions grounded in technological evidence, enabling flexible and sustainable responses to changes in policy and the operating environment.

FOCUS Key Factor (2) Increased Need for Effective Utilization of Steel Scrap

Cost of purchasing cold iron sources (scrap/direct reduced iron) will increase

short term (2027) medium term (2035) long term (2050)

The electric arc furnace method, which has low CO_2 emissions, is attracting increasing global attention, and countries are introducing electric furnace facilities. At the JFE Group, in addition to maximizing the use of existing electric arc furnaces, we have decided to introduce an electric arc furnace at the East Japan Works (Chiba District) and an innovative electric arc furnace at the West Japan Works (Kurashiki District). Going forward, demand is expected to increase even further for cold iron sources such as scrap and direct reduced iron, raising concerns about the risk of higher costs for procuring the cold iron sources needed to maintain steel quality and ensure stable production. We are responding by strengthening collaboration with customers and users in scrap collection to ensure a stable supply of high-grade scrap. We are also advancing research and development to establish technologies for using low-grade and difficult-to-use scrap, to expand the amount of scrap handled and promoting the effective use of resources.

In addition, we are taking part in a Middle East direct reduced iron project to ensure stable procurement of direct reduced iron. Through these activities, we are reducing procurement risks for cold iron sources while lowering manufacturing costs.

Furthermore, based on the market evaluation of steel products with high environmental value, we are seeking to sustainably operate our business by appropriately passing these costs on to steel prices.

Power demand will increase due to converting from blast furnace process to electric arc furnace process

short term (2027) medium term (2035) long term (2050)

Converting from blast furnaces to electric arc furnaces requires large amounts of electric power. In addition to the power needed to melt cold iron sources in electric arc furnaces, power will also be needed to make up for the heat sources previously supplied through byproduct gases generated in blast furnaces and other facilities, which had been used in reheating furnaces and elsewhere within steelworks. Since this increase in power demand involves the risk of higher manufacturing costs, we are working to reduce manufacturing costs at JFE Steel through more efficient processes and technological innovation. Furthermore, based on the market evaluation of steel products with high environmental value, we are seeking to sustainably operate our business by appropriately passing these costs on to sales prices. In addition, stable operation of the electric arc furnace process requires a large and stable supply of power at competitive prices. To this end, we are lobbying the government for stable power supply and pricing and recommending policies for institutional development and reinforcing infrastructure.

FOCUS Key Factor (3) Change in Demand for Automotive Steel

Changes in the product mix due to EV production and other factors

Sales volume of electrical steel sheets for EV motors will increase

short term (2027) medium term (2035) long term (2050)

The widening adoption of electric vehicles is expected to change the composition of steel demand. In addition to the expansion of demand for electrical steel sheets for motors, the product mix of steel is diversifying to encompass lighter-weight steel to offset the increase in weight from batteries and stronger frames to protect batteries. At the JFE Group, we view this change as an opportunity and are bolstering our ability to respond. First, as part of strengthening manufacturing capacity for electrical steel sheets, we are proceeding with construction to triple our production capacity of non-grain-oriented electrical steel sheets at the West Japan Works (Kurashiki District) compared to current levels. In addition, we are building a global processing and distribution system for electrical steel sheets to respond to the worldwide expansion of the EV market.

Sales volume of high-strength steel sheets will increase due to improved collision safety

short term (2027) medium term (2035) long term (2050)

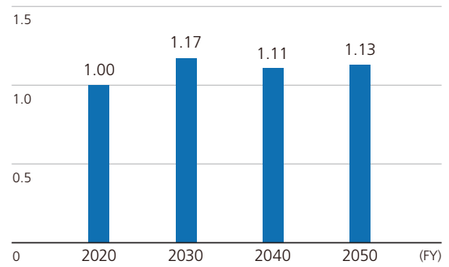
To achieve both weight reduction and collision safety performance, we have decided to construct a new continuous hot-dip galvanizing line (CGL) at the West Japan Works (Fukuyama District) to expand production capacity for ultra-high-tensile-strength steel sheets. On the product development front, in addition to the commercialization of 1.5 GPa-grade cold-rolled steel sheets, we have developed a multi-material structure that maximizes the performance of steel by incorporating a small amount of resin. This structure sandwiches a highly ductile, strongly adhesive resin between a main component made of ultra-high strength steel and a thin steel plate component, thereby achieving further weight reduction and improved collision safety in automotive body frame components.

Steel sales volume will decrease due to material substitution in multi-materialization

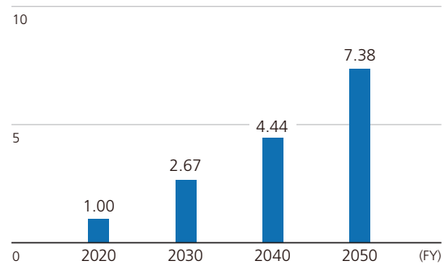
short term (2027) medium term (2035) long term (2050)

Shifting to materials such as aluminum and carbon fiber reinforced plastics (CFRP) to reduce vehicle weight poses potential risk. These materials have higher manufacturing costs than steel and generate more CO_2 emissions over their life cycle. In the 1.5°C scenario, which assumes the introduction of carbon pricing, the price gap between steel and these materials could further widen. As a result, while the use of multi-material designs is expected to progress to some extent in luxury vehicles, adoption by mass-market vehicles is likely to remain limited. Even if all panel components, such as the doors of luxury vehicles, were replaced with aluminum, the resulting weight reduction would affect only about 5% of the total body materials across both luxury and mass-market vehicles. Taking into account the anticipated increase in automobile production volume, the impact on steel demand for vehicle bodies is expected to remain limited.

Estimated World Demand for Automotive Special Steel



Estimated World Demand for Automotive Electrical Steel Sheets



Vertical axis: Steel demand (comparison by year with the year 2020 as 1.00)
Source: Estimated by JFE Holdings based on the reports from METI's Strategic Commission for the New Era of Automobiles

FOCUS Key Factor (4) Increase in Demand for Solutions to Enhance Decarbonization

Increase in demand for decarbonization solution businesses

Expansion of renewable energy-related business short term (2027) medium term (2035) long term (2050)

Demand is expected to continue rising for power generation plants using renewable energy that does not emit carbon. In the engineering business, we are expanding operations through the integrated provision of engineering, procurement, construction, and operation and maintenance (EPC and O&M*4) for renewable energy plants, including biomass power generation*1, geothermal power generation*2, solar power generation*3, and wind power generation.
The Japanese government has positioned offshore wind power generation as a pillar of its Green Growth Strategy for realizing carbon neutrality by 2050. In this context, efforts are being promoted on a Groupwide basis, led by JFE Engineering in the manufacture of seabed-fixed foundation structures such as monopiles. We also built Japan's first monopile foundation manufacturing plant, which began operation in April 2024*5. The steel business supplies large, heavy plates, and the trading business develops supply chain management, including the provision of information on Taiwan and potential demand regions such as East and Southeast Asia.

In addition to renewable energy, we are focusing on developing and implementing carbon capture, utilization, and storage (CCUS) solutions, as well as commercializing green hydrogen and ammonia-related technologies. Strengthening these initiatives for next-generation technologies will accelerate the delivery of solutions for realizing a decarbonized society and open up business opportunities with high environmental value.

> *1 The JFE Engineering Corporation's biomass power generation (Japanese only) (https://www.jfe-eng.co.jp/products/power/ele07.html)
> *2 The JFE Engineering Corporation's geothermal power generation plant (https://www.jfe-eng.co.jp/en/products/power/gene01.html)
> *3 The JFE Engineering's solar power generation (Japanese only) (https://www.jfe-eng.co.jp/products/power/ele05.html)
The JFE Technos Corporation's solar power generation (Japanese only) (https://www.jfe-technos.co.jp/products/solar/)

*4 Engineering, procurement, and construction (EPC) and operation and maintenance (O&M) business

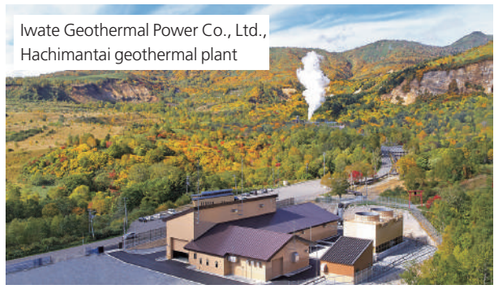
> *5 Completion of Japan's first manufacturing base of fixed-bottom foundation (monopile) for offshore wind turbines (https://www.jfe-eng.co.jp/en/news/2024/20240401.html)

Expansion of waste-to-resource-related business short term (2027) medium term (2035) long term (2050)

From the perspective of resource circulation and effective use, efforts are also underway at waste treatment facilities to increase power generation from waste-derived sources. The engineering business is focusing on fully automated operation*6 of waste incinerators, which makes it possible to increase power generation. In addition, we are actively engaged in the electricity retail business*7, which uses renewable energy as the main power source, and supporting the establishment and operation of new regional electricity retail companies*8, focused on local production and consumption of energy using renewable energy.

JFE Engineering is going beyond conventional energy optimization site by site to develop a Multisite Energy Total Service (JFE-METS)*9 that optimizes energy by collectively managing multiple sites. This service achieves overall energy savings and reductions in CO_2 by analyzing actual energy consumption at multiple sites, deploying and optimizing energy-related facilities at each site, and enabling energy interchange, including at remote sites.

Waste-to-energy power generation plant



Iwate Geothermal Power Co., Ltd., Hachimantai geothermal plant

Geothermal power generation plant

- *6 JFE Engineering's BRA-ING Pre-release (Japanese only) (https://www.jfe-eng.co.jp/news/2020/20200727.html)
- *7 Urban Energy Corporation's electricity retail business (Japanese only) (https://u-energy.jp/service/retail.html)
- *8 Urban Energy Corporation's regional electric power support business, targeting local governments (Japanese only) (https://u-energy.jp/service/municipality.html)
- Establishing regional electricity retail companies in partnership with local municipal governments (CSR Report 2022, P. 116) (https://www.jfe-holdings.co.jp/en/common/pdf/sustainability/data/2022/csr2022e.pdf)
- *9 JFE Engineering's "Multisite Energy Total Service (JFE-METS)" (Japanese only) (https://www.jfe-eng.co.jp/news/2019/PDF/20200130.pdf)

Expansion of low-carbon businesses (eco-solutions)

short term (2027) | medium term (2035) | long term (2050)

There is ample room in the steel industry for disseminating energy-saving steel technologies (eco-solutions) in countries such as China, which accounts for about 50% of global crude steel production, as well as in India and ASEAN countries, where further economic growth and expanded production are expected. Internationally transferring and deploying advanced energy-saving technologies already in use in Japan is expected to yield a potential reduction of more than 400 million tonnes of CO_2 worldwide in FY2030, of which Japan's contribution is projected to be approximately 80 million tonnes of CO_2.

JFE Steel has launched JFE Resolus™, a solution business that applies the accumulated manufacturing and operational technologies from steelmaking to address issues faced by a wide range of industries beyond the steel industry. As the business environment and marketplace undergo significant change, we are further enhancing our own manufacturing technologies while providing the JFE Group's technologies and know-how under the JFE Resolus™ brand, working in concert with customers to achieve sustainable growth.

- JFE Steel's Solution Business (https://www.jfe-steel.co.jp/en/products/solution/)

FOCUS Key Factor (5) Unstable Raw Material Procurement due to Increased Occurrence of Climatic Hazards

Unstable material procurement

short term (2027) | medium term (2035) | long term (2050)

JFE Steel is taking multiple precautions against the risk of instability in the procurement of steelmaking raw materials associated with climate change. In Australia, a source of our major raw materials, the frequency of typhoons is expected to double in the future, and our ability to supply steel products could be impacted if a suspension of production and shipping operations results in a depletion of our raw material inventories. To address this risk, we are strengthening alternative procurement channels and diversifying raw material sources. Specifically, we are gaining flexibility by conducting spot procurement from Chinese port inventories, increasing procurement from nearby sources such as Indonesia, making advance purchases, and increasing the number of contracts for different grades shipped from unaffected regions of Australia. In addition, we are mitigating risks of supply interruptions by stockpiling raw materials at Philippine Sinter Corporation, a Group company, and using external yards. In addition, JFE Steel has acquired a 10% interest in the Blackwater coal mine owned by Australian steelmaking coal supplier Whitehaven Coal Limited. This is a key means for securing the stable procurement of high-quality raw materials amid increasing difficulty in developing or expanding new steelmaking coal projects.

As the decarbonization of steelmaking processes is expected to foster the diversification of required raw materials, we will continue developing and diversifying procurement sources for those raw materials with due consideration for climate change risks.

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FOCUS Key Factor (6) Damage to Production Bases and Offices Caused by Climatic Hazards

Damage to manufacturing bases from typhoons, heavy rain, and drought

short term (2027) | medium term (2035) | long term (2050)

We are taking action to minimize damage with the assumption that typhoons and heavy rains will become stronger and that the incidents of disasters comparable to the torrential rain in Western Japan in 2018 will rise. JFE Steel has already implemented flood and drought countermeasures at production sites to minimize the impact of climate-related hazards, and at this point, no significant impacts are anticipated.

Specifically, we have invested approximately 6.5 billion yen in flood disaster prevention at steelworks and completed upgrades to drainage facilities and other precautions. In addition, we have invested approximately 3.5 billion yen in drought countermeasures and introduced seawater desalination equipment at several steelworks. Since the drought disaster of 1994, no severe comparable events have occurred, and we are confident that existing countermeasures are sufficient to maintain stable operations even if their frequency increases.

Furthermore, since all of our steelworks are located along the coast, inundation risks from rising sea levels must also be taken into account. However, the anticipated sea level rise of about 20–30 cm by around 2050 (70 cm by 2100 at the extreme impact of climate change) is not at the scale at which storm surge inundation would occur. Going forward, we will continue to analyze the status of climate-related hazards and strengthen required countermeasures.

FOCUS Key Factor (7) National Resilience

Strengthened infrastructure and disaster measures

short term (2027) | medium term (2035) | long term (2050)

The JFE Group takes seriously the increased frequency and severity of recent climatic hazards in Japan and overseas. Having one's daily life put in danger is a huge risk. It is our mission to promote disaster prevention and mitigation as well as national resilience to maintain vital infrastructure that is essential to daily life and economic activities.

The JFE Group is able to draw upon its collective strengths to contribute in many ways—for example, by protecting key structures from earthquakes using structural steel such as high-strength H-shaped steel and steel pipe piles as well as steel sheet piles, reinforcing embankments that are prone to bursting, and providing disaster prevention products such as hybrid tide embankments and permeable steel slit dams. Our engineering business can also handle a wide range of infrastructure construction projects, including bridges, gas, water and sewage, and pipelines.

- Hybrid Tide Embankments (P. 86)
- Permeable Steel Slit Dams (P. 86)
- Terre Armée Method (P. 87)

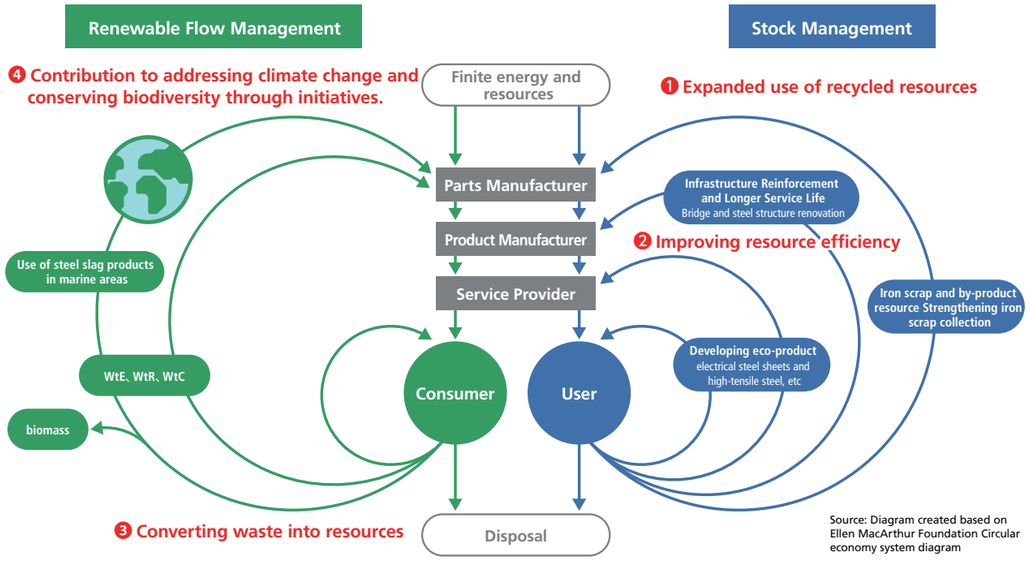
Links to information about the JFE Group Environmental Vision for 2050 and Climate Change Scenario Analysis
Commitment to a Low Carbon Society: Policy Engagement (P. 90)
Targets and Results Related to Climate Change: FY2024 KPI Results and FY2025 KPIs (P. 19)
Initiatives on Climate Change: Initiatives to Address Climate Change Issues (P. 53)

Initiatives to Transition to a Circular Economy

Basic Policy

The JFE Group views transition to a circular economy as indispensable for realizing a sustainable society, and we are taking action to shift the overall economic system of society from a conventional linear economy to a circular economy. In these efforts, we are using digital technologies and collaborating with government, municipalities, and customers throughout the value chain, extending beyond the Group's framework. We are promoting initiatives from three perspectives: converting byproducts and waste into resources, developing eco-product/eco-solution technologies with high resource efficiency, and expanding the use and sales of recycled resources. These activities will also contribute to addressing environmental issues such as climate change and biodiversity conservation and nature positive.

Circular Economy Concept and Initiatives



Source: Diagram created based on Ellen MacArthur Foundation Circular economy system diagram

Iron is easily recovered, highly recyclable, and can be infinitely recycled as raw material for the same steel products. The JFE Group is also recovering and using steel scrap as well as developing initiatives for transitioning to a circular economy.
Our steel business using recycled resources by effectively using byproduct resources such as dust, sludge, and slag generated in the steelmaking process and using waste plastics as blast furnace raw materials. We are also improving resource efficiency by providing high-quality, high-performance steel products.

Our engineering business is delivering solutions for resource circulation by constructing plant and infrastructure facilities such as biomass fuel plants for food waste and sewage sludge, and waste-to-energy plants, as well as operating and managing these facilities on consignment. In addition, we are promoting a circular economy through recycling businesses for PET bottles and plastics, and energy supply businesses.

Our trading business is procuring environmentally sound materials such as biomass fuel by drawing upon our supply chain management network.

Since the steelmaking process consumes large volumes of fresh water for cooling and cleaning products and facilities, the efficient use of water resources, taking into account the impact on water sources and surrounding stakeholders, is a key issue. In response, we are reducing water intake by building systems to purify and recycle used water as much as possible at steelworks. In addition, we are raising employee awareness of water conservation and continuously minimizing environmental impact through reduced and more efficient water use. Furthermore, we place priority on maintaining a safe and sanitary water

environment in the areas surrounding our manufacturing sites, implementing measures to protect water quality to have the least possible impact on local water resources, and actively preserving the living environment of local residents.

For details on the recycling businesses of JFE Steel and JFE Engineering, please see:
> List of JFE Group's recycling businesses (https://www.jfe-holdings.co.jp/en/common/pdf/sustainability/environment/resource/resource01.pdf)

Governance

The JFE Group Environmental Committee, chaired by the president of JFE Holdings and operating under the JFE Group Sustainability Council, sets goals for environmental protection, monitors, and works to improve the Group's overall environmental performance. Key issues for corporate management are deliberated at the Group Management Strategy Committee as well and reported to the Board of Directors. The board oversees environmental challenges by discussing the reports. Additionally, specialized committees set up by JFE Group operating companies and affiliates implement specific activities.

> Framework for Environmental Management (P. 47)

JFE Group Initiatives to Transition to a Circular Economy

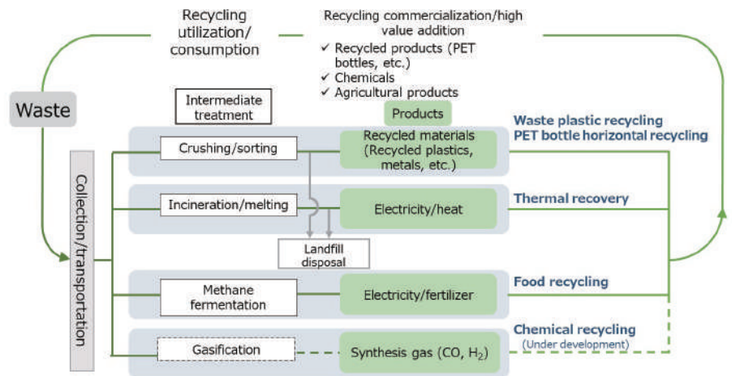
Conversion of Byproducts and Waste into Resources

The JFE Group incorporates the circular economy concept into its business activities to ensure the responsible use of limited resources, reduce environmental impact, and realize a sustainable society. In particular, we are reusing byproducts and waste as new resources as ways to circulate resources and minimize waste.

EN Building a Recycling Value Chain

As one of Japan's leading companies capable of providing one-stop solutions from the collection and transportation of waste to the intermediate treatment and recycling of recovered products, JFE Engineering is striving to establish a recycling value chain, including collaboration with partner companies and municipalities.

Recycling Value Chain



In addition, JFE Engineering is constructing and operating waste-to-energy facilities and waste treatment facilities overseas in alignment with the Ministry of the Environment's National Action Plan for Marine Plastic Litter, formulated in 2019.

Furthermore, J&T Recycling Corporation, a Group company of JFE Engineering, supports the activities of the Japan Clean Ocean Material Alliance (CLOMA), which was established to support activities that address the problem of marine plastic litter. As a member of CLOMA, the company is recycling PET bottles and plastics.

EN Promoting Plastic Recycling

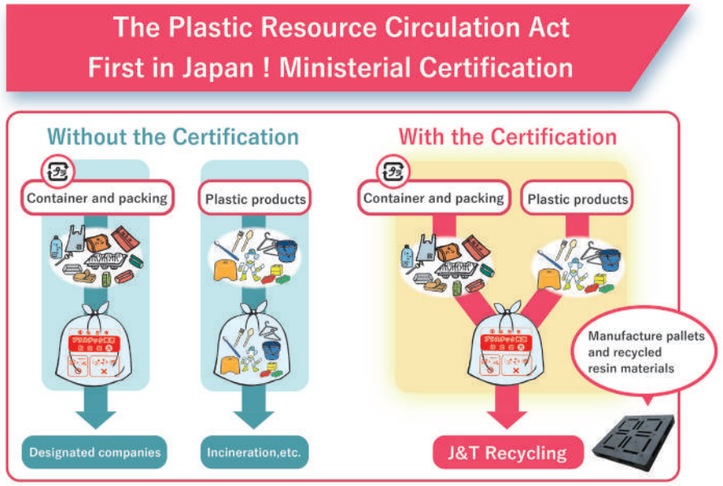
J&T Recycling Corporation joined the recycling plan formulated by Sendai City under the Plastic Resource Circulation Act in September 2022 and, for the first time in Japan, obtained certification from both the Minister of the Environment and the Minister of Economy, Trade and Industry. Following this, in April 2023, the company launched the integrated collection of plastic products. In Sendai, product plastics that had previously been incinerated can now be collected with plastic containers and packaging for more efficient recycling.

In July 2023, J&T Recycling Corporation and the JR East Group jointly established J Circular System Corporation in Kawasaki, Kanagawa Prefecture to promote plastic recycling in Japan. This facility, one of the largest in Japan, is able to process 200 tonnes of used plastics per day and is set up to handle the entire process, from sorting to recycling into new products. The plant began full-scale operation in April 2025 and can directly accept unsorted used plastics collected by municipalities and businesses. This makes it possible to recycle used plastics that had previously been incinerated because they were difficult to sort. The collected used plastics are subjected to advanced sorting, and depending on their characteristics, they are recycled as material recycling or chemical recycling in collaboration with nearby recycling businesses, thereby enhancing resource circulation.

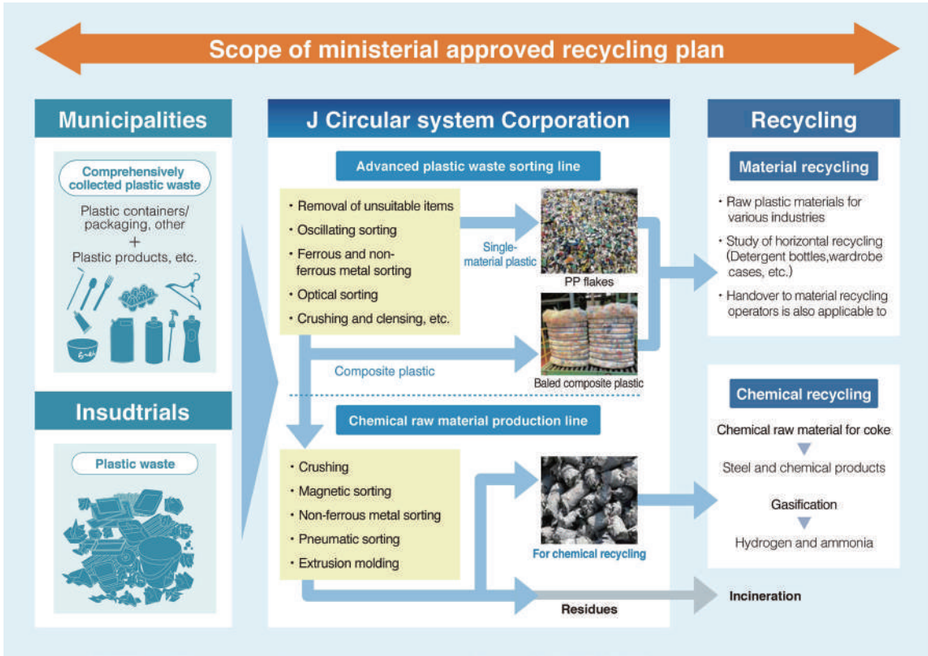
At present, recycling plans formulated under the Plastic Resource Circulation Act by Kawasaki City, Fujisawa City, and Ota Ward have received ministerial certification, and this is the first case in Japan where certification has been obtained through the collaboration of multiple municipalities and recycling businesses. With this certification, a large portion of the used plastics separated and collected as household waste from municipalities and citizens can now be recycled at this facility.

With its unprecedented recycling system, J Circular Systems aspires to become a forerunner in advanced plastic resource circulation and in promoting decarbonization while contributing to the realization of a sustainable, recycling-oriented society.

Ministerial Certification of the Recycling Plan in Sendai City



Scope of Municipal Recycling Plans Related to J Circular Systems



> Japan's First! J&T Recycling Corporation Participates in Sendai City's Plastic Waste Recycling Project (https://www.jt-kankyo.co.jp/en/topics/2022/10/20221003.html)

> J&T Recycling Corporation Establishes J Circular System Corporation—Its Plastic Recycling Facilities on the Kawasaki Waterfront Have the Largest Scale in the Tokyo Metropolitan Area (Japanese only) (https://www.jfe-eng.co.jp/news/2024/20240109.html)

EN orizontal Recycling of PET Bottles

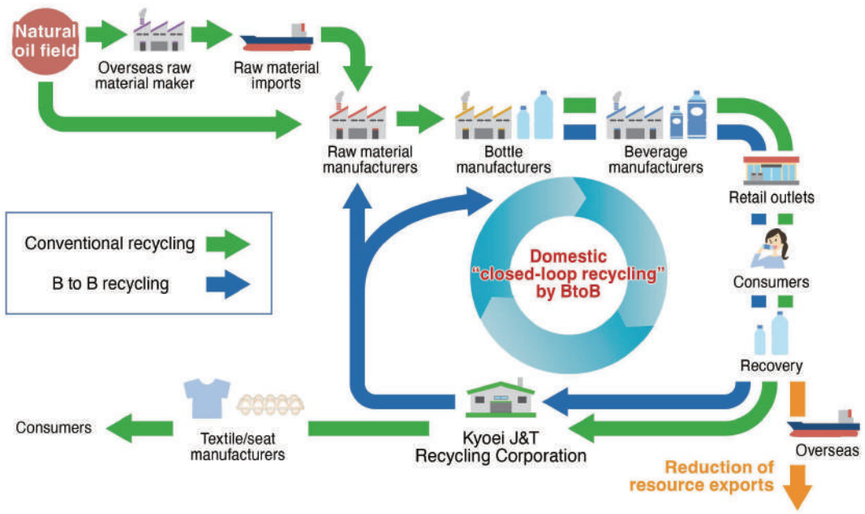
Kyoei J&T Recycling Corporation*1, a subsidiary of J&T Recycling Corporation*2, launched its flake manufacturing plant in October 2021 and completed its pellet production line in April 2022 to begin full-scale commercial operation. Its bottle-to-bottle (B-to-B) technology facilitates repeated recycling (closed-loop/horizontal recycling) an unlimited number of times, achieving a 63% reduction in CO_2 compared to the production of PET bottles from crude oil (calculated by Mitsubishi UFJ Research and Consulting Co., Ltd.), and was included as an example*3 of addressing resource and environmental constraints in the White Paper on Manufacturing Industries (Monozukuri) 2010, published by the Ministry of Economy, Trade and Industry.

Beverage manufacturers and retailers are pursuing a variety of ways to boost the recycling rate of PET bottles (B-to-B). In response to these needs, the B-to-B business of Kyoei J&T Recycling significantly contributes to realizing a circular economy and reducing CO_2 emissions by curbing the use of natural resources.

*1 A joint venture of J&T Recycling Corporation and Kyoei Sangyo Co., Ltd.
*2 A Group company of JFE Engineering
*3 By Kyoei Sangyo Co., Ltd.

Exterior of West Japan PET Bottle MR Center

Horizontal Recycling Flow of PET Bottles



> Kyoei J&T Recycling Corporation's West Japan PET Bottle MR Center Begins Full Commercial Operations
(https://www.jt-kankyo.co.jp/en/topics/2022/04/20220421.html)

> Establishment of Joint Venture between J&T Recycling Corporation and Kyoei Sangyo Co., Ltd. — Construction of Japan's Largest PET Bottle Recycling Resin Plant Contributing to the Shift to B-to-B (Japanese only)
(https://www.jfe-eng.co.jp/news/2020/20200507.html)

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EN Recycling Food Waste

Sapporo Bio Food Recycling Corporation of the J&T Recycling Corporation Group has constructed a new plant to update and expand the capacity of its food recycling power generation plant in Sapporo City, and the plant started operation in November 2024. It is Hokkaido's largest food biogas power generation facility*1, and J&T Recycling operates food recycling power generation businesses*2 at six locations nationwide, including this site.

In 2018, Sapporo City formulated the "2nd Sapporo City Basic Environmental Plan" and has been actively promoting waste reduction and resource recycling initiatives toward achieving zero carbon city status by 2050. While the progress of the plan shows significant reduction in both "household waste" and "business waste" over the past decade, the volume and utilization rate of food waste remained a challenge. To address this issue, Sapporo Bio Food Recycling has renovated its existing plant in the Sapporo Recycling Complex and significantly strengthened its processing capacity. The new plant will be capable of processing up to 100 tons per day, handling not only the existing 68 tons per day of municipal food waste from Sapporo City school meal centers but also industrial food waste from food manufacturing plants in and around Sapporo City.

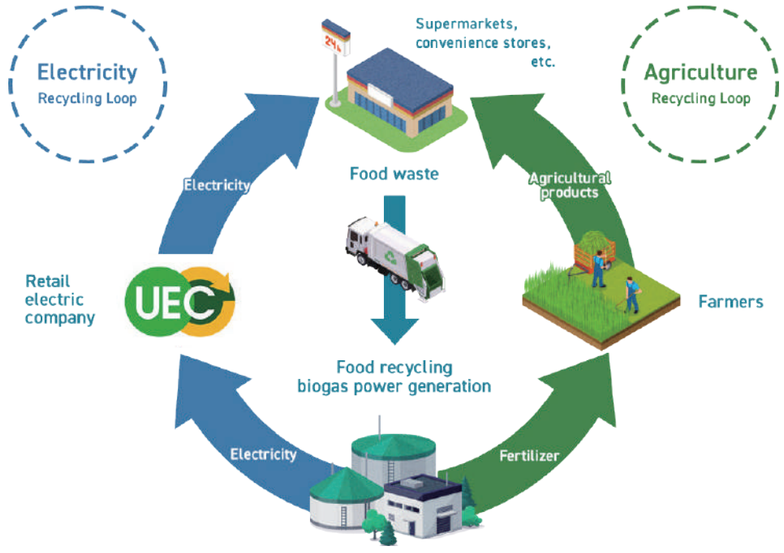
The new facility generates electricity by fermenting food waste using microorganisms and using the produced methane gas as fuel. The power output is 1,980 kW, with an expected annual power generation of approximately 16,420 MWh (equivalent to the annual electricity consumption of about 4,560 households). The generated electricity will be sold through the "Feed-in Tariff" system and through Urban Energy Corporation (UEC), JFE Engineering's retail electricity subsidiary, aiming to promote local production and consumption of renewable energy. Furthermore, the fermentation residue produced during the treatment process will be entirely converted into fertilizer. This will realize a local so-called "double recycling loop" that converts food waste into both clean power and fertilizer.

The JFE Engineering Group will continue to work with local communities to promote improved food recycling rates and local production and consumption of renewable energy, contributing to the realization of a recycling-based society.

*1 Largest biogas power generation facility using food waste as raw material in Hokkaido (according to our research)

> *2 Food recycling business of the J&T Recycling Group (https://www.jt-kankyo.co.jp/en/business/#sec03)

Double Recycling Loop: Creating Renewable Energy and Fertilizer from Food Waste



Food recycling power generation plant (SAPPORO BIO FOOD RECYCLING)

EN Development of a Waste Chemical Recycling Technology (C-PhoeniX Process™) through the Use of the Green Innovation Fund

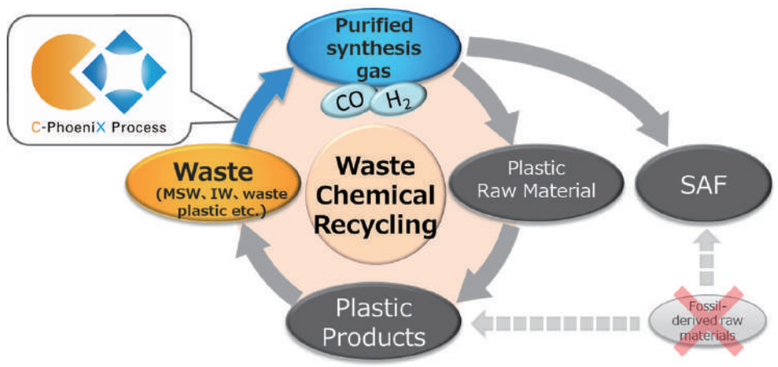
JFE Engineering responded to a public invitation to participate in the "Green Innovation Fund Project/Achieving Carbon Neutrality in Waste and Resource Circulation" project of the New Energy and Industrial Technology Development Organization (NEDO) in February 2024 and was selected*. Following more than two decades of trial and error, JFE Engineering established a technology to convert domestic and other kinds of waste into processable gases. The company's unique gasification furnace has the longest running record in the world. The company is currently developing a new gasification technology, C-PhoeniX Process™ (or CX Process™), to improve and ultimately replace the current technology for carbon neutrality.

The C-PhoeniX Process™, based on the company's accumulated technological expertise, exhibits an advanced capability to constantly produce high-quality, purified synthesis gases, consisting primarily of hydrogen and carbon monoxide, from a wide range of waste materials. Once established, this technology will be applicable to the waste-to-chemical (WtC) process, enabling many types of waste to be recycled for different purposes, including the production of plastic, sustainable aviation fuel (SAF), and hydrogen.

Through the use of the national Green Innovation Fund, JFE Engineering is set to develop a waste chemical recycling technology in cooperation with SEKISUI CHEMICAL Co., Ltd., which owns a technology for converting waste-originated purified synthesis gases into ethanol. In the meantime, JFE Engineering will accelerate the development of its C-PhoeniX Process™ for the advancement and social implementation of WtC. Development under the Green Innovation Projects is scheduled to be completed by the end of FY2030. JFE Engineering will deploy these two technologies, once established, overseas as well as in Japan, and will thereby contribute to the achievement of carbon neutrality by 2050.

> *NEDO launches its Green Innovation Fund Projects to Achieve Carbon Neutrality in the Waste and Resource Circulation (Japanese only) (https://www.nedo.go.jp/news/press/AA5_101724.html)

Overview of Waste Chemical Recycling



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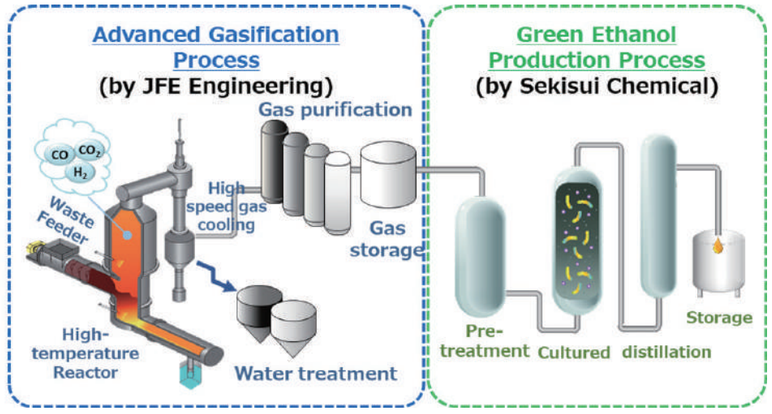
Entire Process and Development Domains



> Developing the Advanced Waste-to-Chemical Gasification Process, the "C-PhoeniX Process " Toward Practical Use in Society (https://www.jfe-eng.co.jp/en/news/2024/20240207.html)

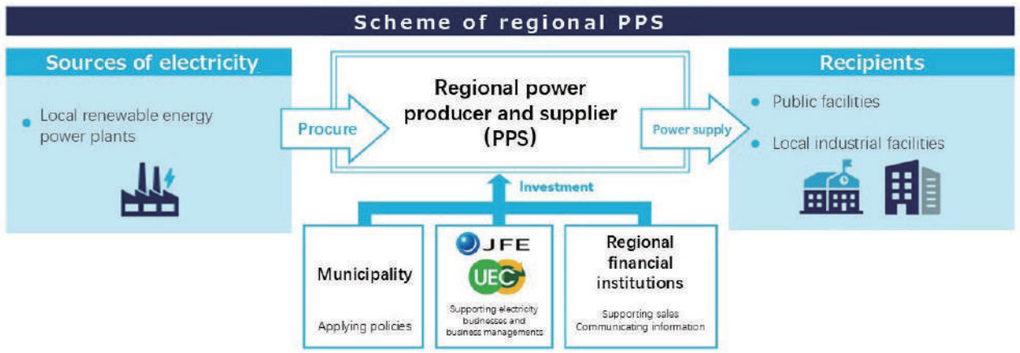
> "Waste-to-Chemical Technology Development for Green Ethanol Production by Integrating Advanced Gasification and Biochemical Conversion Technologies" adopted for the NEDO Green Innovation Fund project (https://www.jfe-eng.co.jp/en/news/2024/20240215.html)

EN Support for New Regional Electricity Projects

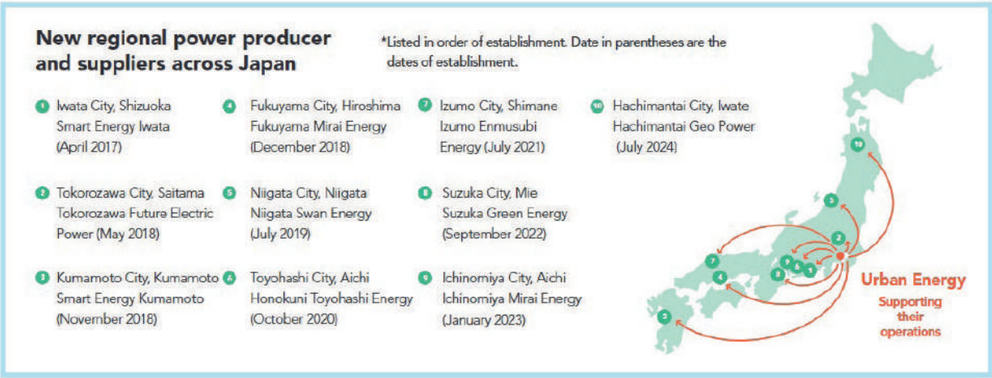
JFE Engineering is creating mechanisms for effectively using regional renewable energy sources such as wind and geothermal power and supplying electricity to local public facilities from renewable energy plants constructed by JFE Engineering, including waste-to-energy plants. These efforts support local production and consumption of energy.

Urban Energy Corporation (UEC), a subsidiary of JFE Engineering, provides consistent support for new regional electricity projects, from establishment to operation, with the goal of achieving regional decarbonization and stabilizing energy costs. Drawing on its extensive experience and expertise cultivated in the retail power business, UEC ensures stable and efficient operations, thereby contributing to the creation of sustainable communities.

New Regional Electricity Scheme Diagram



Record of Support for New Regional Electricity Projects



EN Construction and Operation of Waste-to-Energy Plants Overseas

JFE Engineering and the Thuan Thanh Environment Joint Stock Company*1 (TT) jointly established T&J Green Energy Company Limited (T&J) to conduct a waste-to-energy business in Bac Ninh Province, Vietnam.

After the establishment of T&J, JFE Engineering was responsible for plant design, construction, and operation, while TT handled the obtaining of permits and approvals, securing the plant site, collecting and transporting waste for incineration, and treating incineration ash. The waste-to-energy plant began selling electricity in January 2024. The facility incinerates 500 tonnes per day of municipal and industrial waste with an output of 11.6 MW and an expected annual power generation of 91,872 MWh. The generated electricity is sold to Vietnam Electricity Corporation under the feed-in tariff (FIT) system.

Funding for the construction and operation of the T&J plant was provided through the equipment subsidy program under the Japanese government's Joint Crediting Mechanism (JCM),*2 together with loans from the International Finance Corporation (IFC) of the World Bank Group and the Finland–IFC Blended Finance for Climate Program. This financing package was based on recognizing the project's proper waste treatment and an expected reduction of approximately 600,000 tonnes of GHG emissions over 15 years. The project was implemented in cooperation between the governments of Vietnam and Japan. Both companies plan to use this project as a pilot for launching similar efforts.

Drawing from the JFE Engineering Group's experience in the construction and operation of waste treatment plants, we will continue to contribute to the realization of a resource-recycling society by promoting business planning, construction, and operation in this field in Japan and overseas.

*1 A major recycling company in Vietnam is comprehensively engaged in waste incineration and other recycling businesses.
*2 Refinanced by a local bank at present.

Waste-to-Energy Facility in Bac Ninh Province, Vietnam

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ST Utilization of Byproducts Generated in the Steelmaking Process (Dust, Sludge, Slag)

JFE Steel carefully controls the generation and emission of iron and steelmaking slag (a co-product), iron dust from blast furnaces and converters, sludge from water treatment facilities, and other co-products by setting targets to improve recycling rates. Dust and sludge with high iron content are recycled as raw materials for steelmaking. Iron and steelmaking slag is effectively recycled for reuse in cement and other construction materials. The company is also promoting its use as environment recovery material such as Marine Stone™, which works effectively as a base for the adhesion of organisms and for improving the marine environment. As a result of these efforts, it achieved a 99.5% recycling rate for slag, dust, and sludge in FY2024, fulfilling the target of at least 99%, and it remains committed to consistently achieving the target.

For more quantitative data related to co-products, please refer to:
> Environmental Data (P. 255)

Contribution of Steel Slag Products

Many steel slag products are designated as specified procurement items (products that contribute to the reduction of environmental impact) for public works under the Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Act on Promoting Green Procurement), which was enacted in 2001 to protect the natural environment.

To realize a circular economy, JFE Steel has set a target under the Eighth Medium-term Business Plan (FY2025–FY2027) for using a cumulative total of 320,000 tonnes of steel slag products for marine applications (with actual usage of 40,000 tonnes in FY2024), in order to contribute further to the conservation of natural resources (sand and stone). We will further expand this effort.

● Calcia Improvement Material

Calcia improvement material is a slag product that uses converter-type steelmaking slag as raw material and is manufactured by controlling the composition and adjusting particle size. Dredged soil mixed with calcia improvement material is called calcia improved soil, which is stronger than the original weak dredged soil and is therefore able to prevent dredged soil from dissipating into the surrounding area and having a negative environmental impact placed in water. As a construction material for infrastructure development, it can be applied to landfill materials and other uses, enabling the effective use of dredged soil. Calcia improved soil has been used to construct a mid-section submerged breakwater*1 (Shin Honmoku Pier, Port of Yokohama), backfill material for earthquake-resistant quay walls (Fukuyama Port Minoshima District quay wall construction project), and soil for bank protection (Tokyo new landfill site development project).

Calcia-improved soil can also be used for creating shallow waters and tidal flats and backfilling deep excavated holes, as a technology that can restore marine environments*2.

*1 An embankment built under the water surface on the inside of a perimeter wall to divide the land into sections for reclamation
> *2 Biodiversity Conservation and Nature Positive (P. 151)

Calcia Improvement Material and Calcia Improved Soil

Example of calcia improvement soil application (landfill material)

Steel Slag Hydrated Matrix

Steel slag hydrated matrix is a steel slag product that can be used as a substitute for concrete but uses ground granulated blast furnace slag instead of cement, and steel slag instead of natural gravel and sand aggregate, as its ingredients. It effectively uses steel slag and does not rely on natural aggregate, thereby reducing environmental impact, and uses less cement, in turn reducing CO_2 emissions.

There are many examples of blocks and artificial stones made from steel slag hydrated matrix being used as a substitute for concrete blocks and natural stones in harbor works, apart from the expected application for scour-prevention at the growing number of offshore wind-power stations to be constructed in the near future. In addition, we are conducting on-site monitoring in the Katsunan Central Zone of Chiba Port with the help of a local fishing association to assess the impact of these blocks on marine biodiversity.

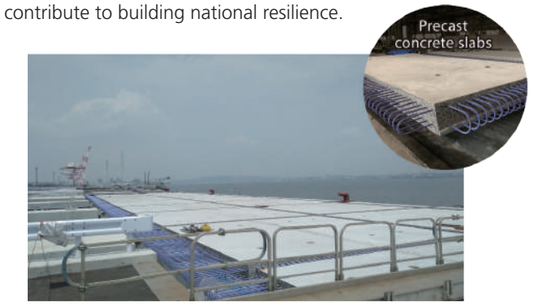
Wave-dissipating and foot protection block

Artificial stones made from steel slag hydrated matrix

Precast Concrete Products Mixed with Finely Ground Blast Furnace Slag

Finely ground blast furnace slag can be used as a cementing material in concrete. This type of concrete exhibits significantly higher durability under harsh conditions such as applications in sewers and exposure to anti-freeze agents. Its effectiveness in reducing environmental impact is widely understood, although there has recently been growing interest in its practical applications for concrete constructions that require higher durability.

As one of the deliverables for the Japanese government's Strategic Innovation Promotion Program, the Japan Society of Civil Engineers published a draft guideline in March 2019 on the application of finely ground blast furnace slag to precast concrete product, and its application now includes precast concrete slabs installed in highways and piers. With the application of finely ground blast furnace slag in concrete, the durability of precast products is expected to be greater and more consistent, allowing them to contribute to building national resilience.



Precast concrete slabs mixed with finely ground blast furnace slag installed in piers

Granulated Blast Furnace Slag

Granulated blast furnace slag, when ground to a fine powder and used to replace part of ordinary Portland cement, reduces the amount of limestone, crushed stone, and sand used, saves energy, and can also reduce CO_2 generated in cement production. For example, blast furnace cement made by replacing 45% of ordinary Portland cement with granulated blast furnace slag reduces CO_2 emissions per tonne of cement produced by 42%. In FY2024, JFE Steel supplied approximately 5.61 million tonnes of granulated blast furnace slag to cement production, equivalent to a reduction of about 3.98 million tonnes of CO_2 emissions.

CO_2 Emissions for Producing 1 Tonne of Cement (Unit: kg-CO_2/tonne)

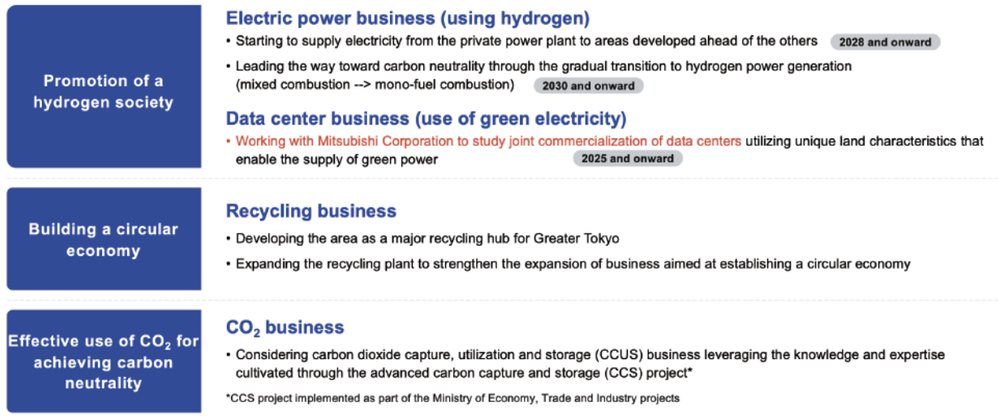
CO_2 Emissions Source	Regular Cement	Blast Furnace Slag Cement
Limestone	476	270
Electricity/energy	283	170
Total	759	440

*Source: Data published by the Japan Cement Association compiled from the actual FY2022 data

Initiatives for Realizing a Circular Economy in the Keihin Waterfront Area

Taking advantage of its proximity to Tokyo, the Mizue district is collaborating with Kawasaki City in expansion and development to create a major recycling hub for the metropolitan area. J&T Recycling Corporation, a group company of JFE Engineering, partnered with JR East and others to establish J Circular System Corporation in a pioneering project to construct the J Circular Systems Kawasaki Super Sorting Center as one of the largest plastic recycling facilities in the metropolitan area. Full-scale operations commenced in April 2025. Going forward, we will continue to promote businesses toward realizing a circular economy through the expansion and development of the recycling area.

Keihin District land business utilization (from materials of the Eighth Medium-term Business Plan)



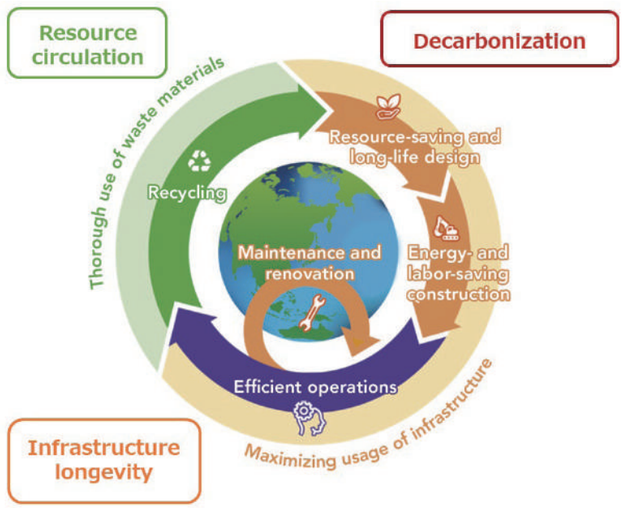
Development of Resource-Efficient Eco-Products and Eco-Solutions

The JFE Group is developing and providing resource-efficient products and services to support the realization of a circular economy. We are deploying eco-products designed from the perspective of the entire life cycle and eco-solutions that create circular value to reduce environmental impact and effectively use resources.

EN Infrastructure Reinforcement and Longer Service Life

JFE Engineering is leveraging its diverse business portfolio to promote multifaceted efforts for transitioning to a circular economy. In the infrastructure field, we are helping to realize a sustainable society through projects that maximize the useful life of infrastructure through resource-saving and long-life design, energy- and labor-saving construction, and efficient operation through maintenance and renovation.

JFE Engineering Circular Economy



Toward Realizing Longer Service Life Bridges

Japan's stock of social infrastructure is expected to age rapidly in the coming years. At the same time, declining birth rates, an aging society, and population decline are reducing the available labor force, making it increasingly difficult to secure engineers for infrastructure maintenance. To address this, JFE Engineering is working to lessen the burden of maintenance by using highly durable materials to construct bridges with longer service life.

Technology Allowing for Bridges with Longer Service Life

Conventional steel bridges suppress corrosion by using coatings such as paint that must be periodically reapplied. Using highly durable materials that do not need to be coated eliminates the need for reapplications, significantly reducing maintenance tasks associated with ordering, design, construction, and management. Moreover, these bridges demonstrate superior cost savings over a 100-year life cycle compared to painted bridges. We have thus pioneered in adopted stainless clad steel for constructing a road bridge.

Stainless clad steel is a steel plate with a two-layer structure, combining ordinary steel (carbon steel) and stainless steel. Stainless steel is placed on the outer surface, which is susceptible to salt damage, while painted carbon steel (base material) is used on the inner surface, which is less susceptible to corrosion. A stainless clad steel bridge is more economical than bridges made entirely of stainless steel or carbon steel, thereby combining economy and durability.

The clad steel selected for this project uses JSL310Mo, a stainless steel with extremely high corrosion resistance, to extend service life. This seawater-resistant stainless steel was uniquely developed by JFE Steel as a material for clad steel, positioning JFE Steel as a pioneer in fabrication and construction technology for steel structures using clad steel. This one-of-a-kind long-life bridge was possible through the combined strengths of the entire JFE Group.

The bridge is currently under construction as part of the replacement work for the Tedori River Bridge on the Hokuriku Expressway, commissioned by Central Nippon Expressway Company Limited.

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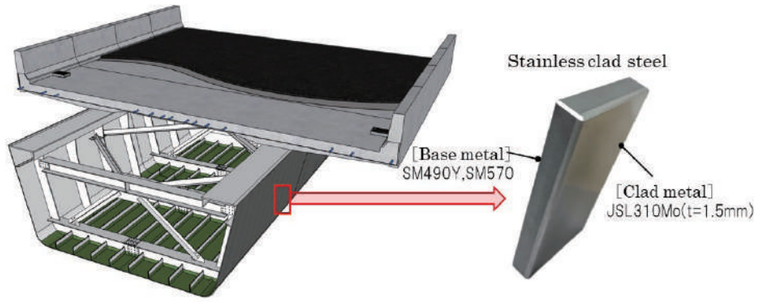
Bridge using stainless clad steel



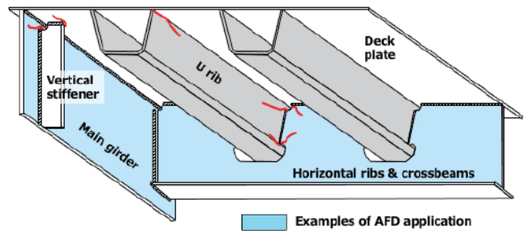
ST Anti-Fatigue-Damage Steel for Increased Bridge Safety (AFD™ Steel)

Extending the service life of steel structures conserves resources and reduces waste, although durability remains challenging. In particular, bridges contain many thin components that may develop fatigue cracks due to traffic load from automobiles and other vehicles, and cracks may propagate between inspections or repairs.

JFE Steel has developed a thin version of its anti-fatigue-damage steel (AFD™*1 steel) with improved fatigue resistance. The steel plate, produced by a plate mill at the East Japan Works (Keihin District) using the Super-RQ system with advanced cooling control, has a minimum thickness of 9 mm and retains the mechanical properties of conventional plates while offering improved fatigue resistance. Realization of thin-plate AFD™ steel allows for the application of highly durable materials across a wider range of structural members, such as thin bridge components prone to fatigue cracking. In addition, AFD™ steel suppresses fatigue crack propagation rate*2 to one-half or less compared to the upper limit of ordinary steel, and product life has been extended about twice the useful life of ordinary steel. This reduces life cycle costs accompanying the longer service life of components. The product received the Grand Prize in the Nikkei Superior Products and Services Awards 2023 in recognition of these features.

*1 Anti-fatigue damage
*2 Fatigue damage is caused by small, repeated forces that create cracks that gradually grow until the material fails. Since these cracks propagate incrementally with the repeated application of force, the length over which the cracks propagate per repetition is called the fatigue crack growth rate.

Examples of Thin AFD Steel Application



> Developed thin, fatigue-resistant steel for steel structures (https://www.jfe-steel.co.jp/en/release/2023/230330.html)

ST Electrical steel sheets

Electrical steel sheets* are popularly used as core materials for electrical equipment such as motors and transformers and therefore play a key role in determining their performance. JFE Steel contributes to global energy conservation and consequently to reducing CO_2 emissions by supplying high-performance electrical steel sheets.

*Electrical steel sheets are obtained by adding silicon to iron and are widely used as iron core materials in equipment such as motors and transformers.

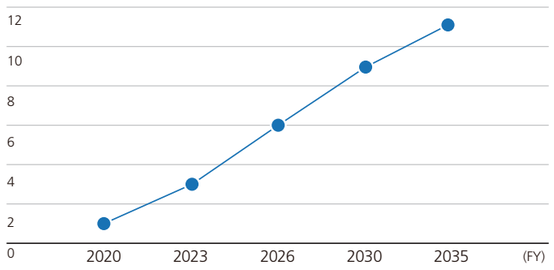
Non-Oriented Electrical Steel Sheets Completion and Start-up of Phase I Expansion and Strengthened Production Capacity at the West Japan Works (Kurashiki District)

Transitioning to a carbon-neutral society requires a major transformation of the social structure, from fossil-fuel-based energy to primarily carbon-free sources. Highly efficient motors, constructed from high-performance, non-oriented electrical steel sheets, will be essential for transitioning to a society in which mobility depends on electric vehicles (xEVs) and zero-emission electricity is the primary source of energy.

JFE Steel's high-grade non-oriented electrical steel sheets contribute to higher performance xEV drive motors through the improved efficiency of excellent low-iron-loss magnetic properties and reduced size made possible by high magnetic flux density. Recognizing the value of these characteristics has led many automobile manufacturers to incorporate these materials into their products, and demand for high-grade non-oriented electrical steel sheets is projected to expand rapidly. To keep pace with this demand, Phase I expansion work to increase capacity for electrical steel sheet production was completed as planned in July 2024, and line production began in September. The start-up of this facility had doubled JFE Steel's production capacity for high-grade non-oriented electrical steel sheets (NO).

Since an even sharper surge in demand is expected for high-grade non-oriented electrical steel sheets essential for xEV drive motors, Phase II expansion work is now underway. This plan is projected to triple production capacity for top-grade non-oriented electrical steel sheets for main xEV motors by FY2026 compared to pre-Phase I levels.

Demand for Non-Oriented Electrical Steel Sheets
(Calculated by JFE, 2020 results = 1.0)



Grain-Oriented Electrical Steel Sheets: Acquisition of Electrical Steel Sheet Manufacturing Company in India

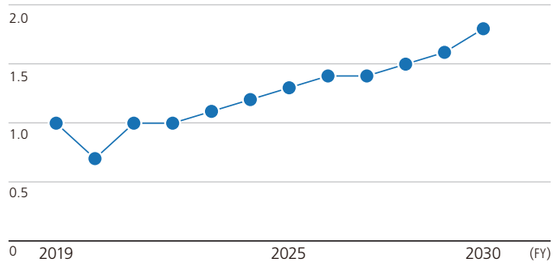
The global demand for grain-oriented electrical steel sheets in transformers is expected to increase due to continuously growing demand for electric power and the expanding adoption of renewable energy. The demand for grain-oriented electrical steel sheets, particularly in India, is expected to increase by 1.8 times in 2030, compared to 2019.

In response, JFE Steel and JSW Steel Limited (JSW) established JSW JFE Electrical Steel Private Limited (hereafter J2ES), a joint venture company in India for grain-oriented electrical steel sheets, in 2023. Preparations, including equipment planning, are currently underway toward starting production in FY2027.

In addition, JFE Steel and JSW jointly acquired, through J2ES, thyssenkrupp Electrical Steel India Private Limited, an Indian manufacturer and distributor of electrical steel sheets in January 2025.

With this acquisition, J2ES will be able to enter the Indian market for grain-oriented electrical steel sheets earlier than planned, ahead of full-scale production in FY2027, thereby capturing medium- to long-term demand for these products. After the acquisition, we will quickly establish an integrated system covering manufacturing through sales to respond effectively to future growth in demand.

Demand for Grain-Oriented Electrical Steel Sheets in India
(Calculated by JFE, 2019 results = 1.0)



Resource-Saving Silicon-Gradient Steel Sheets

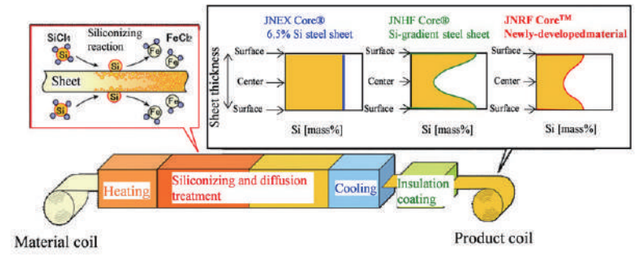
The recent trend toward increasing driving frequency due to the downsizing of electrical equipment has intensified the need to reduce iron loss* in the high-frequency range for electrical steel sheets, widely used as iron core material for electrical equipment such as motors and transformers. Meeting this demand depends upon increasing the concentration of silicon (Si), an element that strengthens electrical resistance. However, increasing concentration also causes magnetic flux density to decrease at the same time.

To overcome this, JFE Steel developed JNHF™, JNSF™, and JNRF™ using its proprietary chemical vapor deposition (CVD) continuous siliconizing process technology for controlling Si concentration distribution. These steel sheets offer low iron loss and high magnetic flux density in the high-frequency range, significantly contributing to higher efficiency and downsizing of electrical equipment. They are used as core materials for solar power reactors and high-speed motors.

In recognition of the positive social impact of this development, we received the 2022 Award for Science and Technology from the Minister of Education, Culture, Sports, Science and Technology under the development category of the science and technology field. JFE Steel will continue to contribute to improving electrical equipment by raising efficiency, reducing size, and saving energy by providing high-performance, high-grade electrical steel sheets.

*The loss of energy, primarily as heat, that occurs when the iron core is excited by an alternating current. The less iron lost, the higher the efficiency of electrical equipment.

CVD Continuous Siliconizing Process and Si Concentration Distribution Control



> Received the 2022 Award for Science and Technology from the Minister of Education, Culture, Sports, Science and Technology for the science and technology field (development category). (Japanese only)
(https://www.jfe-steel.co.jp/release/2022/04/220408.html)

SH Further Expanding the Global Supply Chain for the Steel Sheets Business

The key factor in initiatives for countering climate change, including those for reducing CO_2 emissions, is minimizing electricity loss and using generated electricity without loss. Motors found in places such as power plants, factories, and homes are responsible for 40–50% of all electricity consumed globally. In Japan, the ratio is approximately 55%. Improving the efficiency of motors by 1% in Japan would contribute to the equivalent of a 500,000 kW-class power generation plant in energy savings. Motors for electric vehicles, which are expected to become increasingly popular as we move toward a decarbonized society, and industrial motors essential for factory automation, need to become even more efficient and lighter through downsizing. In addition, continuous improvement in efficiency is required in transformers, which are essential for distributing electricity from source to factories and homes, in order to minimize energy loss in power transmission and distribution.
JFE Shoji has established a stable global supply chain that includes sourcing high-quality electrical steel sheets, which are essential for improving the efficiency of motors and transformers, from JFE Steel and other manufacturers and processing the products to meet customer needs. Since customers who depend on high-quality electrical steel sheets, such as manufacturers of motors and transformers, typically operate manufacturing facilities across the globe, the company has been expanding its electrical steel sheets supply chain in Japan, the Americas, China, ASEAN, India, and Europe. JFE Shoji will continue to build the world's number-one global distribution and processing system for high-quality electrical steel sheets by further expanding its supply chain, enhancing processing functions, and expanding collaboration with alliance partners, to precisely respond to customer needs.

ST Verification of the Feasibility of Making Motors 48% Thinner Using Insulated Pure-Iron Powder Denjiro™

In a joint project with JFE Techno-Research Corporation and ARMIS CORPORATION, a venture company launched by Shizuoka University, JFE Steel designed and prototyped a motor using Denjiro™, the company's insulated pure-iron powder, and demonstrated the feasibility of producing motors 48% thinner and 40% lighter than conventional models while maintaining the same output.

Demand continues to rise for smaller but higher-performing electric motors for industrial equipment and vehicles. Axial-gap motors, which are thinner than general radial-gap motors, can deliver high power (Figure 1). Unlike radial-gap motors, however, axial-gap motors pose a significant manufacturing challenge by requiring a three-dimensional magnetic core that cannot be made by laminating electrical steel sheets. In contrast, powder cores formed by pressing insulation-coated magnetic powder possesses uniform three-dimensional magnetic properties, can accommodate complex shapes, and provide flexibility in design. Furthermore, because these cores are easily crushed, copper wire can be readily separated and recovered from motors, improving recyclability. Efforts are underway to remanufacture crushed powder cores by reforming them for reuse.

JFE Steel has developed and launched an insulation-coated pure iron powder Denjirou™ for powder cores. In this project, an axial gap motor incorporating powder cores made with Denjirou™ was designed, prototyped, and evaluated for performance (Figure 2). The results showed a 48% reduction in height and a 40% reduction in weight compared to conventional motors, at equal or greater efficiency (Table, Figure 3). Based on these results, JFE Steel and JFE Techno-Research Corporation have begun supporting customer design of components using powder cores while also supplying large powder compacts for machining and prototype powder cores processed into designed shapes to promote the use of powder cores for motors.

Going forward, JFE Steel will continue to develop products that meet customer needs while also encouraging technical exchanges, such as proposing the application of technologies and supporting prototype evaluation. These efforts will expand the supply of eco-products that contribute to a circular society and help realize a sustainable society.

Figure 1: Types of motors

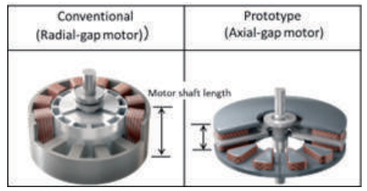
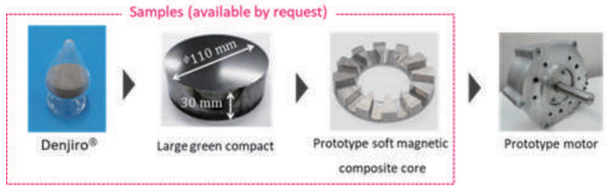


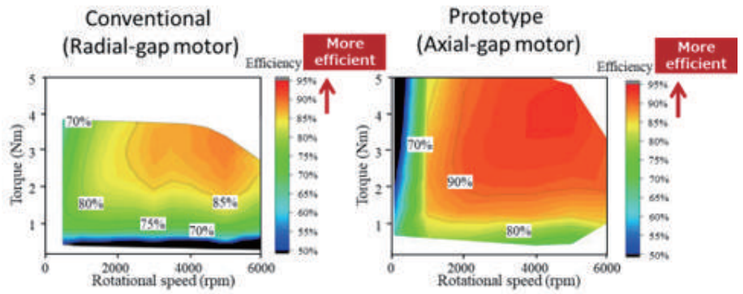
Figure 2: From powder to prototypes



Conventional vs. prototype motor (test results)

	Conventional (Radial-gap motor)		Prototype (Axial-gap motor)
Motor shaft length (mm)	90		110
Core weight (g)	1270	Thinner, Lighter	760
Core diameter (mm)	62		32
Max. efficiency (%)	89		93
Max. torque (Nm)	3.7		5.4

Figure 3: Efficiency of conventional vs. prototype motor



> JFE Steel's New Insulated Pure-iron Powder for Soft Magnetic Composites Enables Prototype Axial-gap Motor to be Slimmed Down by 48% (https://www.jfe-steel.co.jp/en/release/2024/01/240116.html)

ST High-Tensile-Strength Steel Sheets (HITEN) for Automobiles

Applying high-tensile-strength steel sheets (HITEN) to automobile components helps reduce weight while maintaining crash safety performance. JFE Steel contributes to improved fuel efficiency and ultimately reducing CO_2 emissions by supplying customers with ultra-high-tensile-strength steel sheets that meet needs for lighter car bodies. In addition to developing and producing these steel sheets for automobiles, JFE Steel develops application technologies. These include techniques for applying body design and forming/assembly technologies, which have been systematized to offer comprehensive solutions as JESOLVA™ (JFE Excellent SOLution for Vehicle Application), JFE Steel's unique suite of application technologies for automotive steel sheets. To provide these solutions, JFE Steel is actively promoting early vendor involvement (EVI) activities, in which it collaborates with customers from the early stages of automobile development. By improving car body performance and reducing weight, JFE Steel is contributing to the development of next-generation automobiles and the realization of a sustainable society.

Construction of a Hot-Dip Galvanizing Line at West Japan Works (Fukuyama District)

The automotive industry is producing lighter and stronger car bodies to meet increasingly stringent environmental regulations and collision safety standards around the world, and demand is expected to grow for ultra-high-tensile sheets* with excellent processability. JFE Steel has therefore decided to construct a new hot-dip galvanizing line (CGL) at the West Japan Works (Fukuyama District), with an annual production capacity of 360,000 tonnes. The investment will total approximately 70 billion yen, with operations scheduled to commence in October 2028. The new line will enable JFE Steel to increase its production capacity for such sheets, including its JEFORMA™ series, to meet growing demand in the foreseeable future and respond to subsequent needs for even higher strength and functionality.

*High-strength steel sheets with tensile strength ≥980 MPa (megapascals)

Wall Bending and Restrike Method to Suppress the Springback of Ultra-High Tensile Steel Sheets

JFE Steel's Wall Bending and Restrike Method has been adopted and used to produce inner rockers, a body frame component, for use in vehicles manufactured and sold by a major Japanese automaker. The Wall Bending and Restrike Method, a press forming method, is applied to suppress the springback of 1,180 MPa class, ultra-high tensile steel sheets.

Since pressed steel sheets are subject to springback—that is, returning to their original shape when removed from a mold—springback conditions must be corrected. Press-formed ultra-high tensile steel sheets generate greater stress than ordinary steel sheets and are therefore more susceptible to higher levels of springback. The resulting challenge of controlling deformation from the intended shape and the increased difficulty of bonding with other components has been a bottleneck to the wider application of ultra-high tensile steel sheets.

The Wall Bending and Restrike Method provides a solution for reducing springback by applying an offsetting force to springback-induced stress, particularly through the optimization of sheet shape prior to press-forming. The inner rockers, a structural component at the bottom of a vehicle door, for which the Wall Bending and Restrike Method is used, are manufactured by Kyoho Machine Works, Ltd., and the application of this method to mass-production molds was achieved through a joint development by this company and JFE Steel.

Inner rocker made with the Wall Bending and Restrike Method

Forming Technologies for Ultra-High Tensile Steel Sheets—Inflow Control Method and Stress Reverse Forming™ Method

JFE Steel's inflow control method and the Stress Reverse Forming™ Method were adopted and have been used for the production of three front bumper components for Suzuki Swift to reduce the formation of wrinkles at pressed areas of 980–1,180MPa class, ultra-high tensile steel sheets and reduce variation in dimensional accuracies.

When press-formed into a curvature shape, press wrinkles form on the steel sheets and the sheets tend to springback to their original shape; both conditions need to be corrected.

While contributing to vehicle weight reduction, ultra-high tensile steel sheets are susceptible to press wrinkles, mold damage, and shape variation, and all these issues are more likely to occur with thicker, stronger steel sheets, a factor that has inhibited the wider application of ultra-high tensile steel sheets. JFE Steel's inflow control method is capable of reducing the formation of press wrinkles, particularly those around the flanges of pressed areas, by optimizing the inflow of materials at multiple press-forming processes.

The Stress Reverse Forming™ Method is designed to reduce variation in the scale of springback (or variation in dimensional accuracies), which increases as ultra-high tensile steel sheets have higher levels of strength. When press-formed, ultra-high tensile steel sheets are more susceptible to springback and to large variation in strength intensities than regular steel sheets. The Stress Reverse Forming™ Method uses the Bauschinger Effect, or the mechanical phenomenon in which

deformation stress in steel sheets decreases immediately after the direction of the deformation is reversed. This method enables customers to stabilize their production of press components even if there are changes in the intensities of steel sheets.

The front bumper components for which these two methods are used are manufactured by Okamoto Press Industry, Co., Ltd. In fact, both the inflow control method and the Stress Reverse Forming™ Method were jointly developed by Okamoto and JFE Steel.

Ultra-High Tensile Steel Sheet Product Adopted for the First time as a Material for a Hybrid EV Battery Module Component

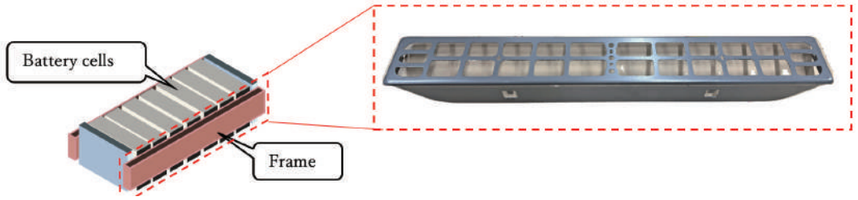
The 980 MPa class galvanized steel sheet was the first of JFE Steel's ultra-high tensile steel sheet products to be selected and used as a material for a lithium-ion battery module frame used in hybrid EVs.

A vehicle battery pack is comprised of multiple battery cells and bound with a steel frame to achieve a high power output. The frame must have a high bonding force to prevent the battery from swelling and from losing performance due to heat during use, and thus there has been demand for a high strength steel sheet. However, high-strength steel sheets are known to be susceptible to fracture when formed by bending. This process is required to minimize the curvature of the folding area of the frame to almost a 90-degree angle and thereby shrink the size of the battery module.

This issue can now be resolved with the use of a press-forming method using CAE* and product specs developed by J-MAX Co., Ltd., both of which have enabled the use of JFE Steel's 980 MPa class, galvanized steel sheet that has the high processability suitable for a battery module frame on hybrid EVs. This galvanized steel sheet is a product of the JEFORMA™ series, a lineup of steel sheets with high strength and high bending formability, properties achieved by optimizing the metallographic structure of the steel sheet through intricate temperature control at the continuous galvanizing facility of the West Japan Works (Fukuyama District).

*Computer-Aided Engineering. A design tool using computer simulation.

Ultra-High Tensile Steel Sheet Product Adopted for a Hybrid EV Battery Module Component



Cold-Press Forming Technology for Integrated Auto-Frame Component

As a component integration solution using ultra-high-tensile-strength steel sheets and cold-press forming, JFE Steel has developed a technology for reducing the number of components in automobile body structures, targeting the rear member*1 Automakers have recently focused on large-scale component integration technologies such as giga casting, which uses aluminum casting technology, and medium-scale integration technologies such as hot stamping, which involves heating steel prior to press forming and simultaneously cooling and quenching in the die to achieve both formability and component strength. This technology falls into the same category of component integration technologies.

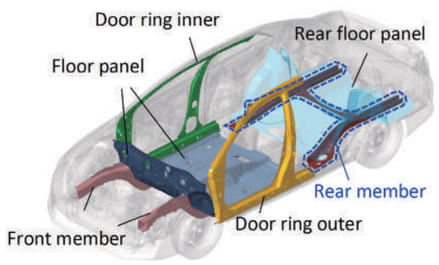
Component integration by cold-pressing presents challenges in formability. However, by utilizing JESOLVA™, JFE Steel's unique systematized solution technology for automotive steel sheets, we have made it possible to form large components using ultra-high-tensile-strength steel sheets of up to 1,470 MPa class. Furthermore, to integrate components with different strengths, we applied Tailor Welded Blank (TWB)*2 and our proprietary Cold Patchwork Method*3, enabling designs with strength variations within a single component. The result is a reduced number of components, even for small-scale integrations, thereby increasing productivity and reducing the cost of auto-frame production.

Challenges arise as integrated components become larger, such as higher logistics costs and greater burdens on end users when damage requires extensive repairs. Limiting integration to appropriate ranges using this technology ensures portability and reduces repair burdens.

The rear member is a large part that protects the body from rear collisions and is composed of 11 spot-welded components. With this technology, the number of components can be reduced to as few as three while maintaining rear collision performance, thereby improving productivity and reducing costs in automobile body manufacturing.

*1 A structural component that supports a vehicle's rear suspension and drivetrain and connects them to the body
*2 A processing technology that uses laser welding to join steel sheets of different thicknesses and strengths into a single sheet
*3 A technology for stacking and spot-welding together steel sheets for simultaneous press forming

Cold-press integration target and rear member



Prototype rear member

ST Certification by SuMPO's EcoLeaf Environmental Labeling Program

JFE Steel acquired SuMPO EPD certification for 36 product types under the SuMPO Environmental Label Program operated by the Sustainable Management Promotion Organization (SuMPO). These certifications cover three types of tinplate steel sheets for cans, nine flat steel products, nine construction steel products, three types of steel plates, four steel pipe products, and eight bar and wire rod products.

SuMPO EPD is a Type III EPD program managed by SuMPO for quantitatively disclosing the environmental impact of products and services throughout their life cycle, from raw material procurement to disposal and recycling in accordance with ISO 14025:2006 (environmental labels and declarations, Type III Environmental Declarations, Principles and Procedures). The environmental impact of our products is presented as graphic representations of data to increase transparency. The disclosure of environmental impact data with fairness and reliability assured by third-party review and verification enables customers to quantitatively and objectively evaluate the environmental impact of the products they use.

Going forward, JFE Steel will actively promote the acquisition and publication of SuMPO EPD for its products.

> SuMPO Environmental Labeling Program (https://ecoleaf-label.jp/en/)

ST Extra-Thick, High-Strength Steel Plate for the Materialization of Large Container Ships

The world's thickest crack arrest steel plate*1, developed by JFE Steel, is applicable to large container ships, with its 460 MPa class yield strength and a thickness of 100 mm. The technology is the first in the world to satisfy two different properties in the extra-thick steel plate: weldability and crack arrestability. Ensuring the safety of large container ships improves transport efficiency and fuel savings through lighter ship structures.

Container ships are characterized by large openings in the upper deck. Since their hulls are subjected to large wave loads at sea, extra-thick and high-strength steel must be used in the upper deck and hull sides (hatch side coamings). The trend toward building larger container ships for greater transport efficiency has required that steel plates be thickened from 50 to 100 mm and strengthened to the 460 MPa class in yield strength, while also providing high crack arrest properties to stop the propagation of brittle fractures in the steel. To ensure the safety of rapidly growing hull structures, the International Association of Classification Societies has mandated an arrest toughness value (Kca) of 8,000 N/mm$^{3/2}$ or higher for steel plates of 80 mm and 100 mm thickness used in hatch side coamings. JFE Steel established a proprietary technology using Thermo-Mechanical Control Process (TMCP)*2 technology, which finely controls heating and rolling temperatures, to increase the ratio of crystal orientations in the central thickness of the plate that resist crack propagation. This ensures high crack arrest performance even in 100 mm extra-thick, high-strength steel plates, the world's thickest.

The development of this technology received the 2023 Award for Science and Technology from the Minister of Education, Culture, Sports, Science and Technology under the development category of the science and technology field for significantly contributing to the materialization of ultra-large container ships. It has been awarded many other prizes, including the 2018 Invention Prize of National Commendation for Invention and the 2019 Okochi Memorial Prize. We will continue to improve the economic efficiency, safety, and reliability of vessels by providing high-performance, high-quality steel material while meeting the diverse needs of customers and also addressing global environmental concerns and contributing to the realization of a sustainable society.

*1 A steel plate with outstanding ability to effectively confine hull damage to the minimum should weld cracking occur.
*2 A thermo-mechanical control process technology that improves the strength and toughness of steel material in an online process using controlled rolling and accelerated cooling systems

> Received the Award for Science and Technology from the Minister of Education, Culture, Sports, Science and Technology under the science and technology field (development category) (Japanese only) (https://www.jfe-steel.co.jp/release/2023/04/230407.html)

Expansion of the Use and Sales of Recycled Resources

The JFE Group is actively promoting the use of recycled resources to help realize a circular economy, and is expanding its market application through products and services that leverage these materials. By combining resource efficiency with waste reduction, we contribute to reducing environmental impact and achieving sustainable growth.

SH Initiatives to Strengthen the Handling of Environmentally Beneficial Products

Our trading business has strengthened the handling of environmentally beneficial products by setting KPIs for the handling volume of fuels for biomass power plants and steel scrap. Under the Eighth Medium-term Business Plan, JFE Shoji will lead in further expanding the lineup of environmentally beneficial products and promoting efforts toward realizing a circular economy.

Expanding Business in Biomass Fuels

JFE Shoji imports fuels such as palm kernel shells (PKS) to Japan from Malaysia and Indonesia and wood pellets from Southeast Asian countries as fuel supplies for domestic biomass power plants.

PKS and wood pellets are made from byproducts or waste materials generated during palm oil production and wood processing. Using these as fuel reduces waste and promotes effective resource use. These initiatives also contribute to realizing a circular economy.

Since these biomass fuels absorb CO_2 during their growth process, they are regarded as carbon-neutral fuels, offsetting the CO_2 emitted when burned. Furthermore, replanting and recultivation of the trees and crops used as raw materials support a more sustainable supply chain.

To encourage the shift away from coal-fired power, JFE Shoji is also developing and supplying alternative biomass fuels to reduce environmental impact and support energy transition through the use of waste as resources.

PKS

Wood pellets

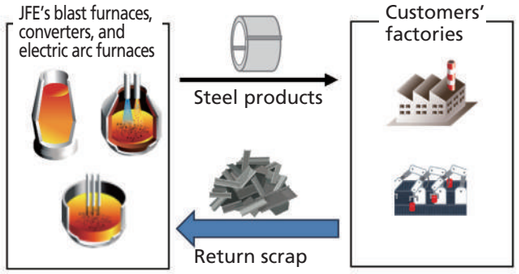
Expansion of Scrap Trading to Support the Development of a Recycling-Oriented Society

JFE Shoji engages in a recycling business for steel and aluminum scrap. Demand for steel scrap is particularly expected to grow in Japan and overseas as the global community advances toward carbon neutrality. JFE Shoji will contribute to building a recycling-oriented society by increasing scrap recycling across the globe.

ST Initiatives to Expand Scrap Collection and Use

Steel is highly recyclable because it can be separated and collected using magnetic force. Even after completing its role in society, it remains endlessly reusable as raw material for steel products while retaining its properties. Its recycling rate of 93.7% is extremely high compared to other materials. Steel is recycled through efficient separation and collection into high-quality, high-functionality products, reducing environmental impact across the entire life cycle.

JFE Steel uses steel scrap as raw material in blast furnaces, basic oxygen furnaces, and electric arc furnaces. We have traditionally collected and used "return scrap," a term for scrap generated during production that is sold back by customers and Group factories. Under the Eighth Medium-term Business Plan, we have set a KPI for the expansion of this volume with associated action plans. For FY2025, we expect to achieve our target of doubling the volume of collected and used scrap compared to the average during the Seventh Medium-term Business Plan period. By expanding the collection and use of scrap toward the realization of a circular society, we will also contribute to addressing climate change.



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Executive Summary | Environmental Management | Initiatives to Address Climate Change Issues | Initiatives to Transition to a Circular Economy | Biodiversity Conservation and Nature Positive

ST Reducing Plastic Waste by Manufacturing Cups from Highly Recyclable Steel

JFE Steel is proposing recyclable steel cups that take advantage of the properties of steel, featuring light weight, durability, thinness, and a pleasant feel and coolness when drinking. Steel cups can be repeatedly recycled into any type of steel product, taking advantage of steel's high recyclability. Using easily recyclable steel cups also helps to solve the problem of disposable plastic waste. We are encouraging a recycling-based lifestyle by promoting the Steelish™ logo and developing activities that express the message of contributing "stylishly" to the global environment by leveraging the benefits of steel products.

As part of these activities, we have been promoting the BETTER RECYCLE Shonan Project since 2021. This project is a new attempt to approach the issue of disposable plastic cups with consumers and contribute to addressing the issue by proposing new lifestyles through the development of new products. The project team, made up of members from IBLC Co., Ltd. and Shonan Style (a magazine published by EDITORS, Inc.) as well as JFE Steel, sought advice and cooperation from local governments and disposable plastic cup suppliers in the Shonan area and created a prototype for an eco-friendly recyclable disposable steel cup. The prototype and the Steelish™ initiative were presented at Carnival Shonan 2022, an event held at the Kanagawa Municipal Tsujido Kaihin Park in November 2022 to explore turning the Shonan beaches into the first zero-waste beaches in Japan.

In March 2023, steel cups were used at Nakame Challenge Cup 2023, an event hosted by Asahi YOU. US, Ltd. and the Nakame Area Management Association to eliminate disposable plastic bottles discarded by people viewing cherry blossoms in Nakameguro and raise awareness of plastic pollution, food loss, and other sustainability issues.

JFE Steel is committed to playing its part in fostering public awareness about climate change and plastic pollution issues and to achieving the SDGs by developing steel solutions that meet the needs of customers and society as a whole.

The Steelish™ logo

The recyclable steel cup

> Website on recyclable steel cups (Japanese Only) (https://www.jfe-steel.co.jp/products/can/use/scene09.html)
> BETTER RECYCLE Shonan (Japanese Only) (https://www.jfe-steel.co.jp/products/can/pr/better_recycle_shonan.html)

Resource Recovery and Recycling Targets and Results

Recognizing that the efficient use of resources is a key environmental issue for the manufacturing industry, the JFE Group sets and manages progress against ambitious targets tailored to the respective business characteristics of Group companies. We will continue to pursue the following targets and advance initiatives that contribute to the transition to a circular economy.

The responsible use of water resources is also an important environmental concern for the manufacturing industry. Since the steel business consumes large volumes of water, we set ambitious targets for water recycling rates, manage progress, and strive to reduce water usage.

Targets and Results for FY2024 and Targets for FY2025

Operating Company	FY2024 Targets	FY2024 Results and Initiatives	FY2025 Targets
JFE Steel	Recycling rate of co-products: 99% or higher	Resource recovery rate: 99.5%	Continue efforts to prevent and reduce the generation of dust and sludge in the recycling of co-products, to maintain the recycling rate of co-products at 99% or higher
	Maintain efficient use of water Recirculated water usage rate: 90% or higher	Recirculated usage rate: 92.7%	Continue the water resource recycling effort to maintain the recirculated usage rate at 90% or higher
JFE Engineering	Recycling rate at construction sites •Recycling rate of rubble: 99.5% or higher •Recycling rate of sludge: 95.0% or higher •Recycling rate of industrial waste: 85.0% or higher	Recycling rate at construction sites •Recycling rate of rubble: 99.6% •Recycling rate of sludge: 97.1% •Recycling rate of industrial waste: 83.9%	Recycling rate at construction sites •Recycling rate of rubble: 99.5% or higher •Recycling rate of sludge: 95.0% or higher Recycling rate of industrial waste: 85.0% or higher
	Recycling rate of office recyclable waste (Yokohama head office): 98.0% or higher	Recycling rate of office recyclable waste (Yokohama head office): 97.7%	Recycling rate of office recyclable waste (Yokohama head office): 98.0% or higher
JFE Shoji	Global recycling of steel scrap •Scrap trade volume exceeds FY2020 level by 5%	From FY2020: +5% Both domestic and overseas sales increased compared to previous year, achieving the target	Global recycling of steel scrap: +10% from FY2020 Strengthen domestic and overseas procurement networks and expand sales to JFE Group and domestic and overseas customers

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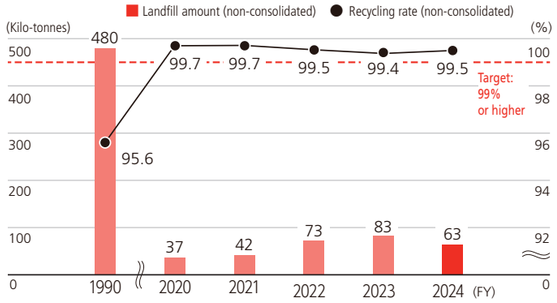
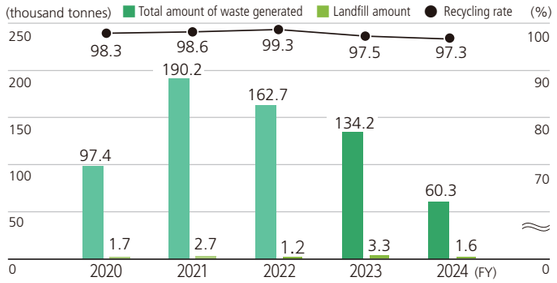
JFE Steel Landfill of Co-Products and Recycling Rates



		1990	2020	2021	2022	2023	2024	
Group companies*	Amount released	—	513	504	593	583	640	(Kilo-tonnes)
	Landfill amount	—	23	52	94	97	83	(Kilo-tonnes)

*Twenty-two JFE Steel consolidated subsidiaries in Japan

JFE Engineering Waste Generated at Construction Sites



For more on waste generated at the steelworks, please refer to:

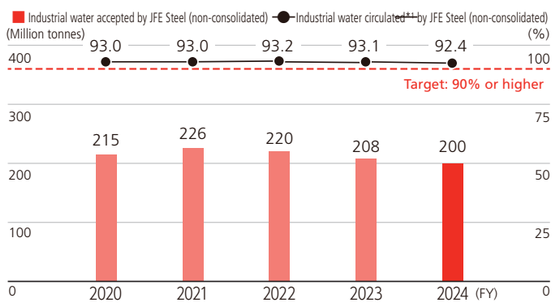
> Environmental Data (P. 255)

Efficient Use of Water Resources

ST Setting Targets for Water Recirculation

All of JFE Steel's seven production sites in Japan developed a water management plan and monitored water usage in seeking to increase the recirculation rate of water in order to reduce the volume of water intake and drainage and efficiently use water resources. The target water recycling rate at JFE Steel, which uses a large volume of water for cooling and other processes, is 90% or more, which is extremely high considering the amount evaporated when water is used. We are striving to improve the recycling rate by adopting purification processes such as biological and chemical wastewater treatments, and we have been successfully achieving the target. Our recycling rate of industrial water in FY2024 maintained a high level of 92.4%.

JFE Steel Industrial Water Accepted and Circulated



JFE Steel

Total amount	3,066	3,207	3,242	3,053	2,731	(Million tonnes)
Industrial water accepted	215	226	220	208	200	(Million tonnes)

Group companies*2

Total amount	265	235	233	207	226	(Million tonnes)
Industrial water accepted	21	19	18	16	16	(Million tonnes)

*1 Industrial water circulated (%) = (Total amount used – industrial water accepted)/ total amount used ×100
*2 Twenty-two JFE Steel consolidated subsidiaries in Japan

EN Efficient Use of Water Resources

JFE Engineering and each Group company strive to use water efficiently at their business sites.

For more on quantitative data related to water, please refer to:
> Environmental Data (P. 255)

Biodiversity Conservation and Nature Positive

Basic Policy

Recognizing that natural capital and biodiversity are foundational for realizing a sustainable society, the JFE Group has endorsed the Declaration of Biodiversity by Keidanren and Action Policy and conducts business in harmony with nature across the world. We particularly recognize biodiversity conservation as a key challenge and conduct assessments to minimize the ecological impact associated with our business activities. We are also engaged in activities that contribute to biodiversity conservation and nature positive at our own production sites, construction sites, and their surrounding areas, and at suppliers. Our initiatives include cooperating with the community to monitor biodiversity and carry out preservation activities around the steelworks, the key facilities for our business, and in surrounding areas. We are also involved in developing iron and steelmaking slag products that can help restore the marine environment. Furthermore, beyond our business operations, we launched a joint research program with a local government and conduct environmental education for local communities.

Our core steelmaking business uses large quantities of fresh water for cooling and cleansing products and facilities. For this reason, the efficient use of water resources with due consideration to the source of the water and stakeholders in the area is a key challenge. While we have always implemented countermeasures against meteorological disasters such as droughts and floods at our manufacturing sites in Japan, we are further reinforcing them in anticipation of the increased frequency and severity of weather events associated with climate change by securing alternative means and raising the height of embankments. We also seek to identify water-related risks throughout our business sites and supply chain in Japan and overseas, such as the risk of drought at the source of water intake and pollution at the point of discharge. In areas under water stress, we will respond appropriately through dialogue with stakeholders.

> Declaration of Biodiversity by Keidanren and Action Policy (Revised Edition)
(https://www.keidanren.or.jp/en/policy/2018/084.html)

Basic Approach

The JFE Group has established a basic policy to promote initiatives for biodiversity conservation and nature positive.

Guided by our corporate philosophy of contributing to society with the world's most innovative technology, the JFE Group recognizes biodiversity conservation and nature positive as essential for realizing a sustainable society, and established the following policies to guide its activities:

- Deepen recognition that our business activities depend on and impact biodiversity and natural capital and promote activities to mitigate risks.
- Promote the development of processes, products, and technologies that contribute to biodiversity conservation and nature positive.
- Collaborate with stakeholders such as local communities and supply chains and promote biodiversity conservation and nature positive efforts through diverse approaches, including integration with carbon neutrality and the circular economy.
- Foster awareness of biodiversity through employees' proactive initiatives and educational activities.
- Disclose initiatives for biodiversity conservation and nature positive and broadly share them with society.

Endorsing and Participating in External Initiatives

As a member of the Keidanren Committee on Nature Conservation, the JFE Group endorses the Declaration of Biodiversity by Keidanren and Action Policy and actively engages in the conservation of nature and biodiversity.

The Group took part in the Business for GBF Project, launched by the Ministry of the Environment and Keidanren Committee on Nature Conservation. We are now registered as an NPE Partner in developing its Nature Positive Economy Promotion Platform (NPE Platform).

JFE Holdings has also joined the 30 by 30 Alliance for Biodiversity, launched by the Ministry of the Environment, business associations, nature conservation groups, and other organizations. This alliance is committed to effectively protecting at least 30% of Japan's land and sea as healthy ecosystems toward the Nature Positive goal of halting and reversing biodiversity loss by 2030. JFE will contribute to the conservation of biodiversity by carrying out various activities, including the conservation of its biotopes.

For further details on external initiatives, please refer to:

> Business for GBF Project, Ministry of the Environment (https://www.biodic.go.jp/biodiversity/private_participation/business/en/
> Ministry of the Environment's 30 by 30 Alliance (https://policies.env.go.jp/nature/biodiversity/30by30alliance/)

In addition, JFE Holdings has endorsed the disclosure recommendations published by the Taskforce on Nature-related Financial Disclosures (TNFD), joined the TNFD Forum, and registered as a TNFD Adopter. Going forward, we will appropriately disclose information about the impacts of our business activities on the natural environment and biodiversity in line with the TNFD framework.

> Taskforce on Nature-related Financial Disclosures (TNFD) (https://tnfd.global/)

Governance

The JFE Group's initiatives for biodiversity conservation and nature positive are supervised and guided by the JFE Group Sustainability Council, chaired by the president of JFE Holdings. A cross-group JFE Group Environmental Committee has been established to discuss matters such as targets, progress checks, and improving overall Group performance. Particularly key issues and indicators are supervised through deliberations of the Board of Directors.

> Framework for Environmental Management (P. 47)

Strategy

Evaluation of the Relationship between Business Activities and Natural Capital (Evaluation in Line with the LEAP Approach)

The JFE Group pilot tested the LEAP approach in line with the recommendations of the Taskforce on Nature-related Financial Decisions (TNFD). In FY2023, we conducted a trial evaluation focusing on the steel business. In FY2024, we expanded the scope within the steel business for more detailed examinations and conducted evaluations for the engineering business.

Process

Locate

Locating the interface with nature
Steel business: identified the location information of major manufacturing sites and mines supplying raw materials such as iron ore and coking coal and assessed the state of natural capital in the surrounding areas.
Engineering business: identified the location information of major manufacturing sites in FY2024 and assessed the state of natural capital in the surrounding areas.
Both evaluations referred to TNFD-recommended tools such as IBAT and Resource Watch.

Evaluate

Evaluating dependencies and impacts
We applied ENCORE and other TNFD-recommended tools to identify and evaluate the dependencies and impacts of our steel and engineering businesses on important natural capital.

Assess

Assessing nature-related risks and opportunities
Based on the findings from the evaluation of the dependencies and impacts, we identified and assessed nature-related risks and opportunities for our steel and engineering businesses.

Prepare

Preparing to respond and report
We have been preparing to respond to the assessed risks and opportunities.

Steel Business

Specific Categories of Findings on the Dependencies and Impacts on Nature (Evaluate)

Regarding the dependencies and impacts of our steel business on nature, we reviewed the findings under the categories of manufacturing at our production sites and procurement from our upstream supply chain at iron ore and coking coal mining sites. Our procurement and manufacturing operations depend on natural resources, particularly related to water supply, the control of water volume, and climate adjustments. Meanwhile, our manufacturing operations impact nature through GHG emissions and pollution. The iron ore and coking coal mining conducted upstream in our supply chain also affect nature through land use, water resource use, GHG emissions, and pollution.

		Dependencies on nature																				Impacts on nature												
		Supply service				Adjustment and maintenance services																Use of terrestrial and aquatic land			Use of resources			Climate change	Pollution				Disturbance	
Supply chain	Business activities/procured materials	Biomass resources	Genetic materials	Water resources	Animal-based energy	Global climate adjustment	Regulation of precipitation patterns	Local climate adjustment	Air purification	Soil quality adjustment	Soil and sediment maintenance	Solid waste decomposition	Water purification	Water flow adjustment	Flood mitigation	Storm mitigation	Noise mitigation	Pollination	Biological control	Habitats maintenance	Air and ecosystems dilution	Perceptual impact mitigation	Land areas	Freshwater areas	Sea areas	Water resources	Other biological resources	Other non-biological resources	GHG emissions	Air pollution	Hazardous substances	Nutrients	Solid waste	Invasive alien species	Disturbance
Direct operations	Steel			■			■						■	■	■	■									■			■	■	■		■		■
	metal manufacturing			■			■		■			■	■	■	■	■									■			■	■	■	■	■		■
Upstream	Iron ore			■		■	■				■		■	■	■	■					■		■	■	■		■	■	■	■		■		■
	coking coal			■		■	■				■		■	■	■	■							■			■			■	■	■		■		■

■ Very high ■ High ■ Moderate □ Low

Assessment of Leading Manufacturing Sites (Locate)

Our assessment of leading major manufacturing sites in line with the five criteria defined by the TNFD for priority areas found that areas of high conservation significance, including key biodiversity areas (KBAs), exist in the surrounding regions. We also conducted similar assessments for production sites of JFE Steel's domestic Group companies, evaluated the surrounding natural environment, and confirmed the results.

Manufacturing Site	Conservation Significance		Ecosystem Integrity	Degradation in Ecosystem Integrity	Water-Related Physical Risks		
	Protected Areas/KBA	STARs	Biodiversity Intactness Index	Pressures on Biodiversity	Baseline Water Stress	Riverine Flood Risk	Coastal Flood Risk
East Japan Works, Chiba	Located in proximity	1	1	5	3	2	3
East Japan Works, Keihin	Not located in proximity	1	1	5	3	2	3
West Japan Works, Kurashiki	Located in proximity	1	1	5	2	2	3
West Japan Works, Fukuyama	Located in proximity	1	2	5	2	2	3
Chita Works	Located in proximity	1	1	5	3	2	3
Sendai Works	Located in proximity	1	1	5	2	2	3

■ Very high ■ High ■ Moderate □ Low

In addition, the JFE Shoji Group conducted similar assessments at 48 processing sites operated by 38 companies (24 sites at 18 companies in Japan and 24 sites at 20 companies overseas). In Japan, six sites were found to be adjacent to protected areas or KBAs of high conservation significance. Overseas, sites in eight countries were found to face water risks, and in one country, a site was identified as being adjacent to indigenous peoples or local communities. These sites have been recognized as priorities for future evaluation and responses.

*Assessment based on the five criteria was performed using the following indicators and tools.

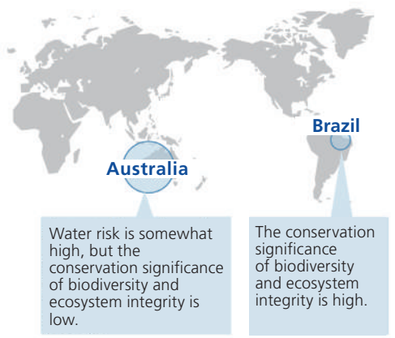
- Conservation significance: Assessed with IBAT, the proximity (within a 5-km radius) to areas of conservation significance, for example, protected areas and KBAs
- Ecosystem integrity: Assessed based on the Biodiversity Intactness Index provided by Natural History Museum
- Rapid degradation in ecosystem integrity: Assessed based on the Pressure on Biodiversity indicator provided by WWF Biodiversity Risk Filter to measure at degree of influence on nature
- Water-related physical risks: Assessed based on the Baseline Water Stress, Riverine Flood Risk, and Coastal Flood Risk indicators through the use of Aqueduct

Assessment of Raw Material Suppliers (Locate)

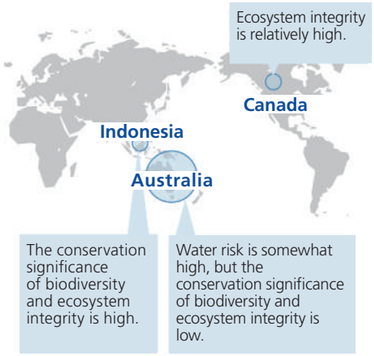
We located the interfaces of our major iron ore and coking coal suppliers in natural settings and assessed the state of nature at those sites (procurement volume of roughly 70%; 8 iron ore mines and 14 coking coal mines). Iron ore is procured from countries including Australia and Brazil. The assessment revealed that procurement mines in Australia are exposed to high water stress, making responses to water-related risks important. Although procurement volumes are relatively small, some mines in Brazil were found to be located near areas of conservation significance.

Our coking coal suppliers are mining in Australia, Canada, and Indonesia. The assessment revealed that procurement mines in Australia face relatively low levels of various risks. On the other hand, some mines in Canada and Indonesia were found to be located in regions with high ecosystem integrity.

Iron ore (supplier countries and procurement ratios)



Coking coal (supplier countries and procurement ratios)



Reviewing Nature-Related Risks and Opportunities (Assess/Prepare)

Following the above evaluation of dependencies and impacts, we organized the currently assumed nature-related risks and opportunities. The risks, some of which are recognized in our climate change scenario analysis, include physical risks that could be materialized due to a water shortage or natural disasters and potentially trigger a decrease in production at our manufacturing sites or a lack of procurement from suppliers. Additionally, transition risks may arise if regulations concerning protected areas and pollution are tightened. On the other hand, opportunities were identified in the form of increased demand and development potential for environmentally friendly products, processes, and technologies, as well as environmental materials that contribute to resource circulation.

Meanwhile, we confirmed that JFE Steel's major iron ore and coking coal suppliers have conducted assessments concerning water resources and ecosystem and have publicly disclosed how to respond to their detected risks. We will continue to monitor the status of their response efforts as part of our supply chain management. We will also encourage more of our suppliers to adopt and observe the JFE Steel Procurement Guidelines .

As for our own material risks and opportunities, we will maintain the current measures in place and, while enhancing our assessment, we will keep a close watch on whether additional measures are necessary.

Nature-Related Risks and Opportunities in Direct Operations

	Cate-gory		Item	Impact	Magnitude	Likelihood	Time frame	Response
Direct operations	Physical risk	Acute	Intensification of extreme weather	Suspension of operations due to infrastructure damage caused by the increased frequency and severity of natural disasters	Large	Low	Medium term	**Reinforcement of drainage facilities at steelworks and plants** •Facilities reinforced to prevent water pollution during heavy rainfall (expansion of treatment, water gates, raised manholes, etc.) •Facilities reinforced to prevent site flooding (forced drainage systems, pump trucks, raised critical equipment, etc.) •Damage mitigation through the use of weather information for torrential rains, typhoons, storm surges, etc. (minimizing damage by preemptively shutting down equipment when risks are anticipated)
		Chronic	Water shortages and ecosystem degradation	Suspension of operations due to ecosystem degradation, such as water depletion	Large	Low	Long term	**Reduced water intake and discharge by recycling water** •Formulate water management plans and monitor and manage water usage (set targets for water usage and recycling rate and track actuals monthly) •Reduce water intake and discharge by increasing recycling rates (install coagulation-sedimentation, filtration, biological treatment to promote recycling) •Conduct water stress assessments (using Aqueduct for objective evaluation)
	Transition risk	Policies and regulations	Stricter regulations toward nature positive	Increased compliance costs from tighter regulations on water use and pollution affecting ecosystems around business sites (terrestrial and aquatic)	Medium	Low	Long term	**Implementation of the following measures with the goal of Zero Major Environmental and Disaster Accidents** •Implement thorough purification to reduce environmental impacts when discharging water used in the steelmaking process into public water bodies •Conclude agreements with local governments that enact stricter discharge standards than those mandated by the Water Pollution Prevention Act , and implement water quality improvement initiatives with stricter voluntary management standards to consistently meet those agreements •Conduct environmental audits (annually by the audit department, covering measurement results, responses to incidents, and the handling of complaints) •Install NOx and SOx control equipment (e.g., low-NOx burners, exhaust gas treatment facilities) •Use dust dispersion simulations to design effective countermeasures for neighboring areas (identify sources, strategic placement of windbreak walls and nets) •Continuously monitor major emission sources of soot, dust, NOx, and SOx, and detect and remedy abnormal signs at early stage •Periodically conduct on-site environmental audits of domestic and overseas Group companies (every 3–5 years, depending on environmental impacts and management practices) •Periodically exchange information with local residents (explain environmental measures at steelworks and regularly gather resident feedback)
		Reputation	Impact on surrounding ecosystems	Increased costs from adverse impacts on local ecosystems (terrestrial and aquatic) through water use or pollution, and revenue decline due to loss of trust	Medium	Low	Long term	
	Opportunity	Services, markets	Ecosystem restoration and environmental load reduction through steel and slag products	Increased demand for products contributing to nature positivity and reducing environmental load	Medium	High	Short term	**Expansion of supply of products that contribute to biodiversity, nature positivity, and environmental load reduction, and collaboration with municipalities and other companies** •Expand supply of eco-products such as high-tensile steel sheets and electrical steel sheets •Manufacture steel sheets free of environmentally harmful substances such as hexavalent chromium •Contribute to marine environment improvement, tidal flat creation, and coral reef restoration through steel slag products •Joint public-private research project with Yokohama City for "Creating Abundant Seas" •Agreement with Chiba Prefecture on a demonstration project for blue carbon creation at the Hota Fishing Port •Promote biodiversity verification of steel slag products through collaboration with the venture company Innoqua Inc.

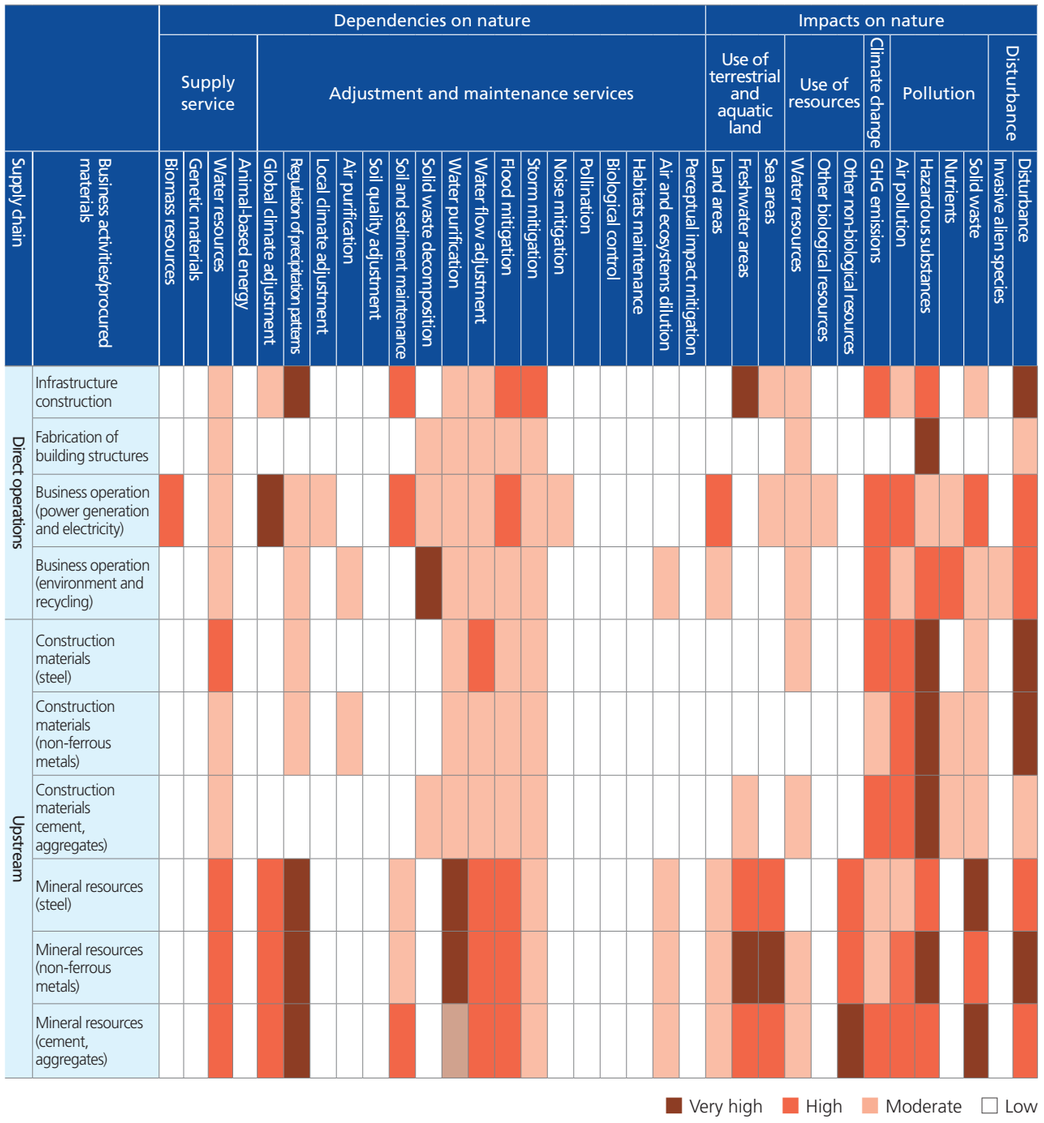
	Cate-gory		Item	Impact	Magnitude	Likelihood	Timeframe	Response
Direct operations	Opportunity	Products and services	Growing demand for resource-circulating products	Higher sales by expanding lineup of resource-circulating products	Medium	High	Medium term	**Expand lineup of environmental products supporting resource circulation** •Expand targeted products at JFE Shoji and strengthen distribution and logistics
		Nature preservation and restoration	Biodiversity conservation at factories	Enhanced reputation among stakeholders, including local residents, by promoting initiatives on Company premises in response to growing public interest in nature and biodiversity conservation	Low	Medium	Medium term	**Biodiversity conservation initiatives on Company premises, mainly at the Chita Works** •Reproduction and conservation of the ecosystem of the Chita Peninsula, Aichi Prefecture, at Biotope Chita •Biotope Chita certified as a Nature Symbiosis Site •Chita Works certified as an Aichi Biodiversity Company •Transplanting of rare plants within planned construction areas
Upstream	Physical risk	Acute	Intensification of extreme weather	Instability of raw material procurement and increased procurement costs due to increased frequency and severity of natural disasters	Medium	Low	Medium term	**Response policy** •Diversification of procurement sources •Sharing and promoting the JFE Steel Procurement Guidelines •Monitoring suppliers' ESG-related activities **Specific measures currently implemented** •Ongoing diversification of procurement sources •Confirming presence or absence of programs addressing proximity to critical ecosystems and water-related risks at each major supplier site
		Chronic	Water shortages and ecosystem degradation	Instability of raw material procurement and increased procurement costs due to ecosystem degradation such as depletion of water resources	Medium	Low	Long term	
	Transition risk	Policies and regulations	Strengthening of mining regulations	Increased procurement costs due to decline in new mine development caused by expansion of protected areas	Medium	Low	Long term	
				Increased procurement costs due to tighter regulations on environmental impacts such as pollution and water use during mining	Medium	Low	Long term	
		Reputation	Serious impacts at procurement mines	Reputational decline from sourcing at mines that seriously impact critical natural areas or local communities due to deforestation or pollution, and reduced procurement volumes due to mine shutdowns from serious impacts	Medium	Low	Long term	
		Market	Demand for sustainable procurement	Increased compliance costs from demands by customers and investors for sustainability in raw material procurement	Low	Medium	Medium term	

Engineering Bussiness

Specific Categories of Findings on the Dependencies and Impacts on Nature (Evaluate)

Regarding the dependencies and impacts of our engineering business on nature, we reviewed the findings under infrastructure construction and business operation categories at our sites and procurement from our upstream supply chain at iron ore and coking coal mining sites. Our procurement and manufacturing operations depend on natural resources, particularly related to water supply, the control of water volume, and climate adjustments. Meanwhile, our infrastructure construction operations impact nature through GHG emissions and pollution. The iron ore and coking coal mining conducted upstream in our supply chain also affect nature through land use, water resource use, GHG emissions, and pollution.

Following this evaluation, we proceeded with assessments focused on infrastructure construction and upstream procurement, which have significant dependencies and impacts as well as business scale.

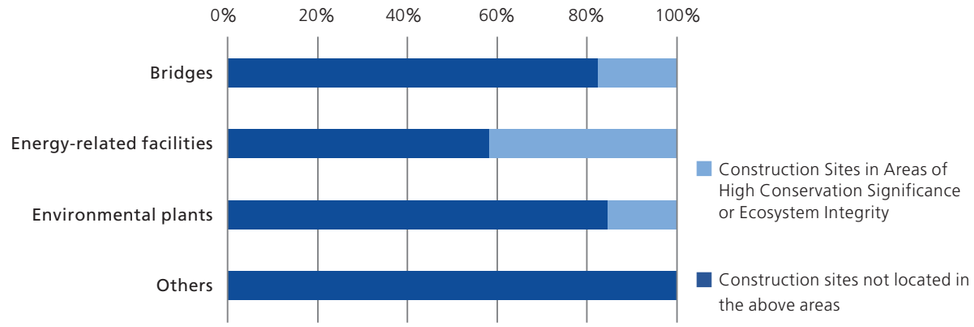


Assessment of Construction Sites (Locate)

We identified the locations of domestic construction sites at a certain scale in 2024 and evaluated them based on the five criteria defined by the TNFD for priority areas. The evaluation found that some construction sites are in areas of high conservation significance or ecosystem integrity. Other criteria, such as water stress, were generally evaluated as low.

Roughly 20% of the construction sites are in areas of high conservation significance or ecosystem integrity, and when viewed by business type, many are energy-related facilities. At all construction sites, we confirmed that environmental assessments are conducted in advance regarding impacts on surrounding ecosystems and that additional measures are taken during construction to reduce ecosystem impacts.

Ratio of Construction Sites in Areas of High Conservation Significance or Ecosystem Integrity



Reviewing Nature-Related Risks and Opportunities (Assess and Prepare)

Following the above evaluation of dependencies and impacts, we organized the currently assumed nature-related risks and opportunities. The risks, some of which are recognized in our climate change scenario analysis, include physical risks that could materialize due to a water shortage or natural disaster and potentially trigger a decrease in production at our manufacturing sites or insufficient procurement from suppliers, apart from transition risks that might occur if regulations concerning protected areas and pollution are tightened.

Nature-Related Risks in Direct Operations

	Category		Item	Impact	Magnitude	Likelihood	Timeframe	Response
Direct operations	Physical risk	Acute	Intensification of extreme weather	Suspension of construction work and increased construction costs due to increased frequency and severity of natural disasters	Medium	Medium	Medium term	•Adoption of construction methods requiring less on-site work and development of new construction technologies •Enhance project management by using weather forecasting systems •Reduce CO_2 emissions from fuel consumption by using commercial power instead of generators
		Chronic	Water shortages and ecosystem degradation	Suspension of construction work and increased construction costs due to ecosystem degradation such as depletion of water resources	Medium	Medium	Long term	•Promote water recycling, adopt construction methods with low water use, and develop methods that account for water shortages
	Transition risk	Policies and regulations	Stricter regulations toward nature positive	Decline in new construction demand and increased compliance costs due to stricter land use regulations toward 30 by 30	Medium	High	Medium term	•Properly conduct construction in protected areas based on regulations and in line with the requirements of laws, municipalities, and other customers
				Increased compliance costs due to stricter regulations and monitoring requirements on environmental impacts such as pollution and ecosystem disruption during construction	Medium	Medium	Long term	•Optimize environmental assessment compliance costs by leveraging lessons learned from past construction projects •Develop efficient environmental management methods using digital technologies
		Market / Technology	Delay in technologies addressing ecosystem considerations	Increased costs for developing and implementing technologies that contribute to nature positive and resource circulation, and loss of opportunities due to delays in response	Medium	Medium	Medium term	•Develop technologies for sorting and recycling plastics and promote new recycling businesses in collaboration with municipalities and private companies in plastic-related industries
		Reputation	Impact on surrounding ecosystems	Reputational decline due to adverse impacts on terrestrial and marine ecosystems caused by land use change, pollution, and disruption during construction	Medium	Medium	Medium term	•Plan and implement construction in line with environmental assessment results to reduce ecosystem impact risks •Reduce ecosystem impact risks through environmentally conscious initiatives during construction •Plan and implement construction based on engagement with local communities

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Nature-Related Opportunities in Direct Operations

	Cate-gory		Item	Impact	Magnitude	Likelihood	Timeframe	Response
Direct operations	Opportunity	Services, markets	Efficient use of construction materials	Increased demand for repair work to extend infrastructure lifespans	Large	High	Short term	•Shorten construction periods, adopt methods requiring less on-site work, and develop new construction technologies to reduce impacts on infrastructure users
			Expansion of orders for environmental facilities	Increased demand and order opportunities for environmental facility construction such as for waste-to-energy plants	Medium	High	Short term	•Design improvements to enhance performance of existing products, develop new customers •Development of new products
			Development and implementation of ecosystem-conscious technologies	Increased demand and order opportunities through construction technologies with low environmental impact	Medium	Medium	Medium term	•Adoption of construction methods requiring less on-site work and development of new construction technologies
			Expansion of orders through national resilience measures	Expansion of order opportunities through national resilience measures to address intensifying natural disasters	Large	High	Short term	•Propose designs to customers that anticipate early restoration after disasters •Strengthen orders for seismic reinforcement and vibration control work on existing structures

Nature-Related Risks and Opportunities in Upstream and Downstream

	Cate-gory		Item	Impact	Magnitude	Likelihood	Timeframe	Response
Upstream	Physical risk	Acute	Intensification of extreme weather	Instability of raw material procurement and increased procurement costs due to increased frequency and severity of extreme weather events	Medium	Medium	Long term	•Consider the use of green steel depending on construction project requirements •Require suppliers to implement GHG reduction initiatives through procurement guidelines •Develop construction technologies that reduce the use of materials with unstable procurement risks •Reduce procurement instability risks by developing new suppliers
		Chronic	Water shortages and ecosystem degradation	Instability of raw material procurement and increased procurement costs due to ecosystem degradation such as depletion of water resources	Medium	Medium	Long term	•Reduce procurement instability risks by developing new suppliers •Develop construction technologies that reduce the use of materials with unstable procurement risks •Require suppliers to reduce and effectively use resources (water, energy, raw materials, etc.) through procurement guidelines •Require suppliers to implement biodiversity conservation and sustainable use initiatives through procurement guidelines
	Transition risk	Policies and regulations	Stricter regulations on raw materials	Increased compliance and procurement costs due to stricter regulations toward nature positive in raw material mining and requirements for sustainability certification	Medium	Medium	Long term	•Reduce procurement instability risks by developing new suppliers •Develop construction technologies that reduce the use of materials with unstable procurement risks •Require suppliers to reduce and effectively use resources (water, energy, raw materials, etc.) through procurement guidelines
	Opportunity	Resource efficiency	Efficient use of construction materials	Reduction of natural impacts and cost savings in procurement through efficient use of construction materials, leading to reduced procurement volumes	Medium	Medium	Short term	•Implement environmentally conscious designs that require fewer materials •Further promote the use of recycled materials •Adoption of construction methods requiring less on-site work and development of new construction technologies
	Transition risk	Policies and regulations	Expansion of responsibility scope for impacts on nature after construction	Increased monitoring costs and reputational decline due to construction of facilities with significant natural impacts during operation (expansion of responsibility scope)	Medium	Medium	Long term	•Plan and design facilities from a life cycle perspective to reduce environmental impact risks

Measures to Address Impacts and Risks in Areas of High Conservation Significance or Ecosystem Integrity

The evaluation of construction sites in FY2024 confirmed the presence of sites in areas of high conservation significance or ecosystem integrity. Actions were taken at construction sites in these areas to avoid and mitigate impacts on ecosystems, as shown below.

Measures Implemented at Construction Sites in Areas of High Conservation Significance or Ecosystem Integrity Example

Example: Bridge repair work in Prefecture A

The site was confirmed to be adjacent to a protected area and to have high ecosystem integrity, and the following actions were taken during construction.

- In agreement with the client, the following actions were taken:
  - ➡ For repainting, existing paint film was removed using the Eco Paint Peeling Method (EPP method)*, which employs a water-based paint stripping agent free of organic solvents.
- The work areas were sealed to prevent paint from dripping during application.

Example: Construction of an energy-related facility in Prefecture B

The site was confirmed to be adjacent to a protected area and to have high ecosystem integrity, and the following actions were taken during construction.

- In agreement with the client, the following actions were taken:
  - ➡ A sealed conveyor system was adopted, with dust collectors installed at each dust-generating point, in order to reduce dust dispersion into the surrounding environment.
- Oil pans were installed under outdoor gear reducers so that lubricant would not leak even if the gaskets deteriorated.
- Painting was performed at factories insofar as possible, and low-VOC paints were applied in areas requiring on-site application.

> *JFE Group CSR REPORT 2015, Eco Paint Peeling Method (P. 46): (https://www.jfe-holdings.co.jp/en/common/pdf/sustainability/data/2015/csr2015e.pdf)

Risk and Impact Management

As a holding company, JFE Holdings is responsible for the Group's comprehensive risk management under the Basic Policy for Building Internal Control Systems. Regarding initiatives for biodiversity conservation and nature positive, each operating company identifies priority areas, assesses dependencies and impacts, and evaluates risks and opportunities in line with the LEAP approach recommended by the TNFD, and the results, including priorities for action, are reflected in the JFE Group's strategy.

The JFE Group monitors risks that could affect management at the JFE Group Sustainability Council, Group Management Strategy Committee, and Management Committee. Risks and impacts related to biodiversity conservation and nature positive are also assessed in terms of timeframe, likelihood, and magnitude of impact, and the progress of efforts is reviewed. Quantitative and qualitative targets are set as KPIs for particularly important Group initiatives, and progress and performance are monitored.

For further details, please refer to:
> System for Promoting Sustainability (P. 11)
> Risk Management (P. 251)
> Framework for Environmental Management (P. 47)

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Metrics and Targets

We monitor environmental performance and set targets, and many of these metrics are aligned with the TNFD framework. For the TNFD disclosure metrics that are not yet subject to monitoring and target setting, we will prepare for future data collection.

Items Monitored	Target Operating Company	Metrics	Correspondence to TNFD Metrics (Global Core and Additional)	Performance
Water resources	ST EN SH	Water intake	A3.0	P. 269
	ST EN	Water discharge	C2.1	P. 269
	ST	Water recycling volume	A3.2	P. 269
Pollution	ST EN	Hazardous substance emissions (PRTR)	C2.4	P. 264
	ST EN	Hazardous substance emissions (COD)	C2.1	P. 264
	ST	Hazardous substance emissions (SOx/NOx)	C2.4	P. 263
Resource circulation	ST EN	Resource input volume	—	P. 266
	ST EN	Byproducts/waste emissions	C2.2	P. 266
Use of resources	ST	Water intake and consumption from water-stressed areas	C3.0	No intake from water-stressed areas (Japan)
Risk	ST EN SH	Fines due to negative impacts on nature	C7.2	0 yen (Japan)
Opportunity	ST EN	Beautification/greening expenses at production sites	C7.3	Approx. 0.6 billion yen (Japan)

Items with Set Targets	Target Operating Company	Metrics	Correspondence to TNFD Metrics (Global Core and Additional)	Performance
Reduction of chemical substance emissions	ST	Reduction of chemical substance emissions	C2.4	P. 263
Resource use	ST	Recycling of co-products	A2.1	P. 266
	EN	Recycling rate at construction sites	A2.1	P. 268
	EN	Recycling rate of office recyclable waste	A2.1	P. 267
	SH	Expand product lineup, contributing to resource circulation	C7.4	Initiative starting from FY2025
Effective use of water resources	ST	Efficient use of water resources	A3.0	P. 269

Target Areas

As part of overall risk management, we identify, analyze, and evaluate water risks based on past incidents of droughts and floods in the JFE Group's businesses, forecast data from the Meteorological Agency and results of our scenario analysis. In particular, we consider as key risks the damages to business sites and disruption of the supply chain caused by restrictions on water intake due to droughts or increasing severity of meteorological disasters. In response, we are further reinforcing measures such as using recycled water, securing alternative means, and strengthening drainage facilities.

ST Water Risk Assessment and Measures

JFE Steel identifies and evaluates water-related risks based on past incidents of damage caused by droughts and floods, forecast data from the Meteorological Agency and results of scenario analysis. We conduct a further evaluation of water risks around each manufacturing site from different perspectives by also using the World Resource Institute (WRI)'s Aqueduct, a mapping tool for evaluating overall water risks from droughts and floods in each region around the world. According to the WRI's assessment in June 2024, water risks for all of Japan are not designated at a high level or above, but there will be risks of water shortages and flooding due to weather conditions in the future (2030s and 2040s). JFE Steel identifies steelworks under such weather risks and takes measures such as business continuity planning.

ST Raised Effluent Standards to Reduce Water Resource Pollution Risks in Iron and Steelmaking Processes

JFE Steel strives to reduce its environmental impact on waterways by thoroughly purifying water used in iron and steelmaking processes before releasing it into public waterways or sewers. The company has concluded agreements with the administrative entity in each area that set out more rigorous effluent standards, compared to those stipulated under the Water Pollution Prevention Act. It also established a strict voluntary control standard to improve water quality. For FY2023, COD*, the water quality index for wastewater, was 2.3 tonnes per day.

*COD stands for chemical oxygen demand, an indicator for water pollution in seas, oceans, lakes, and ponds. It represents the amount of oxygen (mg/l) consumed when pollutants present in water, such as organic matter, are oxidized.

EN Proper Management in Accordance with the Water Pollution Prevention Act and Sewerage Act

Wastewater from the JFE Engineering Yokohama head office, Tsurumi works, Tsu works, and the Kasaoka Monopile Factory is released into public waterways or sewer systems. Nitric oxide, phosphorus, and COD in the wastewater are measured on a regular basis and effectively managed in accordance with the Water Pollution Prevention Act and Sewerage Act.

For more on quantitative data related to water, please refer to:
> Environmental Data (P. 255)

Main Initiatives for Biodiversity Conservation and Nature Positive

The JFE Group endorses and participates in the Challenge Zero initiative jointly sponsored by Keidanren and the Japanese government. We are also collaborating with Yokohama City on a project that uses steel slag products to improve the marine environment while also undertaking efforts for biodiversity conservation and nature positive.

> Challenge Zero (https://www.challenge-zero.jp/en/member/37)

ST Complete Chromate-Free Hot-Dip Galvanized Steel Sheets

Chromate treatment using hexavalent chromium (Cr^{6+}), an environmentally hazardous substance, has been performed employed to improve the corrosion resistance of hot-dip galvanized steel sheets, mainly used in the electrical and building materials sectors. We developed steel sheets that deliver performance equal to or greater than that of chromated steel sheets without using hexavalent chromium, and by having customers evaluate the stable performance of these products, we achieved complete chromate-free hot-dip galvanized steel sheets in 2020.

ST Contributing to Biodiversity and the Creation of an Attractive Seaside Town by Utilizing Steel Slag Products (Partnership Agreement with Yokohama City)

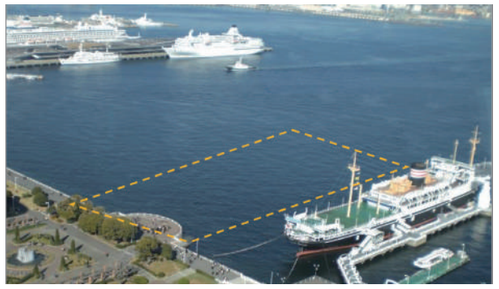
Silty sediment (sludge containing large amounts of organic matter) piles up at the ocean bed along the seaside frontage of Yamashita Park in Yokohama City, Kanagawa Prefecture, and significantly deteriorates water quality in summer. As a result, the ocean's ability to function as a spawning ground or environment for nurturing organisms has been lost.

In a joint research project with Yokohama City, JFE Steel is restoring the intrinsic ability of the waters to purify seawater with the help of marine organisms by using carbonated steel slag products such as Marine Block™ to form shorelines as a base for the adhesion of organisms and assist in improving the marine environment. Immediately after an experiment, we observed an increase in the presence of marine organisms such as starfish and sea cucumbers around the area, and the populations continuing to grow. Moreover, we estimated that 8,400 kl of seawater (equivalent to seventeen 25-meter swimming pools) is filtered per day by filter-feeding marine creatures such as bivalves and sea squirt. We also estimated their impact on the removal of COD and the reduction of CO_2 in comparison to results obtained through water purification at sewage treatment plants.

The findings from the research project were presented at many exhibits and other events, helping to raise local awareness of environmental protection. This public-private research project for improving the marine environment has earned public recognition, with Yokohama City and JFE Steel jointly receiving the FY2021 Environmental Award (Group-2) of the Japan Society of Civil Engineering*1. In September 2022, JFE Steel won the Minister of Land, Infrastructure, Transport and Tourism Award of the 5th Eco Pro Awards*2, sponsored by the Sustainable Management Promotion Organization, a general incorporated association. A signboard commemorating these awards was installed next to the sea-facing balcony in Yamashita Koen Park, displaying research findings to visitors.

*1 The Japan Society of Civil Engineering Award is a prestigious award with a history of over 90 years. The Environmental Award (Group-2) is given to an innovative project that has contributed to any combination of environmental preservation, improvement, and creation activities by developing or operating civil engineering technology or systems.
*2 The award is given to goods, services, technology, solutions, or business models with specific and outstanding eco-friendly attributes that are widely recognized by businesses, consumers, investors, and market players in the Japanese market.

> FY2021 Environmental Award of the Japan Society of Civil Engineering (https://www.jsce-int.org/node/780)
> The 5th Eco Pro Award (Japanese only) (https://sumpo.or.jp/seminar/awards/5th_eco-pro_award_results.html)



The dotted line indicates the area in which slag products are being used at Yokohama Bay (photo taken by Yokohama City)

Colony of sea squirts on Frontier Rock™

Marine Block™ covered by marine bivalves (Yokohama Bay area)

Signboard commemorating the partnership project (installed in September 2023)

ST Agreement Concluded on the Demonstration Project for Blue Carbon Creation at the Hota Fishing Port

In March 2025, JFE Steel entered into a collaboration agreement with Chiba Prefecture, the Hota Fishery Cooperative Association in Kyonan Town, and Kyonan Town for a demonstration project to restore seaweed beds.

In Chiba Prefecture, shallow coastal areas host many rocky reefs and tidal flats with widespread seaweed and seagrass beds. Recently, however, the destruction of seaweed beds has been spreading in the Uchibo coastal area. Although there are several theories about why this is happening in Chiba coastal waters, the main causes are thought to be rising seawater temperatures and damage caused by herbivorous fish. The demonstration project is scheduled to run from April 1, 2025 to March 31, 2028. Initially, steel slag products (artificial stone) rich in iron, which is essential for seaweed growth, will be wrapped with seed strings containing seaweed seedlings and placed in the sea. To subsequently confirm the effects of seawater temperature and herbivorous fish—considered causes of the destruction of seaweed beds—seaweed growth will be monitored under varying conditions, such as species and water depth.

This demonstration project is intended to create blue carbon* and improve fishery productivity by enhancing the marine environment.

*Blue carbon refers to CO_2 sequestered by growing seaweed and other marine vegetation.

April 30, 2025, at the Hota Fishing Port
From left: Ms. Yoko Inoue, Director General, Environmental and Community Affairs Department , Chiba Prefecture
Mr. Eiji Katayama, General Manager, Slag Business Planning Division , JFE Steel Corporation
Mr. Harukazu Shiraishi, Mayor of Kyonan Town
Mr. Shigeo Murai, Representative Director and President, Hota Fishery Cooperative Association

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ST Advancing Biodiversity Verification of Steel Slag Products in Collaboration with Venture Businesses

JFE Steel keeps a water tank containing the coral-covered steel slag products Frontier Rock™ and Marine Block™ at the exhibition area at the reception of the head office, offering visitors the opportunity to enjoy watching coral and tropical fish while learning about our initiative to preserve the ecosystem using steel slag products. We also intend to conduct experiments inside the tank. Innoqua Inc.* is providing technical support for the exhibition, which has been featured by several newspapers and TV programs as an example of business collaboration in the field of the environment.

*A venture company engaged in the development of systems for managing and nurturing corals and fish by combining its aquarist know-how with IoT and AI.

Healthy coral growth on Marine Block™ (left) and Frontier Rock™ (right) inside the water tank

ST The Biotope Chita Initiative to Reproduce and Conserve the Local Ecosystem

To commemorate the 80th anniversary of its opening in 2023, the JFE Steel Chita Works established and developed Biotope Chita within the plant premises to recreate and conserve the Chita Peninsula's ecosystem. Of the approximately 2 hectares of site area, 1 hectare had already been developed as a green belt in 2013. We are creating habitats at Biotope Chita for living organisms and conducting community-based events in collaboration with the local area.

Biotope Chita overview

Rice planting event

ST The Chita Works Certified as an Aichi Biodiversity Company

In November 2022, our Chita Works was recognized as a certified enterprise under the Aichi Biodiversity Company Certification Program in its first term launched by Aichi Prefecture based on the Aichi Biodiversity Strategy 2030. The program is intended to encourage more businesses in the prefecture to play a pivotal role in preserving local biodiversity by certifying those that have implemented outstanding initiatives to do so.

We have used Biotope Chita at the Chita Works since FY2022 to create green spaces that attract the chestnut tiger butterfly, a species that migrates more than 2,000 kilometers across Japan, and we have partnered with municipalities in the Chita Peninsula of Aichi Prefecture to exchange information on butterfly arrivals. We are also engaged in conservation activities for native species such as the Japanese rice fish (Oryzias latipes) and Japanese honeybee (Apis cerana japonica). We have further strengthened our initiatives since FY2024 by undertaking ex-situ conservation of wetland plants.

Certified
Aichi Biodiversity Company

Chestnut tiger butterfly

Japanese rice fish

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ST Biotope Chita Certified as a Nature Symbiosis Site

Biotope Chita, the biodiversity conservation base of the Chita Works, was certified as a Nature Symbiosis Site by the Ministry of the Environment in March 2025. The certification was obtained as a result of Chita Works joining in 2024 the previously certified Inochi wo Tsunagu Projec t*2, which operates in the Greenbelt of Chita peninsula*1.

A Nature Symbiosis Site is an area that promotes biodiversity conservation through private initiatives and other efforts, certified by the Government of Japan under a system led by the Ministry of the Environment. It is one of the initiatives for achieving the international 30 by 30 target to effectively conserve more than 30% of land and sea as healthy ecosystems by 2030. This certified area is a portion of Biotope Chita (0.66 ha). Certification was granted following monitoring surveys that confirmed the conservation of biodiversity, having identified 86 plant and 16 bird species. Going forward, JFE Steel Chita Works will also obtain independent certification and further strengthen its initiatives.

*1 The Greenbelt of Chita peninsula (76.33 ha) is a forest belt in the coastal industrial area of the Chita Peninsula. In 2011, efforts began under the Inochi wo Tsunagu Project, a wide-area collaboration focused on biodiversity. Activities include improving the quality of green spaces, creating pathways for species to move freely between green spaces, and creating habitats for living organisms.
*2 The Inochi wo Tsunagu Project was launched in 2011 following COP10 in Nagoya in 2010. The project views green spaces managed by companies along the coastal area of the Chita Peninsula as one large green belt and seeks to promote integrated conservation and management beyond corporate boundaries, including periodic information exchange meetings, collaborative activities to promote biodiversity conservation, and joint awareness-raising events.

自然共生サイト認定
30by30

ST Initiatives for Blue Carbon Using Steel Slag Products and Acquisition of J Blue Credit™

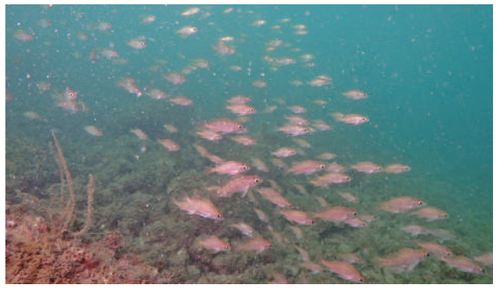
In recent years, research on blue carbon (carbon absorbed and stored by living organisms in the ocean) has been advancing. We are also creating seaweed beds using steel slag products and measuring the total carbon absorption of these beds.

JFE Steel has been promoting the research while creating a seaweed bed using steel slag products and measuring the amount of carbon captured by the entire bed. The company has been collaborating with Koujiro Fisheries Cooperative (Iwakuni City, Yamaguchi) and the National Institute of Technology, Ube College (Ube City, Yamaguchi) on a project to create a seaweed bed and ecosystem using recycled materials at areas around Shinto, Iwakuni City, since FY2012. The initiative involves creating a seaweed bed with rich biodiversity using Marine Stone™, a grain-size-adjusted steel slag, and other steel slag products, and measuring CO_2 absorption of the created beds. The cumulative amount of CO_2 absorbed and stored from 2018 to 2023, which totaled 81.4 tonnes, received J Blue Credit™ certification by the Japan Blue Economy Association. This was the first certification ever given to a three-party joint project by the Fisheries Cooperative, academia, and private business. The seaweed bed created through the project had the co-benefits*1 of offering a gathering place for diverse fish. Additionally, the sea area is used for education and research.

This initiative was highly regarded, and its members and JFE Steel received the Ministry of Agriculture, Forestry and Fisheries Prize for the 32nd Global Environment Award*2 in 2024.

*1 Climate co-benefits are the positive impacts beyond greenhouse gas reduction that result from climate action policies and projects.
*2 The Global Environment Award recognizes environmental preservation and related efforts that will help establish a circular society for a "harmonic coexistence between industrial development and the environment of the Earth."

> The 32nd Global Environment Award (Japanese only) (https://www.sankei-award.jp/eco/jusyou/)



School of rockfish gathered around the steel slag seaweed bed

Excellent place for education and research (photo from the National Institute of Technology, Ube College)

ST Restoring Marine Ecosystems Using Steel Slag Products

Marine Stone™ is a grain-size-adjusted steel slag that controls the generation of hydrogen sulfide from the silty sediment in enclosed coastal seas and improves the environment in which organisms can live. Its effectiveness in improving marine environments is widely recognized, and the joint project with Hiroshima University has received external commendations.

Frontier Rock™ is another steel slag product that consists of artificial stones made from a steel slag hydrated matrix and provides an excellent base for seaweed beds and fishing reefs. A submerged bank built on the seabed off the coast of Minami-Izu Town, Shizuoka Prefecture, has become a gathering place for large perennial seaweeds as well as useful fishery resources such as lobsters and a wide variety of fish.

School of fish attracted to the submerged bank made of Frontier Rock™

ST Calcia Improvement Material

Calcia improvement material* is a slag product that uses converter-type steelmaking slag as raw material and is manufactured by controlling composition and adjusting particle size. Calcia-improved soil can also be used for creating shallow waters, tidal flats, and embankment material and as backfill material for deep excavation pits left by marine sand extraction. It contributes to improving the marine environment. To date, it has been used as the main embankment material for creating a shallow area (incidental facilities at the sediment disposal site, Tokuyama-Kudamatsu Port).

> *Contribution of Steel Slag Products (P. 165)

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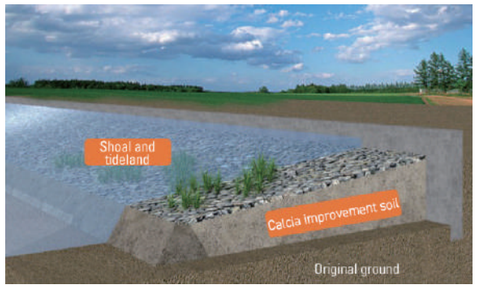


Example of calcia improvement soil application (shoal and tideland construction material)

EN Initiatives in the Engineering Business for the Preservation of the Natural Environment and Biodiversity

In engineering projects, at waterfronts, in mountainous areas, or in large-scale construction efforts, customers and related organizations often conduct preliminary surveys in advance, depending on the importance of conserving the surrounding environment, and various environmental protection conditions may be imposed on the work, including measures for protecting living organisms.

JFE Engineering respects the proposed conditions and thoughtfully considers biodiversity conservation by keeping the impact of construction works at a minimum. For example, the company may propose a construction method that minimizes the impact of noise or drainage pollution. For its steelworks, the status of biodiversity on its premises and in surrounding areas are checked, and necessary measures are taken to ensure preservation.

Our construction projects adopt methods that comply with customer requirements. For example, reference is made below to Biodiversity Conservation in the Reconstruction of the Tedori River Bridge and Contribution to Japan's First Communication Optical Fiber Cable Installation across Tokyo Bay Using the Curved Pipe Jacking Method.

We also engage in community activities that contribute to the conservation of local natural environments and biodiversity.

EN JFE Engineering: Biotope for Children's Learning Experience

JFE Engineering has conducted some renovation work at the JFE Dragonfly Path in the Tsurumi Works, and since 2009 it has been inviting children in the community to learn about the ecosystem at a biotope, Dragonfly Pond, located along this path.

The JFE Dragonfly Path Fan Club, a group mainly composed of neighborhood residents, has organized a research event that involved capturing dragonflies in order to learn about their ecology and the local environment.

We are also a founding member of the How Far Do Dragonflies Fly Forum , which aims to improve the quality of green spaces in the Keihin coastal area and contribute to biodiversity. The forum brings together companies, residents, governments, and experts and conducts research activities such as capture, tagging, and release of dragonflies that fly in 15 green spaces and biotopes scattered throughout the Keihin coastal area and inland areas to track their movements. The JFE Dragonfly Path also serves as a research site.

These activities were certified in 2024 by the Ministry of the Environment as a Nature Symbiosis Site under the designation "Yokohama/Keihin Forest."

Dragonfly Pond serving as a biotope

EN Participation in Kanagawa Prefecture's Reforestation Partner Program

In March 2023, the JFE Engineering Group's J&T Recycling Corporation expressed its support for the Kanagawa Reforestation 50 Year Plan and signed a memorandum of understanding with Kanagawa Prefecture on the Reforestation Partner Program*, an initiative launched by the prefecture.

The company's intent is to use the program as part of its environmental protection and harmony activities while supporting the prefecture's vision. Under the partnership, the company's employees volunteer to help thin trees and take part in other efforts for conserving forests, a valuable source of water for future generations.

The Reforestation Partner Program grants naming rights to participants for parts of the prefecture-owned forests, one of which is now called the J&T Kankyo Miracle Forest (with the word "miracle" expressed in kanji, meaning the "future is coming"). J&T Recycling Corporation is constantly enhancing its ESG initiatives to improve the environment.

*For details about the Reforestation Partner Program, please refer to:

> Website for Kanagawa Prefecture (Japanese Only) (https://www.pref.kanagawa.jp/docs/pb5/partner.html)

New employees pruned trees in a volunteer activity

J&T Kankyo Miracle Forest

森林CO_2
吸収量算定書

ご支援いただいた寄附額による標準的CO_2吸収量
247t −CO_2

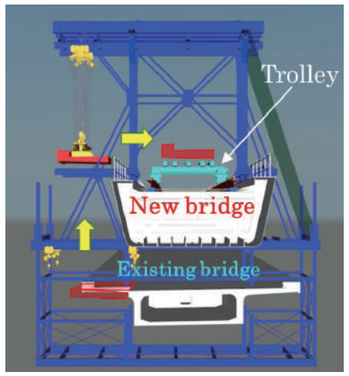
Valuation report on CO_2 absorption by the forest

EN Biodiversity Conservation in the Reconstruction of the Tedori River Bridge

The reconstruction of the Tedori River Bridge* is described under the heading "Toward Realization of Longer Service Life Bridges" in the Initiatives to Transition to a Circular Economy section of this Sustainability Report 2025. The project is characterized not only by the use of stainless clad steel but also by the adoption of a special reconstruction method necessitated by local site constraints. The bridge is located at the mouth of the Tedori River, and the sandy beach beneath the girders is inhabited by the Iso-komori spider (Lycosa ishikariana) and the Little Tern, both listed as endangered species (Category II). We therefore developed a reconstruction method that avoids bringing heavy machinery onto the sandy beach to protect these rare species.

The construction method begins by assembling the new bridge on top of the existing one before its removal and then installing a removal frame on the new bridge. Using this frame, the girders are cut in mid-air, lifted onto the new girders, placed on transport vehicles, and carried out of the bridge area. This reconstruction method was developed by JFE Engineering, combining multiple techniques derived from similar experiences in urban expressway reconstruction and widening projects and applied to the site after full-scale construction trials.

> *Toward Realizing Longer Service Life Bridges (P. 136)



On-site construction status

Removal method image

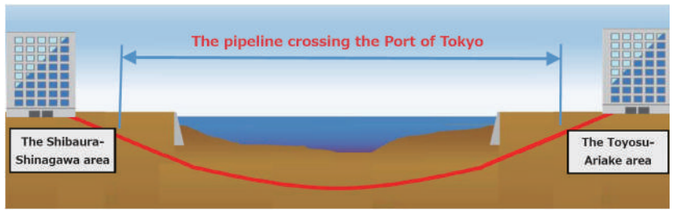
EN Contributing the Company's Horizontal Directional Drilling Method to Japan's First Installation of Telecommunication Optical Fiber Cables across Tokyo Bay

JFE Engineering has completed the construction of a transmission channel across Tokyo Bay as a project ordered from Nippon COMSYS Corporation. The ongoing advance of information and telecommunication technologies have made telecommunication networks indispensable in daily life, and the growing volume of telecommunication traffic requires an increasing number of optical communications facilities.

Construction involved laying a pipeline for installing telecommunication optical fiber cables between Tokyo's Shibaura and Shinagawa areas, where many tech companies are located, and between the city's Toyosu and Ariake areas, thereby establishing a network with the shortest route. The challenging work required laying the pipeline deep undersea to prevent damaging seawalls and other protection structures around Tokyo Bay as well as handling nearly 2,000 meters of pipeline, one of the longest in Japan. The construction was completed successfully without accident within just two months, thanks to the use of the JFE-RAPID™ method, a pipeline technology developed by JFE Engineering to facilitate quick, low-cost construction.

The JFE-RAPID™ method makes it possible to bring down construction cost and shorten the work period by drilling at the sea bottom and moving the pipeline forward through a circular boring method instead of installing vertical shafts. This is an effective method for installing telecommunication cable and a promising technique for laying power cable pipelines for offshore wind-power stations.

The pipeline (concept)



Propulsion machine

> JFE Engineering Completes the Construction of a Pipeline Crossing Tokyo Bay—Contributing with the Company's Horizontal Directional Drilling Method to Japan's First Installation of Telecommunication Optical Fiber Cables across the Bay (Japanese only)
(https://www.jfe-eng.co.jp/news/2024/20240523.html)

Initiatives for Realizing Nature Positive in the Keihin Waterfront Area

The shared urban space under OHGISHIMA2050 is envisioned as a green, future-oriented venue for demonstration and interaction of advanced technologies supporting DX and GX. In collaboration with Kawasaki City, we are exploring the creation of a nature-positive urban space that fosters biodiversity.

As part of land use initiatives in the Keihin area, we are planning to promote the promotion of CCUS projects by leveraging the expertise and know-how cultivated in advanced CCS projects, contributing to ecosystem conservation through businesses that support carbon neutrality. Land use conversion in the Keihin area involves dismantling large idle facilities such as steelworks and coke plants. Through the recycling of scrap, concrete, and other materials, we are working to reduce environmental impact. At Ogishima, we have continued operations as a steelworks rich in greenery, conducting extensive greening initiatives to create a people- and environment-friendly site. In land use conversion as well, we will aim to realize an urban environment that takes biodiversity and resource circulation into consideration.

Shared urban space (concept)

Social: Executive Summary

The mission of the JFE Group is to establish its position as an indispensable company supporting people's daily lives, driving sustainable development and ensuring safe, comfortable lives for all. Through our efforts to address social issues, such as investing in human capital, and by respecting human rights across the supply chain, we intend to achieve the sustainable growth of the Group and become an entity that continues to develop and provide safe, high-quality products and services based on our leading technologies.

The human resources strategy of our Eighth Medium-Term Business Plan stands on two pillars: establishing a talent portfolio for achieving management strategies, and maximizing employee capabilities. Efforts to realize these pillars include diversifying recruitment sources to respond to business expansion and intensified hiring competition, strategically developing talent aligned with management strategies, encouraging the active participation of diverse human resources, and enhancing employee engagement.

With the belief that respect for human rights is foundational for business as well as a corporate social responsibility, we have been taking action to realize a society in which human rights are respected and protected. We have also been conducting human rights due diligence since FY2021 in accordance with the United Nations Guiding Principles on Business and Human Rights. In 2023, we revised the JFE Group Human Rights Basic Policy in light of recent changes in awareness and issues related to human rights. We will continue to promote Groupwide efforts as well as seeking cooperation from all stakeholders including our supply chain to respect and protect human rights.

Regarding contribution to local communities, it is important to cooperate and collaborate with society as we carry out our corporate activities globally. By actively contributing to those communities, we hope to achieve sustainable growth for both our businesses and society at large.

Targets and Results for Material Issues of Corporate Management Concerning Society (Materiality)
> FY2024 KPI Results and FY2025 KPIs (P. 19)

Key Initiatives

- Formulate a human resources strategy (P. 176) linked to management strategy.
- Promoting talent acquisition and development (P. 178) aligned with management strategies such as overseas expansion and DX and establish a talent portfolio.
- Proactively promote DEI (P. 180), including encouraging the active participation of diverse human resources, especially female employees, and fostering a culture that embraces diversity. We are also working to improve work engagement (P. 185) by deeply instilling our purpose, expanding investments in workstyle reforms, and improving workplace environments. As the foundation supporting these initiatives, we are promoting occupational health and safety (prevention of occupational accidents) (P. 191) and health and productivity management (P. 194), focusing on creating workplaces where everyone can work safely and in good health.
- As part of our human rights due diligence (P. 200), we revised the JFE Group Human Rights Basic Policy and promoted the identification and remediation of human rights risks at JFE Holdings and major Group companies. In the supply chain, we conducted surveys on human rights risk for high-priority suppliers. In FY2024, we expanded the scope of these surveys to include high-priority overseas Group companies. We provided feedback to suppliers on the results of the FY2023 survey and supported those identified as requiring follow-up in making improvements. In FY2025, we plan to further expand additional surveys at overseas Group companies and conduct a second round of surveys for high-priority suppliers, focusing mainly on those surveyed in FY2023.
- Actively promote DX (P. 177), including the active introduction of IoT, AI, and data science, and the application of data assets.

Human Capital

Basic Policy

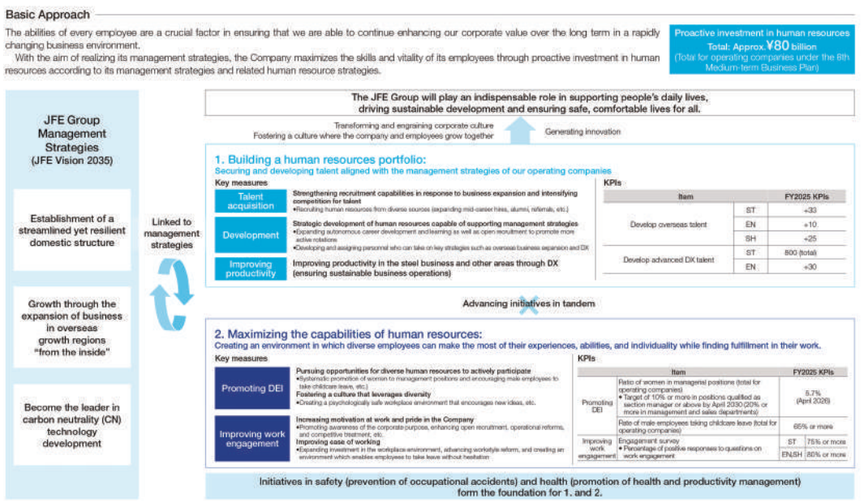
In this rapidly changing business environment, the power of each employee is essential for continuously enhancing corporate value into the future. The JFE Group views people as the driving force of corporate growth and, under its human resources strategy linked to its management strategies, as well as the JFE Group's Basic Policy on Human Resource Management and the JFE Group Health Declaration, seeks to achieve its management strategies by maximizing employee abilities and vitality by actively investing in human capital.
The human resources strategy of the Eighth Medium-Term Business Plan stands on two pillars:
① Establishing a talent portfolio to realize management strategie
- Promote talent acquisition and development aligned with each operating company's management strategies and establish a talent portfolio.
- Particularly focus on developing employees capable of supporting business expansion and DX as a common, Groupwide priority.

② Maximizing human resource talent
- Realize conditions where every individual in the human resource portfolio can thrive through improved work engagement.
- Realize conditions where every individual in the talent portfolio can thrive through enhanced employee engagement.

By advancing our efforts under these two pillars, we will strive to maximize the power of our people, foster a corporate culture in which the Company and its employees grow together, and execute transformation for growth while realizing our management strategies.

These efforts will be supported by ensuring occupational health and safety, which depends upon ensuring employee well-being and safety as a basic corporate requirement, particularly for manufacturers, and is fundamental to the continued existence of any company. The JFE Group adheres to the philosophy of safety first and, together with its Group companies and partner companies (including contractors), is promoting health and safety activities and effectively operating an occupational health and safety management system to promote a safe and healthy workplace. Furthermore, the Group seeks to create safe, attractive environments where everyone can enjoy working and aggressively promotes the establishment of settings in which personnel with diverse backgrounds can demonstrate their full potential. To that end, it collaborates with its health insurance union and industrial health staff to maintain and strengthen employee health so that everyone can work with vigor.
We plan to invest approximately 80 billion yen (total for operating companies) in these human resources during the period of the Eighth Medium-Term Business Plan.

Overall Framework of the Human Resource Strategy



JFE Group's Basic Policy on Human Resource Management

❶ Respect Human Rights and Facilitate Fair Management of Human Resources
The Group manages human resources fairly by respecting the human rights of all employees and nurturing employees who embrace the Group's corporate values and standards of business conduct.

❷ Foster a Corporate Culture that Nurtures People and Promotes Satisfying Workplaces
The Group facilitates interactive communication among employees to cultivate a corporate culture that nurtures human resources and creates safe, attractive environments where everyone can enjoy working.

❸ Diversify Human Resources
The Group ensures that diverse all people, including women, non-Japanese, the elderly and the disabled, can demonstrate their full potential.

❹ Recruit and Steadily Nurture Excellent Human Resources
To survive in an increasingly complicated and diversified business environment, the Group steadily recruits diverse, high-quality skilled human resources, ensures that they receive the skills and knowledge necessary to continue strengthening the Group's technological capabilities, and nurtures their global capabilities.

Poster displayed at each workplace

JFE Group Health Declaration

❶ JFE, recognizing that health and safety are fundamental for fulfilling its mission, creates workplaces in which every employee can work with vigor.

❷ JFE and its health insurance union work together to advance initiatives for maintaining and upgrading the physical and mental health of employees and their families.

❸ JFE gives top priority to health and safety and to creating a health culture in which each employee takes personal responsibility.

Targets and Results

Having identified the promotion of talent acquisition and development, the promotion of DEI, the improvement of work engagement, the prevention of workplace accidents, and the promotion of health and productivity management as material issues related to human capital, the JFE Group has set KPIs to manage progress and promote relevant initiatives.

For KPI performance results, please refer to:
> FY2024 KPI Results and FY2025 KPIs (P. 19)

Promoting Talent Acquisition and Development

Initiatives

We are acquiring and developing talent to execute the business strategies of operating companies and building a portfolio aligned with those strategies. Amid intensifying competition for talent, we are pursuing automation and labor-saving measures through DX and establishing optimal production systems in the steel business, and building a lean, robust organizational structure. At the same time, we are strengthening our recruitment capabilities by combining diverse sources such as career hires, alumni hires, referral hiring, and the use of scouts and agencies. Additionally, we are enhancing corporate recognition through advertising and offering competitive compensation.

From the perspective of human resource development, we are cultivating an awareness of autonomous career development by providing broad work experience through active job rotation, developing learning environments tailored to employee motivation, and expanding voluntary (self-nominated) training programs. Specialized human resource development will depend on continuously securing and developing global and DX talent to implement the Group's management strategies, such as expanding locally based overseas operations and building a lean, resilient organizational structure. We are particularly emphasizing these initiatives.

For more on training results, please refer to:
> Social Data (P. 273)

ST Strengthening the Foundation of the Domestic Steel Business and Developing Human Resources for Growth and Priority Fields

JFE Steel will maintain its domestic steel business as the foundation of its operations while continuously enhancing the capabilities of its human resources. The company is building and implementing a framework to assign personnel to growth and priority fields by leveraging the depth of its workforce talents. In addition, it is reviewing the overall framework and content of its management training to ensure management practices are aligned with its established purpose, vision, and values.

ST Domestic Steel Business

JFE Steel is enhancing the quality of its human resources by encouraging and supporting autonomous career development. This includes providing diverse work experience through active job rotation, developing learning environments tailored to employee motivation, and expanding voluntary (self-nominated) training programs.

Strengthening the skills of younger employees has become increasingly important for operational staff during generational turnovers. In response, the company is leveraging the human resource development system at its manufacturing sites to assess and analyze individual skill levels quantitatively and apply these insights to training. Furthermore, it is working to further strengthen the effectiveness of training by adopting IT, including the introduction of training simulators using mixed reality (MR) technology.

ST Growth and Key Areas

JFE Steel is promoting the transition of personnel from the domestic steel business by equipping them with the skills and experience required in growth and priority areas such as overseas operations and DX. For its overseas business, it is building a pool of human resources capable of managing global operations by actively rotating mainly younger employees into overseas assignments to provide hands-on experience, as well as actively encouraging overseas study. The company introduced a new open-application overseas study program in FY2025 to further accelerate human resource development.

To promote DX, JFE Steel has redefined the required skills and knowledge at each career stage while systematizing and enriching the content of training. It has redefined highly skilled DX personnels as Business Innovators, who drive business process reforms, Data Scientists, who leverage advanced technologies such as AI and machine learning, and Digital Designers, who leverage low-code tools to enhance efficiency and sophistication, and is systematically and strategically developing these professionals.

EN Engineering Training Programs to Support Independent Learning

To enhance the knowledge of underlying technologies that represent a technological foundation for an engineering enterprise, the company's leading expert lectures over 30 different courses on basic technology for younger employees and mid-career hires.

A web-based learning curriculum launched in FY2018 offers employees opportunities to acquire business skills that cater to each job responsibility, including accounting and marketing.

Through these training programs, JFE Engineering provides younger employees with opportunities to grow through independent and continuous learning and strengthens the leadership capabilities of managers to transform corporate management.

SH Training and Measures to Maximize Employee Potential

To expand the trading business in Japan and overseas, JFE Shoji has established training programs that enable personnel with diverse backgrounds to achieve growth in their respective environments. These programs include skill training courses for developing the basic skills required of trading company personnel, such as negotiation, finance, and strategic thinking, as well as practical trade training for acquiring hands-on knowledge and onboarding programs for newly hired mid-career employees, thereby further strengthening the company's competitiveness. Furthermore, employees in rank-based training are provided opportunities to learn the roles and skills required for their new qualifications before being promoted for fostering talented employees who can make an early impact. Other programs include the Overseas Trainee Program, which dispatches young employees to overseas Group companies early in their careers, and the national staff training program, through which talented locally hired overseas employees are invited to the head office to further boost their abilities and motivation. These programs for a wide range of employees are intended to raise the performance of the entire Group.

Developing Personnel for Overseas Operations

In addition to hiring and developing non-Japanese for career-track positions in Japan and local personnel overseas, the JFE Group is enhancing programs for Japanese employees to gain overseas study and training. The Company is also developing younger employees through practical experience by dispatching them on overseas assignments.

Global Personnel Development Programs

	JFE Steel	JFE Engineering	JFE Shoji
Study abroad	○	○	○
Short-term overseas language training	○	—	○
Overseas assignments for younger employees	○	○	○
Dispatching engineers to international conferences	○	—	—
Training for local personnel at overseas sites	○	○	○
Practical training in Japan for non-Japanese personnel at overseas sites	—	○	○
Internship for international students	○	○	—

Promoting Diversity, Equity and Inclusion (DEI)

Initiatives

In a rapidly changing business environment, the JFE Group believes that the fusion of various values and ways of thinking will lead to the creation of unprecedented ideas and solutions, which ultimately results in sustainably enhancing corporate value. For this reason, the Group has positioned the promotion of DEI as a key management concern. It has established a DEI promotion department in each of its operating companies to steadfastly advance initiatives such as creating an environment where each employee's diverse experiences, abilities, and individuality can be utilized. In addition, management and the promotion organization are working together to formulate and implement companywide policies, including the establishment of a DEI promotion committee headed by the president. Initiatives are being strategically advanced to particularly encourage the active participation of women. These efforts include recruitment measures to increase the number of candidates for female management positions, and retention measures through the enhancement of internal and external networking and the presentation of role models, as well as placement and development measures through the creation of individual training plans for female employees.

ST Accelerating and Strengthening Diversity Promotion

JFE Steel fosters a workplace culture in which diverse human resources can play an active role across a variety of fields, through such initiatives as management and supervisor training and activities for raising awareness through Diversity Month. Furthermore, directors and general managers strive to accelerate and strengthen the promotion of diversity by setting diversity targets and exercising leadership in their own divisions.

To promote women's advancement, the company provides career training for female employees and their supervisors, actively sends them to external training, and has started to hold online career networking events to connect the entire company and women's health seminars based on the voices of female employees. For female employees engaged in shift work, health seminars by occupational health nurses are provided to facilitate adaptation to shift work, and the human resources department periodically conducts follow-up interviews. For employees experiencing life events such as pregnancy or childbirth, interviews on work-life balance are offered, during which employees can discuss the future of their careers with their supervisor as well as the human resources department. A detailed support system has been established for employees to continue to play an active long-term role while balancing work and childcare. As part of helping employees balance work with childcare and nursing care, the company disseminates joint labor-management messages that encourage male employees to take childcare leave. It also holds seminars to assist employees with balancing work and nursing care. Through these initiatives, it has supported employees through various stages of life while establishing a workplace where they can feel work engagement.

Additionally, the company changed the name of the promotion department to the DEI Promotion Office in FY2024, and it has bolstered its activities as a means of confirming its commitment to diversity from the perspective of equity while also raising the level of understanding of its activities.

EN Promoting Awareness-Raising Activities within the Company

JFE Engineering engages in activities for reforming its corporate mindset, including lectures for executives, diversity seminars for managers, e-learning programs for all employees and the annual Diversity Month.

For female employees, the company supports career development by providing opportunities for external training and networking events. To help employees balance work with childcare and nursing care, workshops are held for those returning from childcare leave, and training sessions are conducted for supervisors on childcare and nursing care. Through these initiatives, we are striving to create a workplace where employees facing life events can also thrive.

The company accepts 36 locally hired employees of overseas Group companies to provide on-the-job training. We also strive to create an environment where workers can spend their time in Japan with a sense of security, by offering information through a portal site and providing Japanese language classes. Every year in Japan, the company actively hires around 100 mid-career recruits possessing diverse characteristics and values, such as those with experience in other industries.

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SH Initiatives to Raise Awareness within the Company

JFE Shoji promotes companywide awareness by periodically conducting diversity seminars for the management team, diversity management seminars targeting managers including those at Group companies, and e-learning for all employees, as well as Diversity Month (every November). In addition, the Diversity Promotion Committee, comprising the management team, was established to share overall policies and develop and implement departmental plans. It also supports the career development of female employees by building networks through roundtable discussions with senior employees and actively dispatching them to external training programs and activities.

The company organizes information exchange meetings for employees on maternity leave and follow-up seminars after they return to work to ensure that women can continue working after childbirth or periods of childcare or nursing care. As part of efforts to encourage male employees to participate in childcare, in addition to explaining the system during rank-based training, explanations are provided to eligible employees and their supervisors.

Promoting Women's Professional Development

The JFE Group is implementing a broad range of initiatives to promote women's advancement, including active recruitment, planned development and appointment of women to management positions, enhanced childcare-support programs that significantly exceed statutory requirements, and development of training and awareness-raising activities. The initiatives and issues faced by each company are shared among operating companies. They are also discussed at the Board of Directors' and other meetings in an ongoing effort to promote the initiatives. In recognition of its efforts to encourage the empowerment of women, JFE Holdings has been selected three times as a Nadeshiko Brand* since FY2013.

*A joint project of the Ministry of Economy, Trade and Industry and the Tokyo Stock Exchange. One company per industry is selected from among those listed on the First Section of the Tokyo Stock Exchange and announced as a company that is actively promoting the careers of female employees, including improvements to environments where women can continue to work.

Formulation of an Action plan for Promoting Women's Professional Development

The Act on Promotion of Women's Participation and Advancement in the Workplace went into effect on April 1, 2016. The JFE Group has designated the promotion of workforce diversity as a key management strategy for maximizing the potential of every employee and has been actively hiring and supporting the advancement of female employees. We formulated the following action plan in accordance with the Act to establish a working environment that encourages female employees to demonstrate their abilities and create satisfying workplaces for all employees.

- Action Plan Period

Period of five years starting on April 1, 2021 and ending on March 31, 2026

- Target of the Action Plan

We have set a common goal for the JFE Group to increase the ratio of women in managerial positions above the section manager level to at least 10% by 2030 (of which at least 20% are in administration and the sales divisions). Under this goal, we will actively promote the appointment of women to managerial positions. As of April 2025, the ratio of women in managerial positions is 4.3% (of which 8.0% are in administration and the sales divisions) total for operating companies.

- Action Plan for Each Operation Company

> JFE Steel (Japanese only) (https://www.jfe-holdings.co.jp/csr/pdf/female_plan_st.pdf)
> JFE Engineering (Japanese only) (https://www.jfe-holdings.co.jp/csr/pdf/female_plan_eng.pdf)
> JFE Shoji (Japanese only) (https://www.jfe-holdings.co.jp/csr/pdf/female_plan_shoji.pdf)

Company Policy Explained by the President

The president of JFE Holdings has endorsed the Declaration on Action that was introduced by a group of male leaders in Japan who intend to create "A Society in which Women Shine" with the support of the government's Gender Equality Bureau Cabinet Office. He also announced additional measures to support the professional development of female personnel, thereby communicating both inside and outside the company that women can play active roles at JFE.

For more information, please refer to:
> Declaration on Action by a Group of Male Leaders Who Will Create a Society in Which Women Shine
(https://www.gender.go.jp/policy/sokushin/male_leaders/pdf/declaration_body_en.pdf)

Promotion of Childcare Leave for Male Employees

We believe that creating an environment where male employees can more easily take childcare leave will make it possible for both male and female employees to balance work and childcare, enabling diverse employees to fully demonstrate their vitality and strengths. Each operating company is promoting childcare leave for male employees through such efforts as holding seminars on childcare leave, encouraging supervisors to recommend taking the leave, and internally sharing best practices.

Employment of People with Disabilities

The JFE Group has three special subsidiaries, JFE Apple East Corporation, JFE Apple West Corporation and Mie Data Craft Co., Ltd., to employ people with disabilities and create enjoyable workplace environments for them.

For more on the employment of people with disabilities, please refer to:
> Social Data: Employment of People with Disabilities (P. 275)

Programs for Employees Over 60 Years Old

To ensure that the skills and experience of veteran employees are handed down, JFE Group companies have either raised the mandatory retirement age to 65 or introduced a system that enables all employees to work until the age of 65.

As of the end of March 2025, 973 veteran employees (about 5% of the total) are working at JFE Steel, JFE Engineering, and JFE Shoji.

ST Passing on Techniques and Skills and Promoting Human Resource Development

JFE Steel raised its mandatory retirement age to 65 in April 2021 to increase the motivation of veteran employees in their work, pass on their techniques and skills, and steadily promote human resource development. While we used to rehire anyone who wished to continue working after reaching the age of 60, we recently established a personnel and wage system to cover all employees up to the age of 65.

EN Maintaining and Strengthening Competitiveness and Passing on Skills

JFE Engineering regards veteran employees as highly specialized experts in business and technical fields and expects them to play roles in maintaining and strengthening competitiveness while passing on their skills to the next generation of workers. To encourage their further success, we raised the retirement age to 65 in fiscal 2023.

SH Realizing Flexible Workstyles

JFE Shoji is mindful of creating an environment that allows veteran employees over 60 to continue working with high motivation, while also seeking to realize flexible workstyles and develop a healthy working environment. Employees may choose from a variety of working arrangements, including full-time employment, shortened workweeks, and shortened daily work hours in accordance with their lifestyles.

Respect for Sexual Minorities (LGBTQ)

The JFE Group is creating a workplace that does not discriminate on the basis of gender, sexual orientation or gender identity by conducting internal human rights seminars and position-specific training programs. LGBTQ concerns have also been incorporated into the Group's compliance guidebook, which is distributed to all employees and used as a common reference during the annual Compliance Month of October toward nurturing greater understanding. JFE Steel has revised its benefit program to extend coverage to same-sex or de facto partners from FY2022 and holds program briefings and educational training sessions. At JFE Engineering, e-learning programs are offered to all employees, and seminars are held mainly for personnel in human resources. Seminars are conducted at JFE Shoji for management, including executives, and e-learning programs are offered to all employees to promote understanding.

Securing Diverse Human Resources

Recruitment Results for University Graduates (FY2025) and Mid-career Hires (FY2024)
1,080 employees (total of three operating companies)

- Women in career-track positions: 21.9% (128 out of 590)
  Women in administrative career-track positions: 38.5% (94 out of 244)
- Mid-career hires: 39.7% (429 out of 1,080)
  Career-track employees hired mid-career: 39.5% (233 out of 590)
  Operational employees hired mid-career: 40.0% (196 out of 490)

To ensure sustainable growth, the JFE Group is diversifying its recruitment sources to reliably secure talent and is actively hiring diverse personnel, including women, foreign nationals, and mid-career recruits.
In addition, it has a broad overseas presence and hires employees locally, thereby contributing to communities with employment opportunities.

Recruitment Results (Three Operating Companies) for University Graduates (FY2025) and Mid-Career Recruits (FY2024)

Category	Career-Track Positions			Operational Positions	Total
	Administrative	Technical	Total		
Male	150	311	461	469	930
Female	94	35	129	21	150
Total	244	346	590	490	1,080
Ratio of women (%)	38.5	10.1	21.9	4.3	13.9

For more on employees, please refer to:
> Social Data (P. 273)

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Improving Work Engagement

Initiatives

The successful execution of our business strategies depends upon every individual in the talent portfolio fully demonstrating their abilities and thriving. To this end, we are developing an environment where every employee experiences a strong sense of work engagement. Companies across the Group are actively implementing initiatives to enhance a supportive working environment, such as promoting flexible workstyles that make it easier to take leave, as well as initiatives to increase work engagement through business process reforms and revised HR systems.

Enhancing a Supportive Work Environment and Work Engagement

The JFE Group and each operating company conduct an annual engagement survey, set KPIs to maintain a sense of current employee awareness, and use the results to identify issues and plan effective measures related to work engagement. In addition, we refer to the results of periodic corporate ethics awareness surveys to foster more comfortable working conditions.

The JFE Group complies with laws and regulations related to salary payments and sets wages above the minimum levels specified by country, region, and industry sector to meet living wage requirements. It also provides a challenging and fulfilling working environment by offering industry-leading employment conditions and performance-based bonuses linked to Company profits while complying with regulations such as on overtime work.

Furthermore, the Group offers generous welfare benefits, including dormitories and Company housing to create a stable environment for our employees and encourage them to remain with us for many years.

Positive Response Rate to Questions in the Engagement Survey

	FY2022	FY2023	FY2024
JFE Steel	72%	72%	70%
JFE Engineering	79%	81%	81%
JFE Shoji	78%	80%	77%

ST Initiatives to Improve Work Engagement

In April 2024, JFE Steel established the Human Resources Strategy Division to promote multifaceted measures, including personnel and corporate culture reforms, based on management's understanding that improve work engagement is a key management concern for the company's sustainable development. It launched the ReFuture PROJECT*, with the president as the project owner, as a corporate reform for enhancing employee job satisfaction so that both the company and its employees grow together. The company provides a variety of support and initiatives to enhance employee job satisfaction, and employees in turn contribute by maximizing their abilities. Through this cycle of the company and its employees meeting each other's expectations, we aim to build a culture that strengthens mutual trust and continuously enhances corporate value. The Culture Transformation Section, established within the Human Resources Strategy Headquarters, leads the entire project and develops action plans in cooperation with related departments.

The environment surrounding the company is changing drastically, including carbon neutrality, a declining population, and falling domestic demand. Under these circumstances, we must redefine what we wants to be in the future, the reason for its existence in society, and how we currently define our long-term vision, so that employees can work with their own dreams and expectations for the future. With this in mind, the company formulated its corporate purpose, vision, and values, and action is being taken through the ReFuture PROJECT to promote employee recognition, understanding, empathy, and action related

to these statements. Furthermore, in October 2024, we revised our personnel and wage systems, including a reorganization of employee classifications, a framework for employees to choose a range of work locations to which they could be transferred, greater transparency in evaluations, and enhanced feedback.

JFE Steel is also promoting its new workstyle so that employees can work with a sense of job satisfaction and fulfillment, which in turn will lead to improving productivity across the company. In concrete terms, the company will promote teleworking by expanding its work-at-home systems; introduce a coreless flexible working hour program; adopt a shared-desk policy at and around the head office; introduce chat and web conferencing tools and robotic process automation (RPA), a software program that facilitates the automation of work done on terminal devices; promote paperless offices by introducing electronic contracts and workflows; and eliminate the use of seals.

In addition, JFE Steel introduced a cafeteria plan as an employee benefit in FY2022 to meet the diversifying needs of employees following a rise in the number of mid-career hires and other changes. The company seeks to enhance the work-life balance by encouraging employees to take paid leave by designating annual planned leave days and enhancing a work-life-balance vacation program to support employees in taking vacations for childcare, nursing care, infertility treatment, self-enlightenment, or participation in volunteer activities. Furthermore, the company has increased the number of days off for general employees by 2 days per year to 121 days per year, starting in FY2024, to establish a more secure working environment for them and their families while balancing health and work.

*The name "ReFuture PROJECT" embodies the company's desire to create a new future that the world needs, by focusing on what the company wants to be in the future, especially now that the organization, founded in 2003 with the vision of becoming "Japan's leading future-oriented corporate group," is in a period of dramatic change.

Key Initiatives for the ReFuture PROJECT in FY2025

Item	Outline
① Formulating our vision	Embedding our corporate purpose, vision, and values
② Operational reforms	Reviewing business processes, promoting digitalization, and improving operations by putting our values into practice, etc.
③ Improving the workplace environment	Realizing more comfortable working environments through focused investment in offices and other facilities, mainly at manufacturing sites
④ Reviewing personnel and compensation systems	Embedding management practices aligned with the intent of revisions, and diversifying workstyles and leave-taking among on-site employees, etc.
⑤ Transforming communication	Promoting corporate culture transformation through two-way dialogue (e.g. management employees, general managers subordinates)
⑥ Improving management/ strengthening leadership	Promoting management aligned with the corporate purpose, vision, and values through the restructuring of management training and other measures
⑦ Supporting growth and career autonomy	Expanding voluntary (self-nominated) training programs and internal transfers through open recruitment
⑧ Enhancing psychological safety and organizational climate reform	Promoting soft initiatives that lead to changes in awareness and behavior to enhance psychological safety and transform organizational culture

Purpose, Vision, and Values of JFE Steel

Purpose	**Dream for your Future, Steel takes you Further.**
Vision	● Leading the steel industry as the top runner in carbon neutrality. ● Building on a solid domestic business foundation and pursuing fresh growth through bold inroads into overseas markets, and new fields. (Profit target) FY2035 segment profits: ¥500 billion
Values	**Future-Oriented** ● Embrace Challenges, Foster Growth, and Pioneer the Future. ● Act Decisively and Shape the Future. ● Focus on the Essential and Sharpen the Core. ● Be Flexible and Think Beyond the Conventional. ● Be Open-minded with a Broad Perspective. ● Value Hands-on Experience and Grow Together.

EN Initiatives to Enhance Productivity and Improve Work Engagement through New Workstyles

JFE Engineering is promoting "vacation-style reform" across the company. Employees are encouraged to take Fridays off during the summer and consecutive days of paid leave following the completion of construction work. Out of 22 paid leaves granted, 18.7 paid leave days on average (over 85% of the total) were taken by employees in FY2024. The company intends to raise the average to at least 20 in FY2025.

As part of its workstyle reform, JFE Engineering has established an environment in which employees in office divisions can choose where and when to work, through the introduction of remote work and flextime programs with no core hours, to support diverse workstyles. One of these measures is teleworking, which had been introduced to control the spread of COVID-19 and was adopted as a permanent option in FY2021, enabling employees to work from home or any of the roughly 400 shared offices nationwide.

In the area of construction, JFE Engineering has set the reduction of working hours as a major issue and has been steadfastly working on this. Since FY2023, it has been monitoring the progress of reduction efforts and the status of overtime work, site by site, within the countermeasure working group established across the company. Annual plans for overtime work are formulated, and the head office manager works with site staff to address any discrepancies between actual monthly results and the annual plan. In addition, the working group promotes measures such as reducing internal documentation, utilizing the head office's back-office for creating documents, and introducing IT tools to maintain timely communication with the head office and subcontractors. In terms of job satisfaction, the company believes that the success of its employees is a source of competitiveness and sustainable growth, and it has been taking action to enable employees to fully demonstrate their abilities, knowledge, skills, and experience as a management concern.

KPIs have been set for health and safety, development, diversity, and employee engagement, and the following concrete steps are being taken.

● Personnel and Wage Systems Review

Given the changing composition of its workforce, such as an increase in mid-career hires, the company has revamped its personnel system to improve the acceptability of evaluations and support employee growth.

● Training System Review

As part of the personnel system reform, we have redefined the type of personnel we expect at each level as the basis for reviewing our training system, starting this fiscal year. As a result of the review, a variety of training programs have been set in place so that we can be voluntarily selected to meet the growth aspirations of each employee.

SH Initiatives to Support Various Workstyles to Realize a Work-Life Balance

As a measure to realize a work-life balance, initiatives have been implemented to reduce work hours and improve work-life balance, such as designating Wednesdays as the day to encourage everyone to leave on time, prohibit all work after 10 pm, and also designating annual days off. To support more diverse workstyles, JFE Shoji has introduced work-at-home and flexible working hour systems. We also hold annual, companywide Challenge Days that last about a month, to help all employees become aware of and practice a healthier work-life balance. For example, some employees commit to and follow through on leaving the office at the regularly scheduled time while others re-examine the way they work to improve organizational and individual productivity.

We are also striving to improve work engagement by establishing a workplace where employees feel motivated and grow. We periodically monitor the scores of the annual engagement survey, digging deeper into the background of each department and setting action plans for improvement, leading to increased engagement.

In addition, we revised our personnel system so that individual evaluations can be more clearly reflected in salaries. In addition, interviews provide opportunities for feedback to individuals during which supervisors can share the details of evaluation results to subordinates and provide advice for improvement, allowing employees to feel a sense of growth. And supervisors and subordinates can discuss future career steps, designing the way they work from the perspective of the future, to bolster the perception of doing rewarding work.

Operational Reforms

ST Promoting Operational Reforms that Leverage the Latest ICT

JFE Steel has introduced RPA and low-code development tools to reduce employee time spent on simple tasks and to free up more time for creative work. As of FY2024, they had been used in over 1,400 types of operations, generating over 250,000 hours annually that can be allocated to other productive work. The number of citizen developers within the company reached 630 by the end of FY2024.

In addition, in FY2024, the company launched Chat JFE, its own generative AI service, equipped with proprietary security measures and usage guidelines, thereby establishing an environment where all employees can use it safely and efficiently. More than 2,000 employees are already using it for such tasks as document creation, translation, and information searching, and the company will continue to improve productivity through the application of generative AI to operations. Moreover, the time saved from these operational reforms is being used to further enhance the quality of customer service.

To promote data-driven operational reforms, we are promoting companywide use of BI tools to accelerate decision-making through data visualization and sharing to strengthen corporate competitiveness.

EN Promoting Operational Reforms Using Generative AI

In September 2023, with the goal of innovating business operations through the use of generative AI, JFE Engineering released Pla'cello xChat, the company's AI text generator that helps minimize the risk of information leaks through unique security measures, for internal use. We are striving through training sessions and hands-on workshops to promote the wider use of generative AI, and more than 2,000 employees are already leveraging Pla'cello xChat to boost work efficiency in creating documents, organizing information, and for other tasks.

The company uses generative AI for both general office operations and tasks unique to the construction industry. It has developed technologies such as chatbots, document search, and AI-OCR and is rolling out dedicated applications. By automating simple, labor-intensive processes like transcribing and converting data within documents, it is reducing workloads and improving efficiency.

By introducing various programs, measures and tools to boost efficiency, we aim to achieve both work-life-balance and improved productivity while maximizing overall output.

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SH J-MUSCLUE Activities

Since 2008, JFE Shoji has continued to promote operational improvement activities aimed at increasing work efficiency and performance.

At the 2024 J-MUSCLE presentation, 21 teams from JFE Shoji and domestic and overseas group companies presented their J-MUSCLE activities online, which was viewed by a total of 3,300 people across the Group. These activities include improving office work processes by using systems and generative AI, reducing costs and promoting paperless operations through the digitization of invoices and mill sheets, and enhancing communication while accommodating diverse workstyles through office renovations. JFE Shoji is promoting best-practice sharing across the Group to further improve productivity. In particular, the use of generative AI, introduced in 2024, is being actively applied to a wide range of tasks, such as creating documents, organizing information, translation, and building complex Excel formulas, leading to greater efficiency and accuracy.

JFE Shoji will continue to foster a corporate culture that can flexibly adapt to the changing times and constantly seek change free of preconceived notions.

Invigorating Workplaces through Small Group Activities

ST J1 Activities

At JFE Steel, approximately 1,100 small groups carry out J1 Activities* that have yielded various results in the key areas of quality and work improvement. In addition, the JFE Family Result Reporting Conference, which includes participation from Group companies, is held twice a year, and groups that excelled in the competition are dispatched to QC Conventions and affiliated companies in Japan and overseas to strengthen the J1 Activities.

*Designed to turn JFE into an excellent company and propel it to the number one position in its industry (called JE1 Activities at JFE Engineering and J1 Activities at JFE Steel and JFE Shoji).

EN Initiatives of JE1 Activities

JFE Engineering has about 270 teams and 2,000 employees, including those of group companies worldwide, involved in JE1 Activities. The results of these activities are showcased at a companywide competition held at the end of the fiscal year. Activities focused on topics such as quality, efficiency, safety or costs contribute significantly to workplace vitality and corporate performance.

SH Further Revitalizing J1 Activities

JFE Shoji has been conducting J1 Activities in production divisions of its group companies in Japan as a means of improving their problem-solving skills in areas such as safety, quality, cost, operations and delivery target. The company holds annual competitions in which about 20 teams report their activity results, and awards are given to the best-performing teams in safety, quality, and operations. By holding the presentation meeting via Teams, more than 100 people were able to participate. The company will continue to promote J1 Activities to improve workplace vitality and enhance problem-solving skills.

Toward Sound Labor-Management Relations

The JFE Group engages in active discussions with the labor union regarding working conditions and various systems in order to foster a vibrant workplace. We take the union's opinions as representing the true perspectives of our frontlines employees, and we also identify issues and explore measures to create motivating work environments.

ST Sincere Labor-Management Consultations

Recognizing that labor-management cooperation is essential for the company to fully tackle its business challenges, JFE Steel has established a strong relationship with its labor union based on understanding and trust. The company convenes its Labor-Management Business Discussion Committee four times a year to bring the president and other executives together with labor representatives for the purpose of exchanging ideas on business challenges. In addition, labor and management are holding joint committees on work-life balance and improving work engagement. The two sides also exchange views on working conditions, workplace environments, and other related matters, and hold joint consultations whenever the labor system is amended.

EN Working toward Sound Labor-Management Relations

JFE Engineering strives to ensure sound labor-management relations. In addition to Central Labor-management Committees, which are regularly convened for the company's president and other executives to share views with representatives of its labor union, a labor-management committee on work-life-balance helps to maintain friendly working environments.

SH Maintaining Sound Labor-Management Relations

JFE Shoji management and labor have jointly declared they will achieve continuous growth for the company, enhancing the lives of employees and realizing an affluent society based on mutual trust and understanding. The company maintains a sound relationship between management and labor. Semiannual Management Committee meetings are held as opportunities for the company president and other executives to regularly exchange opinions and share management information with representatives of the labor union.

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Occupational Health and Safety

Initiatives

To ensure safety at its operating companies, the JFE Group regularly reports to the Board of Directors, which provides direction and supervision. It also holds discussions on health and safety with the labor unions through the Occupational Health and Safety Committee.
Under the Eighth Medium-term Business Plan, we are working to establish workplace conditions in which everyone at Group and partner companies (including contractors) can work safely. In addition to instilling a strong personal and organizational awareness of safety, the operating companies will continue investing in safety at the same scale as the Seventh Medium-term Business Plan (approximately 10 billion yen per year), advancing the complete separation of moving equipment and personnel through facility modifications, and further promoting multifaceted health and safety management, such as monitoring and detection, using DX.

The JFE Group organizes training programs for newly appointed managers and supervisors to provide information on the Industrial Safety and Health Act and risk assessment regulations and on formulating work plans and policies for health and safety management. In the construction department, we offer programs for local superintendents in charge of construction work (Overall Safety and Health Controller) centered on the Industrial Safety and Health Act as well as related regulations for subcontractors and the Construction Business Act (369 participants in 2024). We also conduct new employee training and position-specific training on mental health (1,367 participants in 2024).

For data related to lost-work injuries at each company, please refer to:
> Social Data: Lost-Work Injuries and Accidents (P. 275)

ST Occupational Health and Safety Initiatives Based on Two Strategies

This is the Group's health and safety activity policy in 2025: On the safety front, we are promoting independent, self-directed safety activities to ensure regulatory compliance and create accident-free workplaces. On the health front, we are promoting activities based on the Health Declaration to increase the number of employees who can work in good physical and mental health over the long term. In accordance with our goal of achieving zero accidents Groupwide and zero accidents at each workplace, we are implementing the following activities.

For safety, we are striving to establish safety-conscious employees and workplaces by promoting regulatory compliance, conducting activities to prevent recurrence of similar accidents, and engaging in open dialogue with frontline workers to identify and address risks. To create accident-free workplaces, we are also striving to ensure the intrinsic safety of equipment and operations by proactively budgeting to improve workplace issues (safety investments), introducing machinery safety standards, and applying DX technologies, thereby reducing the level of worker risks.

For health, we are pursuing health initiatives based on the Steel Health and Productivity Management Strategy Tree, developed in response to the JFE Group's Health Declaration.

In order to more independently and systematically promote occupational health and safety management throughout the organization, we established an occupational health and safety management system in accordance with the ISO 45001 international standard and obtained ISO 45001 certification (JIS Q 45001) for all our construction and operating sites.

We will continue making workplaces safer and healthier through an ongoing and effective operation of the occupational health and safety management system.

Certified Sites

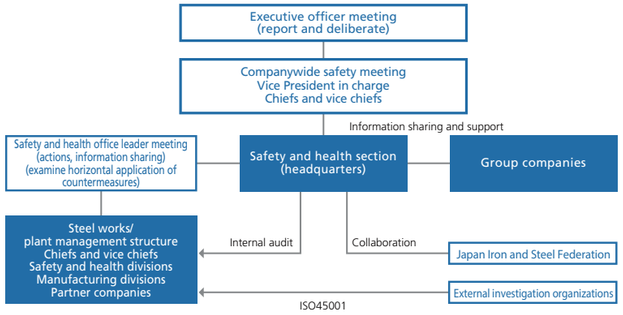
- Chita Works (certified on September 9, 2021⇒ renewed on September 9, 2024)
- Fukuyama Area (certified on December 16, 2021 ⇒ renewed on December 16, 2024)
- Kurashiki Area (certified on May 26, 2022 ⇒ renewed on May 26, 2025)
- Chiba Area (certified on May 26, 2022 ⇒ renewed on May 26, 2025)
- Sendai Works (certified on December 15, 2022 ⇒ will be renewed in 2025)
- Keihin Area (certified on January 19, 2023 ⇒ will be renewed in 2026)

> Social Data (Percentage of Sites Certified under ISO 45001) (P. 277)

In the event of an industrial accident, the department in which the incident occurred investigates the cause and formulates and implements actions to prevent recurrence. At the same time, we inform the relevant departments and labor union through the Occupational Safety and Health Committee. We will also set up a disaster investigation committee as necessary and forward recommendations to the department where the accident occurred as well as related departments so that they can develop appropriate measures to prevent recurrence. In the event of severe accidents, a response is deployed across the company, and a standard progress report is submitted to Corporate Officer Council until countermeasures have been completed. In the event of other incidents and near-misses, the health and safety departments discuss and determine the need to deploy a companywide response and follow up on progress until the companywide deployment is completed. This practice has been standardized across the entire company.

We immediately report industrial accidents to the Japan Iron and Steel Federation (JISF) under the required guidelines. We file an update once we have determined the cause and decide on countermeasures. In the event of severe accidents, we promptly submit a report on safety, disaster prevention and environmental issues to the Ministry of Economy, Trade and Industry, the Ministry of Health, Labor and Welfare, and the JISF.

Management Structure for Health and Safety

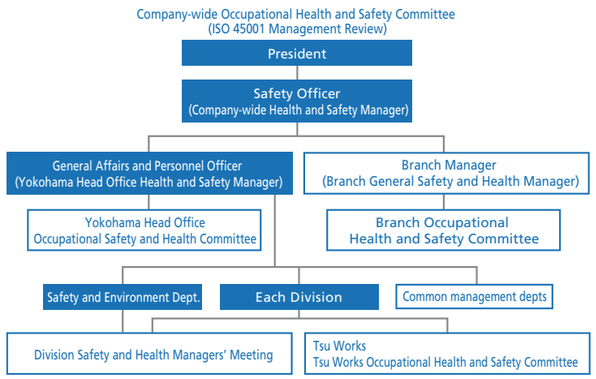


EN Ensuring Employee Health and Improving Occupational Health Level

In addition to setting up governance organizations for health and safety at each operating site to comply with the Industrial Safety and Health Act and in line with the type of work and number of employees, JFE Engineering has established a governance structure for health and safety at each operational headquarters to facilitate and effectively implement companywide management at its construction and operating sites and manufacturing plants. JFE Engineering strives to eliminate disasters at all suppliers and Group companies by establishing priority items to be shared across the company and to which all employees and all staff at suppliers adhere. It also endeavors to identify sources of danger as well as safety measures through risk assessments aligned with the particular characteristics of each individual operational headquarters. Meanwhile, it promotes physical and mental health and the creation of comfortable working environments as a means of ensuring the health of employees and bringing occupational health to an overall higher level.

In the event that an industrial accident occurs, occupational health and safety managers will meet to determine the cause and consider countermeasures that will be deployed across the company. Since 2016, the company has been operating an occupational health and safety management system (ISO 45001 certified) for its construction activities in Japan and overseas as well as its manufacturing operations at the Tsu Works. As a new initiative, JFE Engineering applies IT solutions promoting occupational health and safety, including monitoring and detection by multiple approaches.

Management Structure for Health and Safety



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SH Enhanced Health and Safety Activities and Establishing a Safe and Secure Working Environment

JFE Shoji is implementing the following activities to eliminate unsafe operations that could lead to severe accidents for achieving zero severe accidents at its coil centers and other processing sites.

1. Risk assessment by supervisors patrolling the site and identifying unsafe operations using the recording functions of safety cameras, or by ensuring that each worker is engaged in hazard prediction
2. Comparative study of similar disaster cases and hazard experience training for improving the ability to recognize and avoid unsafe operations
3. Facility improvement for reducing risks, including installation of safety sensors
4. Operation training (slinging for cranes and other skills) and review of operational standards

Furthermore, for each of its Group companies, JFE Shoji assigns a safety manager to spearhead these efforts to raise the level of health and safety activities. To ensure that all JFE Shoji Group companies operate under the same values, safety managers meet every other month to share knowledge and information on occupational health and safety

Annual safety awards are also presented to encourage employees to actively engage in health and safety activities. Through these initiatives, the company will raise the level of safety management within the JFE Shoji Group and continue to maintain safe working environments.

Intrinsic Safety through DX

ST Designing Lines that Protect Even in the Event of Human Error

As part of our safety objectives in 2025 to create accident-free workplaces, we are promoting the use of DX technologies to ensure safety even when someone mistakenly enters a hazardous area. For example, we have introduced person-detection systems where it is impractical to install physical barriers separating internal production line operations from external areas, creating a risk of inadvertently venturing into danger zones. These systems detect someone entering into a hazardous area and can prevent accidents by either immediately interrupting equipment operation or preventing idle equipment from starting. Another example is the introduction of a safety monitoring system that links smartphones with portable gas monitors to detect concentrations of oxygen, carbon monoxide, combustible gases, and hydrogen sulfide, and determine the safety and suitability of working under those conditions. We also use smartphone GPS functions to detect the positions of heavy machinery and other equipment to further safeguard worksite safety. This information is immediately communicated to workers, and recorded location data is used in facility improvements.

Going forward, we will continue introducing DX technologies.

EN Intrinsic Safety at Construction Sites through DX

JFE Engineering is implementing innovative efforts that leverage digital technologies to fundamentally enhance construction site safety.

Three-dimensional simulation technology is used during construction planning to visualize the movements of cranes and structures in advance in order to identify and prevent potential interference risks with high-voltage power lines and surrounding structures before work begins. The technology also optimizes the placement of heavy machinery and material storage areas, as well as worker traffic flow, allowing everyone involved in the project to share a clear overview of the construction process and significantly reducing unnecessary work and errors.

The introduction of inspection robots and drones equipped with 3D measurement technology allows inspections of elevated structures such as viaducts and dimensional surveys of silos that previously required working at height to be performed safely from the ground or other secure locations.

This strategic use of digital technologies not only enhances worksite safety but also leads directly to greater efficiency and reduced costs, thereby contributing to sustainable growth in corporate value.

Health and Productivity Management

Companywide Targets for Each Operating Company

We collaborate with the health insurance association and occupational health staff to maintain and improve employee health. Under the Eighth Medium-term Business Plan, we have set a top-level goal of increasing the number of employees who are physically and mentally healthy and able to perform at a high level, thereby reducing presenteeism. To this end, we are systematically implementing improvement initiatives, such as support for early detection and continued medical treatment as well as smoking cessation and sleep improvement programs.

Presenteeism Performance Results

	Category	FY2024 Results	FY2025 Target
JFE Steel	Percentage of employees who are physically and mentally healthy and working at 80% or higher performance (percentage of employees with presenteeism of 20% or less*) *Measurement method: SPQ University of Tokyo 1-item version	66.3%	67%
JFE Engineering		64.1%	
JFE Shoji		74.6%	

Specific Operating Company Targets

	Category	Item	FY2024 Results	FY2025 Target
JFE Steel	Support for early detection and continued treatment	Regular health checkup attendance rate	99.9%	100%
		Dependent spouse health checkup attendance rate	57.7%*1	60%
	Support for maintaining appropriate body weight	Specific health guidance implementation rate	—*2	60% or higher
		Obesity rate (BMI 25 or higher)	31.1%	30% or lower
	Promotion of smoking cessation support	Smoking rate	25.0%	Annual reduction of 1.5%
	Stress check	Stress check implementation rate	98.0%	98.0% or higher
JFE Engineering	Sleep measures	Sleep risk (based on responses in health checkup questionnaire)	42.9%	35% or lower
	Passive smoking remediation	Smoking rate	21.4%	20.9% or lower
	Obesity remediation	Obesity rate (BMI 25 or higher, or waist circumference ≥85 cm for men, ≥90 cm for women)	42.4%	38.3% or lower
JFE Shoji	Support for early detection and continued treatment	Regular health checkup attendance rate	100%	100%
		Re-examination attendance rate	56%	60%
	Sleep measures	Sleep risk (based on responses in health checkup questionnaire)	42.10%	35.0%

*1 Preliminary figure
*2 The result for the specific health guidance implementation rate will be added once confirmed.
Note: At JFE Steel, the attendance rate for regular health checkups and the obesity and smoking rates are managed on a calendar-year basis.

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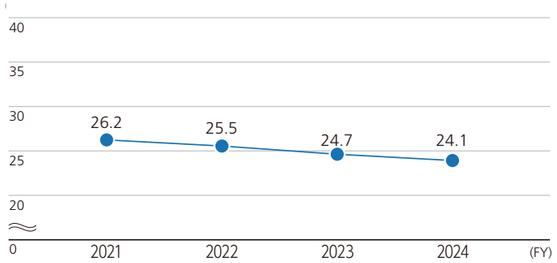
Physical Health Initiatives

- Ensure the implementation of regular physical examinations and strengthen cancer screenings.
- Prevent aggravation of lifestyle diseases by conducting metabolic syndrome checkups and offering health guidance.
- Utilize the health insurance union's health promotion app, PepUp, to educate employees on physical exercise and other healthy habits.
- Promote non-smoking areas and maintain separate areas for smokers and non-smokers in buildings. Provide guidance to help employees quit smoking through industrial physicians and public health nurses.

Changes in Smoking Rates (All Operating Companies)



Mental Healthcare

The JFE Group conducts four basic initiatives to maintain the mental health of employees: "self-care" for workers who strive to remain aware of stress and take preventive measures; "care by management supervisors" who provide advice to subordinates; "care by industrial health staff" who support employees, managers and supervisors; and "care by human resources outside workplaces," including specialist clinics and individuals.

JFE's health insurance union also provides mental health counseling, including a 24-hour hotline for employees and their families (spouse and dependents).

Initiatives on Health Issues

We operate a health management system for continuously and effectively managing the health of all employees, including those on overseas assignments and business trips and those studying abroad.

We particularly seek to ensure that employees working abroad, under healthcare systems that differ from those in Japan, can maintain a healthy lifestyle, along with their accompanying family members, by conducting health checkups and vaccinations before they move overseas, in accordance with Companywide regulations. In a proactive effort to prevent infections, we also provide information on global health issues such as COVID-19, HIV, tuberculosis, and malaria during assignment briefings. We will continue to monitor and appropriately respond to global health issues.

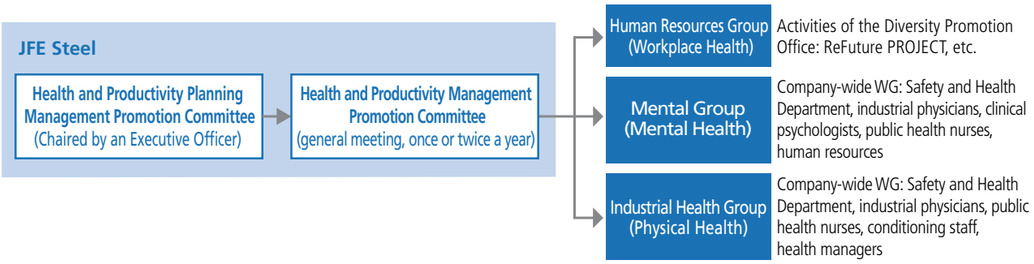
ST Promoting Health and Productivity Management to Maintain and Improve Health

To maintain and improve the health of employees and their families, the JFE Group established the Group Health Declaration in 2016. In line with the declaration, JFE Steel launched the Health and Productivity Management Promotion WG and has been setting medium- to long-term companywide goals. We hope these activities will enable all employees to work healthily and vigorously, and we plan to establish a health culture in which every employee practices activities on their own initiative to maintain and improve their health.

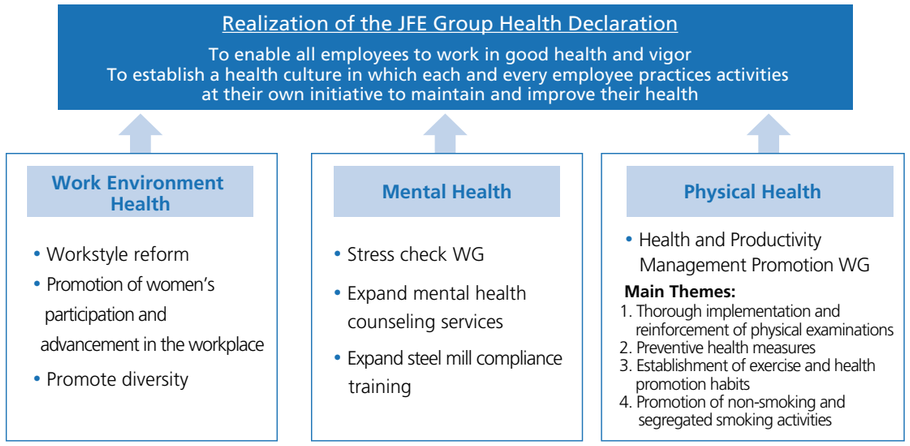
In 2016, JFE Steel first focused on physical health and established key initiatives regarding: (1) thorough implementation and reinforcement of physical examinations, (2) preventive health measures, (3) establishment of sound exercise and health habits, and (4) non-smoking and segregated smoking activities. In 2024, the company expanded the scope to include mental health, and it has been promoting health and productivity management at all of its operating sites.

In 2025, it set a top-level goal of increasing the number of employees who can work in good physical and mental health over the long term. To this end, we created a Health and Productivity Management Strategy Tree that organizes specific actions for attaining this goal and are promoting health management across all of our operating sites.

Structure of Health and Productivity Management Promotion WG



Objective of the Health and Productivity Management Promotion WG



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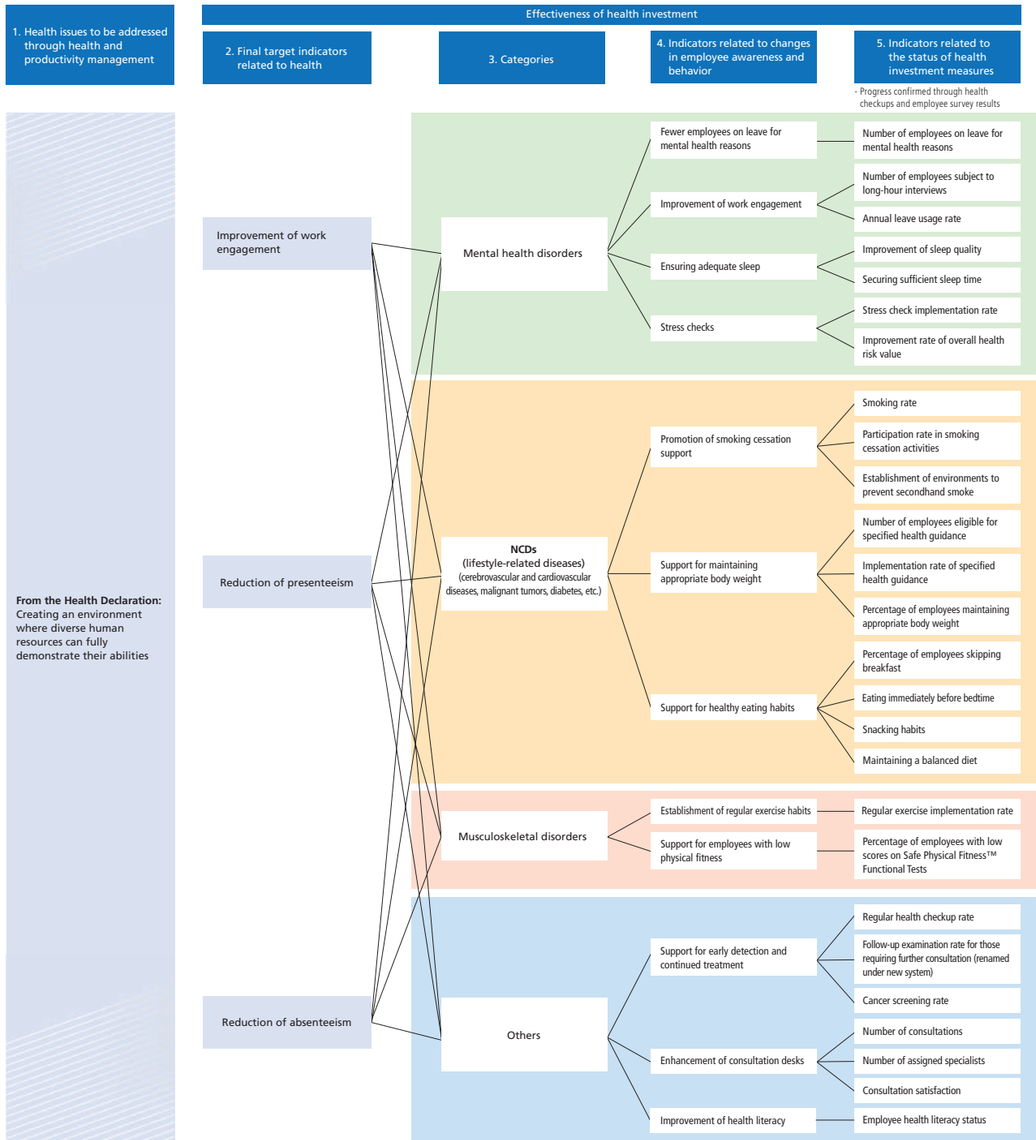
Health and Productivity Management Strategy Tree



ST Active Exercise™ Health

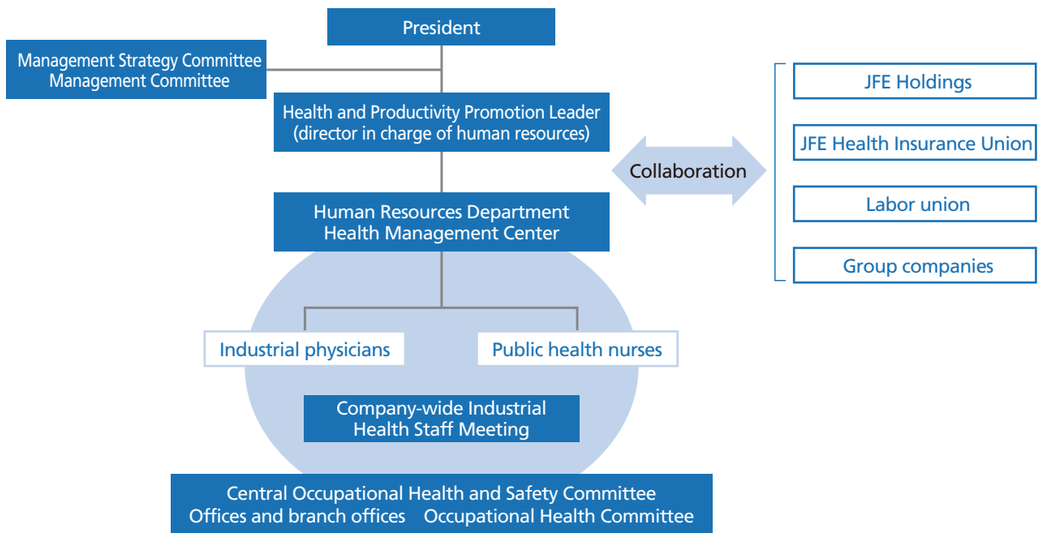
JFE Steel business sites offer the Active Exercise™ program, designed by West Japan Works to help people increase their physical strength and prevent injuries from falling. The program's effectiveness in preventing occupational accidents and improving health has even attracted attention outside the company, and through participation in the Ministry of Health, Labor and Welfare's SAFE Consortium, initiatives such as Active Exercise™ and Safe Physical Fitness™ Functional Tests are being promoted not only among on-site partner companies but also among businesses in other industries.

EN Engineering Activities for Boosting Health Based on Health Checkup Data

JFE Engineering maintains a system centered on the Health Management Center of the Human Resources Department, under which industrial health staff at each office and branch office cooperate to promote activities. The company is pursuing initiatives for improving health focused on five domains, including sleep, smoking and obesity issues extracted from past health checkup data, along with cancer and mental health. Every year, the Health Management Center compiles basic health checkup data and prepares the Data Book, which shows changes over time at a glance for the entire Company and major business sites. The center follows the PDCA cycle while reviewing the results of its initiatives.

In FY2024, JFE Engineering established the JFE Wellness Action 5, a set of five clear and practical health behavior guidelines designed to be easily understood and implemented by employees.

Health and Productivity Management Promotion System



Initiatives Based on Past Health Checkup Data

Fiscal Year Launched	Purpose	Initiatives
2018	Preventing cancer	Stomach endoscopy during regular health checkups
2019	Improving sleep habits	Companywide self-care seminars to practice napping and breathing exercises
2020	Addressing obesity	Labor and management co-sponsored RIZAP seminars and workplace exercises at home
2021	Ending exposure to passive smoking	Complete ban on indoor smoking
	Improving sleep habits	Companywide rollout of Self-care Seminar II focused on sleep-wake rhythms
2022	Providing more personalized guidance	Provision of more individualized guidance on sleep, obesity, smoking, etc.
2023	Preventing cancer	Colonoscopy subsidy system introduced, charity walk held
2024	Improving sleep habits	Conducted SAS screening, held charity walk, established JFE Wellness Action 5

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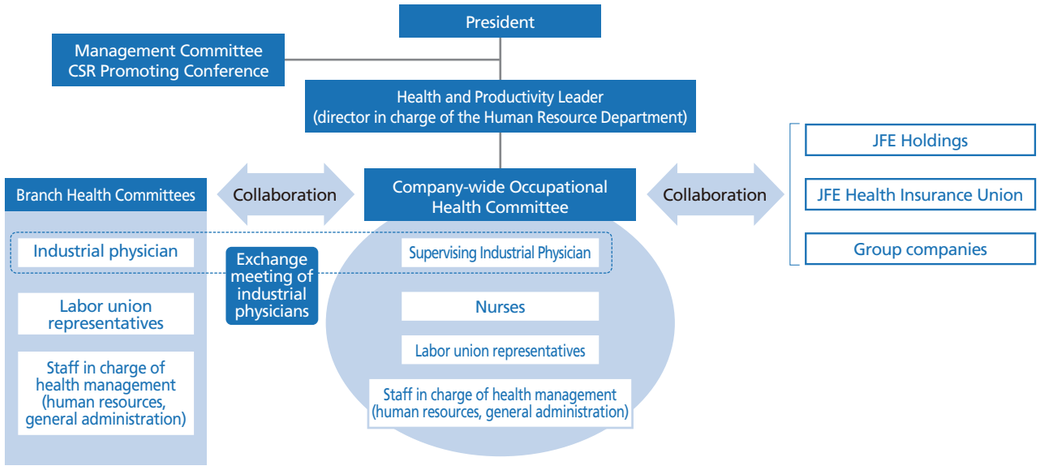
SH Detecting Illnesses at an Early Stage, Maintaining and Promoting Health for Employees and Their Families

JFE Shoji believes that the health of employees and their families holds the key to the further development of the company and is therefore creating workplace environments in which employees can work with vigor.

Health and Productivity Management Promotion System



Past Initiatives

Fiscal Year Launched	Purpose	Initiatives
2018	Prevent cancer	Helicobacter pylori tests conducted during regular health checkups
		New program for subsidizing examination fees for breast cancer and uterine cancer
	Raise employee health awareness	e-learning program based on the importance of regular health checkups, and reducing heart and brain disease
2019	Prevent lung cancer and stroke	Measures related to passive smoke (reduction in smoking rate)
	New program for subsidizing smoking cessation clinic fees	
2020	Encouraging employees to exercise as a habit	Encourage participation in the Powering Up Health Care program
2022	Providing more individualized guidance	Encourage individual consultation to those eligible for specific health guidance
2023	Early detection of stomach cancer	Gastrointestinal endoscopy tests conducted during regular health checkups
2024	Strengthening the implementation of specific health guidance	Enhanced collaboration with health insurance associations and medical institutions to thoroughly encourage participation
	Raising health awareness	Held women's health seminars

Human Rights

Basic Policy

The JFE Group views respect for human rights as both a corporate social responsibility and a foundation of its business. Our determination to prevent discrimination in our business operations is clearly expressed in our Standards of Business Conduct, which we have consistently upheld. The JFE Group Human Rights Basic Policy, established as a standard to which Group companies and their officers and employees must comply, was revised in April 2023, and each operating company has reviewed and revised its procurement guidelines and related materials in line with this policy. Under the policy, we also seek cooperation from all stakeholders, including our supply chain, to respect and protect human rights.

We have been conducting human rights due diligence since FY2021 in accordance with the United Nations Guiding Principles on Business and Human Rights, while organizing seminars by external experts on human rights.

We will continue to promote initiatives for realizing a society in which human rights are respected and protected.

JFE Group Basic Policy on Human Rights

JFE hereby establishes the JFE Group's Basic Policy on Human Rights based on the United Nations Guiding Principles on Business and Human Rights in order to promote Group-wide efforts to respect human rights and to fulfill its responsibilities to all stakeholders that it influences in the course of its business activities.

1. Basic approach to respect for human rights

We, the JFE group, support and respects the International Bill of Human Rights, which consists of the Universal Declaration of Human Rights and the International Covenants on Human Rights, as well as the International Labor Organization (ILO) Declaration on Fundamental Principles and Rights at Work.

We believe that respect for human rights is a corporate social responsibility and a foundational aspect of our operations. In addition to clearly stating and implementing our policy for respecting all members of the company and the general public and refraining from any form of discrimination in our corporate activities, we implement initiatives to ensure that we are not complicit in human rights abuses.

This policy represents our commitment to respect human rights based on the JFE Group Standards of Conduct.

2. Scope of application

This policy applies to all officers and employees of the JFE group. We also encourage all stakeholders, including members of our supply chain, to understand and support this policy.

3. Compliance with applicable laws

We comply with the laws and regulations of Japan and all other countries and regions where we operate, but if there is any conflict with internationally recognized human rights and regulations, we seek ways to respect internationally recognized human rights as much as possible.

4. Human rights due diligence

We identify negative impacts on human rights and utilize our internal mechanisms for human rights due diligence to prevent or mitigate such impacts.

5. Corrections and remedies

We maintain reporting contact points for receiving reports from both internal and external sources regarding negative impacts on human rights caused by any of our business activities. If we are made aware that we have caused or been involved in a negative impact on human rights, we will follow the necessary procedures to correct and remedy the problem.

6. Education

We provide education on respecting human rights to ensure that all of our officers and employees understand and implement the company's basic policy.

7. Oversight

The JFE Group Sustainability Council, chaired by the President of JFE Holdings, Inc., oversees compliance with this policy and the implementation status of initiatives referred to herein.

8. Dialogue and consultations with stakeholders

Among the initiatives taken under this policy, we utilize outside experts as well as engage in discussion and consultation with internal and external stakeholders.

9. Information disclosure

We appropriately disclose all relevant information about our initiatives concerning respect for human rights and the progress of such initiatives via JFE group websites and other means.

10. Business-related human rights issues

(1) Non-discrimination and equality under the law
We respect every individual connected with our corporate and business activities and do not discriminate on the basis of race, nationality, ethnicity, creed, religion, social status, lineage, age, gender, sexual orientation, gender identity, disability, or any other such factor.

(2) Engaging with business partners
We seek the cooperation of all of our business partners in initiatives to respect and protect human rights in order to contribute toward creating a society in which the rights of all humans are respected and protected.

(3) Harassment
We do not engage in any kind of harassment based on gender, status, or any other factors, including through language or behavior that offends or violates the dignity of others.

(4) Forced labor and child labor
We never use forced labor or child labor in any country or region. We also do not tolerate or sanction any form of modern slavery, including bonded labor and human trafficking.

(5) Occupational health & safety and appropriate working environments
In accordance with the fundamental idea that safety is our top priority above all else, we pursue health and safety in all of our activities and strive to create safe, healthy workplaces where all employees feel assured that their physical and mental health is protected.

(6) Working hours and livable wages
We comply with all laws and regulations concerning working hours and wages applicable in the countries and regions where we operate. We work to ensure wages that allow employees to enjoy an adequate standard of living.

(7) Right to freedom of association and collective bargaining
We respect employee rights to freely associate and collectively bargain in accordance with the laws and collective bargaining agreements in each country. In addition to taking into account each country's laws and labor practices, we work to build sound labor-management relations and resolve problems by engaging in sincere and constructive dialogue with employees in accordance with international norms.

(8) Rights of local and indigenous peoples
We respect and give due consideration to local people's land rights, access to water, safety and health as well as the rights of indigenous peoples in regions where we operate.

Established: April 2018
Revised: April 2023
JFE Holdings, Inc.

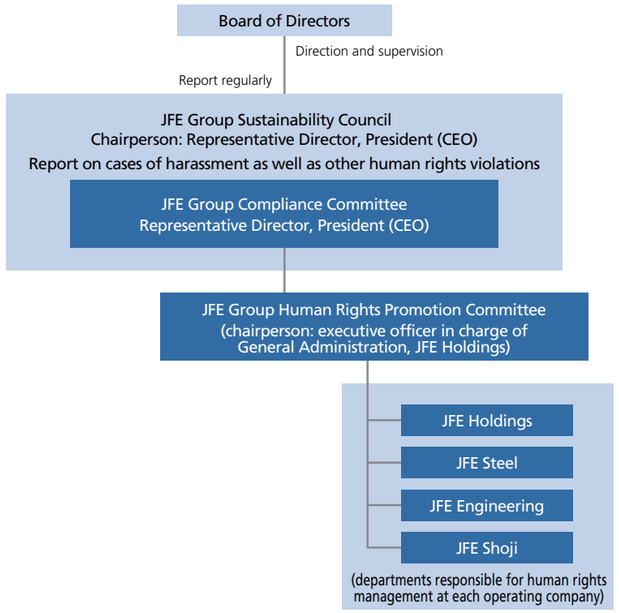
This policy revision was formulated with the assistance of human rights experts and approved at the JFE Group Sustainability Council chaired by the President of JFE Holdings, Inc. Amendments to the policy have also been reported to the Board of Directors.

Structure

Promoting Human Rights

In order to steadfastly focus on human rights initiatives, we formulated Groupwide policies at the JFE Group Sustainability Council, chaired by the President and CEO of JFE Holdings and reports periodically to the Board of Directors for guidance and supervision. In addition, we established the JFE Group Human Rights Promotion Council, chaired by the corporate officer of JFE Holdings under the JFE Group Compliance Committee, chaired by the President and CEO of JFE Holdings, which allows us to regularly share information with departments responsible for human rights issues that have been set up at each operating company.

Governance Structure for Human Rights Awareness Promotion



Remedy Mechanisms

We have been a full member of the Japan Center for Engagement and Remedy on Business and Human Rights (JaCER) since April 2025. The Company accepts reports, complaints, and consultations on human rights issues from stakeholders across the supply chain through JaCER's non-judicial Engagement and Remedy Platform, which complies with the UN Guiding Principles on Business and Human Rights. Using this third-party contact point ensures fairness and transparency while addressing essential human rights issues and also safeguarding anonymity and confidentiality. Although one report filed with JaCER between April and July 2025 was deemed unrelated to human rights, JaCER provided feedback to the reporter and the matter was closed.

In addressing all human rights risks, we emphasize communicating with stakeholders through such initiatives as setting up a Corporate Ethics Hotline at each operating company and an independent law firm as an external contact point, as well as dedicated consultation desks on harassment issues at major offices, all of which accept anonymous reporting and consultation on human rights and related issues. In FY2024, a total of 314 cases were handled through the Corporate Ethics Hotline and harassment consultation desks at JFE Holdings, operating companies, and Group companies.

The operational status of these help desks and reports of harassment as well as other human rights violations are regularly reported to the JFE Group Sustainability Council and Board of Directors, including progress of investigations, findings, corrective measures, and recurrence prevention initiatives. Reports are also periodically submitted to the Board of Directors, thereby providing guidance and supervision.

> JaCER Grievance Form (https://jacer-bhr.org/en/application/form.html)
> Development of the Whistleblowing System (P. 247)
> Governance Data: Corporate Ethics Hotline and Harassment Consultation Desks (P. 282)

Targets and Results

Recognizing that contributing to the realization of a society in which the human rights of each and every individual are respected and protected is not only a corporate social responsibility but also a foundational principle of management, the JFE Group upholds respect for human rights across the supply chain as a key management issue and promotes its efforts by setting KPIs.

> FY2024 KPI Results and FY2025 KPIs (P. 19)

Human Rights Due Diligence

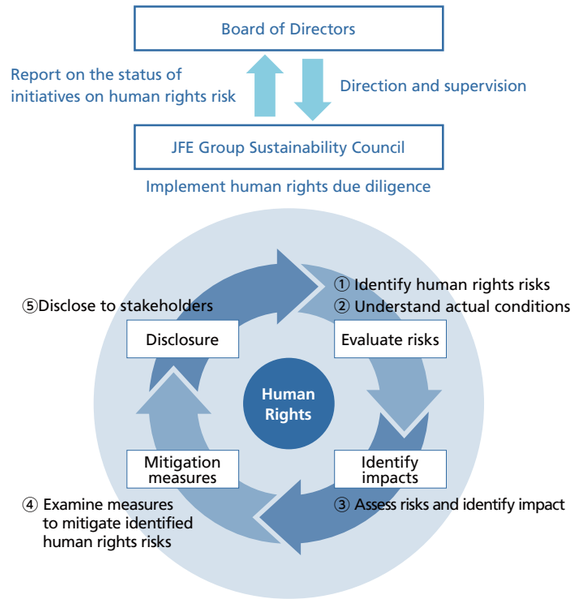
The JFE Group has been committed to human rights due diligence based on the United Nations Guiding Principles on Business and Human Rights since FY2021.

Group's Past Initiatives and Future Plans

	Overview
FY2021	• Identified human rights risks and examined corrective measures to be taken at the JFE Holdings and other Group companies, including operating companies
FY2022	**Expanding Human Rights Due Diligence to Group Companies** • To ensure that Group companies properly identify, assess, mitigate, and prevent human rights risks, the following initiatives were implemented: (1) Held briefings on human rights for Group companies (2) Conducted surveys on human rights risks at major domestic Group companies that are more likely to be affected by such risks in terms of sales scale and other factors
	Establishing a Human Rights Risk Management System for Suppliers • Discussed the method, scope, and priorities for conducting a survey on human rights risks throughout the supply chain • Selected suppliers that are a high priority for a survey, such as those based in countries with high human rights risks
FY2023	**Revised the JFE Group Human Rights Basic Policy (established in 2018)** • Each operating company inspected and revised their procurement guidelines in line with the revised policy
	Expanding Human Rights Due Diligence to Group Companies • Further expanded the survey to include all major domestic Group companies (about 100 companies)
	Establishing a Human Rights Risk Management System for Suppliers • Conducted a survey on human rights risks for about 400 high-priority suppliers
FY2024	**Expanding Human Rights Due Diligence to Group Companies** • ST EN SH Conducted a survey on human rights risks for about 50 high-priority overseas Group companies and provided feedback on the results • ST EN SH Methods and schedule for rolling out supplier surveys by Group companies were considered for major domestic Group companies
	Establishing a Human Rights Risk Management System for Suppliers • ST EN SH Provided feedback on survey results to suppliers surveyed in FY2023, and supported improvements for those requiring follow-up • SH Conducted a survey on human rights risks with 88 newly covered suppliers of steel raw materials, environmental resources, and equipment and materials
FY2025 (plan)	**Expanding Human Rights Due Diligence to Group Companies** • ST EN Conduct a human rights risk survey with six overseas Group companies • SH Provide feedback on the results to the overseas Group companies surveyed in FY2024
	Establishing a Human Rights Risk Management System for Suppliers • ST EN Conduct a second-round survey of approximately 300 high-priority suppliers, mainly those surveyed in FY2023 • SH Conduct a new survey on human rights risks with approximately 20 steel suppliers

Human Rights Due Diligence Process

Human Rights Due Diligence Process



❶ Identify human rights risks

We created a long list of human rights risks by referring to international norms and guidelines. Then, taking into account human rights risks specific to the industry, regional characteristics, and other relevant factors, we identified human rights risks related to the Group and its supply chain by stakeholder, such as employees and suppliers, including women, children, and local residents.

International norms and guidelines referenced:
United Nations Guiding Principles on Business and Human Rights, International Bill of Human Rights, ILO's Core Labor Standards, OECD Guidelines for Multinational Enterprises, Ten Principles of the UN Global Compact, GRI Standards, FLA Workplace Code of Conduct, and CHRB Key Industry Risks.

15 human rights issues to consider:

Compliance with standards and guidelines for respect for human rights demanded by international norms	Avoiding complicity in human rights abuses, compliance, social security, and fair competition	Prohibition of discrimination and equality before the law
Access to remedy	Thorough supplier management	Harassment and abuse
Women's rights	Child labor	Forced labor
Occupational health and safety	Working hours	Appropriate working environment
Wages that guarantee a decent standard of living	Freedom of association and the right to collective bargaining	Rights of indigenous and local people

❷ Investigate current status

We ascertained the current status of the risk management system and activities by examining our disclosure of policies on child labor, forced labor and various other human rights risks, such as the JFE Group Human Rights Basic Policy and the Basic Procurement Policy of each company, our whistleblowing system for ensuring access to remedial action, our initiatives on compliance including prevention of corruption, and other initiatives, systems and rules concerning internal and external human rights issues.

❸ Assess risks and determine impacts

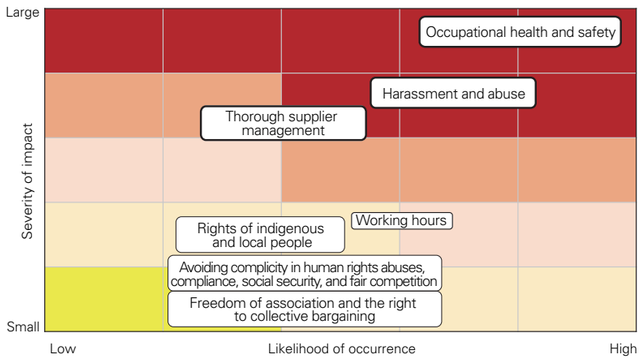
We assessed the risks of the identified human rights issues to be considered, based on the severity of impact and likelihood of occurrence, and determined the status of our initiatives on respecting human rights through written surveys and interviews in order to better identify that status in our future endeavors. During the risk assessment, we also determined the adverse impacts of human rights risks on the JFE Group and its stakeholders.

> Stakeholder Engagement (P. 38)

Human rights risks identified as particularly high risk and requiring action:

- Occupational health and safety
- Harassment and abuse
- Thorough supplier management (establishment of a human rights risk management system for the entire supply chain)

ST EN SH Map of Key Human Rights Risks



❹ Consider mitigation measures for identified human rights risks

We implement mitigation measures for the identified human rights risks, including response as well as preventive and corrective measures and promotion systems. For occupational health and safety and harassment, we continue to strengthen our efforts to eliminate accidents and harassment using KPIs.

To create a sustainable and resilient supply chain, we are establishing a human rights risk management system encompassing the entire supply chain. We will also conduct surveys on the human rights risks of suppliers by determining the priority of the surveys based on the severity of the impact of such risks and the likelihood of their occurrence.

> FY2024 KPI Results and FY2025 KPIs (P. 19)
> Occupational Health and Safety (P. 191)
> Social Data: Lost-Work Injuries and Accidents (P. 277)
> Governance Data: Whistleblowing (P. 282)

❺ Information disclosure to stakeholders

We disclose the JFE Group Human Rights Basic Policy, guidelines for procurement at each operating company, and other related information on our website to communicate our initiatives to respect human rights, including human rights due diligence, and their status to our stakeholders.

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FY2024 Initiatives

Expanding Human Rights Due Diligence to Group Companies

① ST EN SH Domestic Group Companies

We conducted a review of how to roll out supplier surveys at major domestic Group companies, including the methods and schedule for future expansion.

② ST EN SH Overseas Group Companies

We conducted human rights risk surveys of approximately 50 high-priority overseas Group companies and provided feedback on the results.

The initiatives of each operating company are as follows.

ST At JFE Steel, we conducted assessments at three high-priority overseas Group companies in Thailand, Indonesia, and Brazil, taking into account such factors as equity ratio, company size, and human rights vulnerability. Reviewing the results, we found deficiencies in management systems and preventive and remedial frameworks for certain human rights issues, such as the prohibition of discrimination, equality under the law as well as procurement practices. Accordingly, JFE Steel provided feedback on the results and shared examples of remediation measures. Each company is now working on such actions as strengthening systems and revising regulations.

EN At JFE Engineering, we conducted human rights risk assessments at three high-priority overseas Group companies in countries with elevated human rights risks in the Philippines, India, and Thailand, focusing on the occurrence of human rights risks and the effectiveness of management systems. We found deficiencies in preventive and remedial frameworks for certain human rights issues, including harassment and working hour management. Accordingly, JFE Engineering provided feedback on the survey results and shared examples of ways to improve, and is making progress in mitigating human rights risks.

SH At JFE Shoji, we conducted human rights risk assessments at 45 overseas Group companies, thereby completing surveys for all major overseas Group companies. After compiling the results, JFE Shoji has been providing feedback to each company through FY2025.

Establishing a Human Rights Risk Management System for Suppliers

In FY2024, we followed up with suppliers surveyed in FY2023 ①) and conducted a survey of 88 newly-covered suppliers of steel raw materials, environmental resources, and equipment and materials (②).

① ST EN SH Follow-up for Suppliers Surveyed in FY2023

- The details of the supplier selection method, survey method, and other aspects of the FY2023 survey are summarized below.

We conduct surveys and evaluations of high-priority suppliers using the Global Compact Network Japan's CSR Procurement Self-Assessment Tool*, taking into account the characteristics of each business.

*An assessment tool issued and published by the Supply Chain Subcommittee and consisting of 114 questions covering human rights, labor, fair business practices, and other areas.

Supplier Selection Method

ST FY2023

- Raw materials: Selected primary suppliers whose headquarters or production sites are in countries with high human rights risks*1 as well as secondary suppliers through JFE Shoji or JFE Minerals
  ➡ About 50 of approx. 700 suppliers were surveyed
- Materials: Selected manufacturers of critical materials*2 and their trading companies
  ➡ About 180 of approx. 1,500 suppliers were surveyed

EN FY2023

Selected suppliers based on the following criteria.
1. Suppliers whose headquarters or production sites are in countries with high human rights risks
2. Suppliers that provide high-risk raw materials*3
3. Key suppliers with a high level of business dependency, such as business partners or sole-source suppliers for technical reasons
4. Suppliers with a relatively large business scale and high order value*4

➡ About 100 of approx. 3,700 suppliers were surveyed

SH FY2023

Selected high-priority suppliers of steel raw materials, environmental resources, and equipment that supply products to JFE Steel and JFE Engineering
➡ About 70 of approx. 2,400 suppliers were surveyed

*1 Selected based on published indexes (such as the Human Rights Index compiled by Our World in Data) and advice from an advisory body
*2 Materials affecting the quality of steel products, selected by the relevant departments (e.g., refractories, rolls, chemicals)
*3 Selected based on advice from an external advisory body, targeting products that use silicon, lithium, palm oil, and other materials as their primary raw materials
*4 Companies with capital of at least ¥10 million and annual transactions of at least ¥1 billion with at least 100 transactions per year

Supplier Assessment and Evaluation Method

We use the CSR/Sustainable Procurement Self-assessment Tool Set developed by the Global Compact Network Japan to check whether suppliers have mechanisms in place for CSR and human rights, including policies, systems, implementation outcomes, and corrective measures.

We set "high risk questions" in the tool questionnaire in accordance with the Priority Human Rights Risk Map and assessed the respective characteristics of each business, then conducted follow-ups with suppliers that scored poorly on those items.

Examples of high-risk questions

Labor:
- Payment of fair wages
- Fair management of working hours, leave, and paid holidays
- Prohibition of forced labor
- Prohibition of child labor

Supply chain:
- Measures to address conflict minerals

- Operating companies are taking the following actions.

ST SH JFE Steel and JFE Shoji sent follow-up tools* to approximately 40 suppliers who needed to take corrective action. As a result, suppliers submitted written confirmation that they were implementing the following major improvements.

- Suppliers that lacked mechanisms for paying fair wages confirmed they had established internal rules and were monitoring compliance.
- Suppliers that had lacked a policy for preventing the procurement of conflict minerals confirmed they had formulated the necessary policy and developed procedures for communicating it to their own suppliers.

JFE Steel and JFE Shoji will continue to engage with suppliers that have not yet confirmed improvements, and will follow up through such actions as future surveys.

EN JFE Engineering sent follow-up tools to approximately 40 suppliers who needed to take corrective action. The status of improvements will be monitored through such measures as upcoming surveys on human rights risks.

*A document that defines and explains issues related to high-risk questions, provides specific examples of risks, and summarizes initiatives undertaken by the Group

② SH Survey of 88 newly covered suppliers of steel raw materials, environmental resources, and equipment and materials

JFE Shoji surveyed 88 newly covered suppliers of steel raw materials, environmental resources, and equipment and materials. Details of the supplier selection method are provided below (using the same survey and evaluation method as in FY2023).

> Survey and Evaluation Method in FY2023 (P. 208)

We conduct surveys and evaluations of high-priority suppliers using the CSR/Sustainable Procurement Self-assessment Tool Set of the Global Compact Network Japan, taking into account the respective characteristics of each business.

Supplier Selection Method

SH FY2024

Suppliers of steel raw materials, environmental resources, and equipment and materials that meet any of the following criteria were selected.
① Suppliers whose headquarters or production sites are located in countries with high human rights risks*1
② Suppliers that provide high-risk product categories*2
③ Suppliers that fall within the top 75% in procurement value based on purchase amount
➡ About 88 of approx. 2,400 suppliers were surveyed

*1 Selected based on publicly available indexes (such as the Human Rights Index compiled by Our World in Data) and advice from an advisory body
*2 Selected from lists published by Japan's Ministry of Economy, Trade and Industry (METI) and by the U.S. Department of Labor and Department of State

Future Initiatives

We will promote initiatives to correct and mitigate identified human rights risks and take the following actions to expand our human rights due diligence. To steadily advance our initiatives, we will conduct appropriate evaluations and make improvements under the supervision of the JFE Group Sustainability Council and Board of Directors, thereby enhancing effectiveness.

Expanding Human Rights Due Diligence to Group Companies

① ST EN SH **Domestic Group Companies**
In FY2025, we will continue to examine methods and schedules for the future rollout of supplier surveys at major domestic Group companies.

② ST EN SH **Overseas Group Companies**
In FY2025, we will conduct human rights risk surveys at six overseas Group companies for the first time and provide feedback to overseas Group companies that had been surveyed in FY2024.

The initiatives of each operating company are described below.

ST JFE Steel will conduct human rights risk surveys at three major consolidated overseas Group companies in the Philippines, United States, and Singapore.

EN JFE Engineering will conduct human rights risk surveys at three major overseas Group companies in Malaysia, Indonesia, and Germany.

SH JFE Shoji will provide feedback on the survey results to the 45 overseas Group companies that had been surveyed in FY2024.

Establishing Human Rights Risk Management System for Suppliers

In FY2025, each operating company plans to implement the following initiatives.

ST JFE Steel will provide opportunities to explain global trends in business and human rights as well as its own policies to small and medium-sized suppliers that showed a high proportion of responses indicating "no initiatives or corrective mechanisms in place" for high-risk questions in the previous survey. In addition, it will conduct a second round of surveys targeting around 200 priority suppliers selected using the same criteria as in the FY2023 survey.

EN JFE Engineering will conduct a second round of surveys in FY2025 for around 70 priority suppliers, mainly those surveyed in FY2023.

Given that JFE Engineering selects suppliers on a project-by-project basis with some turnover every year, the company also launched a program in July 2025 to screen new suppliers via questionnaire to confirm the presence of any supply-chain risk incidents and whether corrective actions* have been taken. This process informs decisions on transactions and remedial actions.

*Risk items include prevention of bribery of public officials, compliance with antitrust laws, prohibition of forced labor, prohibition of child labor, and efforts related to conflict minerals.

SH In FY2025, JFE Shoji will conduct a human rights survey for approximately 20 newly covered steel suppliers. Details of the supplier selection method are provided below (using the same survey and evaluation methods as in FY2023). This will complete the first round of surveys of JFE Shoji's major suppliers.

We conduct surveys and evaluations of high-priority suppliers using the CSR/Sustainable Procurement Self-assessment Tool Set of the Global Compact Network Japan, taking into account the respective characteristics of each business.

Supplier Selection Method

SH FY2025

Steel suppliers that meet any of the following criteria were selected.
① Suppliers whose headquarters or production sites are located in countries with high human rights risks*1
② Suppliers that provide high-risk product categories*2
③ Suppliers that fall within the top 75% in procurement value based on purchase amount
➡ About 20 of approx. 400 suppliers are scheduled to be surveyed

*1 Selected based on published indexes (such as the Human Rights Index compiled by Our World in Data) and advice from an advisory body
*2 Selected from lists published by Japan's Ministry of Economy, Trade and Industry (METI) and by the U.S. Department of Labor and Department of State

> Survey and Evaluation Method in FY2023 (P. 208)

Human Rights Promoting Activities

To consistently maintain our activities to respect human rights and raise employee awareness, we conduct human rights training courses, offer guaranteed equal employment opportunities, promote fair human-resource management, and actively prevent workplace harassment. Our training courses encourage employees to develop a thorough understanding of the JFE Group Human Rights Basic Policy and the respect for human rights expected of a company in the international community. To this end, we continuously monitor and following up on seminars against a KPI focused on attendance rate (attendance rate in FY2024: 100%).

We seek to prevent sexual harassment, power harassment, and other forms of harassment by addressing these issues in company regulations, displaying posters in workplaces, and regularly conducting harassment prevention training for all employees as well as by position (including management), individual offices, and executives. These programs include sessions that raise awareness and provide practical training using case studies to address everyday communication, the use of reporting and consultation channels if harassment occurs, and appropriate responses.

In addition, we invited an outside attorney to conduct a seminar for corporate ethics hotline and harassment consultation desk staff (those who receive reports, including management) within the JFE Group. We regularly organize these training sessions for hotline and consultation desk personnel, including content on confidentiality obligations when receiving reports and case studies (participants: approx. 200 in FY2020, approx. 300 in FY2022, and approx. 300 in FY2024).

Furthermore, we actively support and take part in initiatives undertaken by public organizations and groups promoting human rights as well as groups in which private enterprises participate, such as the Industrial Federation for Human Rights, Tokyo and the Corporate Federation for Dowa and Human Rights Issue, Osaka. By attending seminars and workshops sponsored or supported by such organizations and groups, we have become increasingly aware of human rights trends and challenges as well as issues specific to Japanese business. We then apply this knowledge in JFE human-rights awareness training programs and related initiatives.

Respecting the Rights of Workers

The JFE Group adheres to the laws and regulations of various countries as well as collective agreements. It also respects the rights to freedom of association as well as their right to collective bargaining.

Upper management, including the president and the representative of the union, meets regularly to discuss matters such as management issues, work life-balance, working environments, and working conditions. By conducting earnest labor-management consultations, we strive to create a vigorous workplace while working to maintain healthy and sound labor-management relations.

The JFE Group complies with laws and regulations related to salary payments and sets salaries above the minimum wage designated by country, region and industry sector. In addition to meeting legal requirements concerning the upper limits for overtime and other mandates, the JFE Group strives to improve employees' work engagement by providing them with one of the top levels of employment conditions in the industry as well as performance-based bonuses linked to company profits.

We regularly review the wage situation in each region and business sector and engage in honest discussions with the labor union to ensure a fair return to our employees while also paying due consideration to management and business performance.

Respect for Freedom of Expression

The JFE Group upholds basic human rights in its Human Rights Basic Policy and is committed to respecting and protecting the human rights of each individual throughout its corporate activities. We pay due care to prevent violations of the freedom of expression, as recognized by the International Covenant on Human Rights and other international conventions, and to fully protect the right to privacy.

Respect for Children's Rights

The JFE Group supports the Convention on the Rights of the Child and Children's Rights and Business Principles and will seek to eliminate child labor and respect every child's right to survival, right to development, right to protection and the right to participation, the four pillars of the Convention on the Rights of the Child.

The JFE Group Human Rights Basic Policy upholds recognizing the diverse values held by each individual in all aspects of corporate activity as well as respecting and protecting the human rights of each person in compliance with international conventions. It also explicitly prohibits child labor and forced labor. To promote concrete initiatives, the JFE Group has focused on nurturing the next generation as a key area of its public service and is engaged in activities that support the sound development of younger generations.

Endorsing and Participating in External Initiatives

We are a member of the Global Compact Network Japan, an organization that promotes Global Compact activities in Japan, in support of the Ten Principles of the United Nations Global Compact, related to the protection of human rights, the elimination of unfair labor practices, environmental protection, and the prevention of corruption. We also participate in subcommittee activities of the Global Compact Network Japan and promote our own initiatives based on exchanging information with participating companies and organizations.

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Respecting Human Rights across the Supply Chain

ST Compliance with the JFE Steel Procurement Guidelines and Responsible Procurement of Raw Materials

In accordance with the JFE Group Human Rights Basic Policy, JFE Steel established the JFE Steel Procurement Guidelines in 2023, which incorporate more extensive and specific information on sustainability in general, in addition to respect for human rights. To promote sustainability initiatives throughout the supply chain, we disclose the guidelines on our website and request compliance from our suppliers.

In terms of raw material procurement in particular, there is concern that tin, tantalum, tungsten, gold, and cobalt provide a funding source for militias causing human rights violations and environmental destruction. Therefore, JFE Steel purchases them only after confirming that they have not been mined in conflict-affected or high-risk areas, in accordance with Japanese and overseas regulations governing the responsible procurement of minerals as well as international rules.

For JFE Steel Procurement Guidelines, please refer to:
> JFE Steel Procurement Guidelines (https://www.jfe-steel.co.jp/en/company/purchase_policy.html#to-our-business-partners)

EN Promoting Initiatives to Respect Human Rights in Cooperation with Suppliers

In line with the JFE Group Human Rights Basic Policy, JFE Engineering has established its Purchasing and Procurement Policies and is promoting sustainable procurement in cooperation with suppliers to advance initiatives related to respect for human rights. It also asks suppliers to respect basic human rights, eliminate all forms of discrimination, and strive to create a safe and comfortable working environment by establishing procurement guidelines while observing laws, regulations, and social norms in their business activities. The company ensures that these policies are clearly communicated throughout the supply chain by publicizing them on the company's website.

For JFE Engineering's Procurement Policy and Procurement Guidelines, please refer to:
> Procurement Policy (https://www.jfe-eng.co.jp/en/information/procurement_policy.html)
> Procurement Guidelines (https://www.jfe-eng.co.jp/en/information/procurement_policy.html)

SH Promotion of Respect for Human Rights in the Supply Chain

In line with the JFE Group Human Rights Basic Policy, the JFE Shoji Group has established the Basic Policy on Sustainability in the Supply Chain to promote joint efforts with suppliers in respecting human rights and advancing sustainability as a whole. To raise awareness throughout the supply chain, the policy is disclosed on the company's website.

For JFE Shoji's Basic Policy on Sustainability in the Supply Chain, please refer to:
> Basic Policy on Sustainability in the Supply Chain (https://www.jfe-shoji.co.jp/en/sustainability/promote/)

Providing Quality Products and Enhancing Customer Satisfaction

Basic Policy

Under its corporate philosophy of contributing to society with the world's most innovative technology, the JFE Group will continue to be a company that provides world-class products and services for a prosperous global future.

JFE Group Standards of Business Conduct

❶ Provide quality products and services
Earn the trust and acclaim of customers by endeavoring to provide safe, high-quality products and services based on superior technologies, and by fully respecting and protecting the privacy of personal and customer information. Also, leverage our superior technologies for the sustainable growth of our Group and society.

Targets and Results

Under its Standards of Business Conduct to provide quality products and services, the JFE Group has identified increasing efficiency and enhancing cost competitiveness in production and engineering and raising quality of products and services and ensuring reliable supply as two key management concerns and sets KPIs to manage progress and promote relevant initiatives.

> FY2024 KPI Results and FY2025 KPIs (P. 19)

Initiatives

JFE Group's Quality Initiatives

The JFE Group manages quality by ensuring compliance with quality standards set by each operating company. All manufacturing sites that require ISO 9001 certification for their quality management have been duly certified.

Strengthening Quality Assurance System

ST Initiatives to Improve Product Quality
To serve customers by meeting their quality requirements and delivering products that boast the world's highest quality, JFE Steel has established a quality assurance system with advanced sensors for process monitoring, in addition to its ongoing efforts to develop new products and advanced manufacturing technologies.

We are conducting activities across the company in line with the Guidelines for Enhancing Quality Assurance Systems formulated by the Japan Iron and Steel Federation (JISF) to strengthen our quality assurance system. In addition to conducting product tests using high-precision testing and inspection equipment, we are striving to thoroughly prevent errors in identification tasks and data tampering by promoting automation in every process, from issuing test instructions and collating specimens to reporting results.

Moreover, the company intends to provide customers with innovative value by operating its quality management system based on ISO 9001 and by advancing the acquisition of various assurance certifications required for steel products, including the JIS mark and approvals from ship classification bodies. We are also actively promoting the formation and standardization of international rules in conjunction with future DX promotion and the social implementation of technologies obtained through research and development.

ST Initiatives to Supply High-Quality Products
JFE Steel is working to improve its manufacturing capabilities by actively utilizing digital technologies in its manufacturing processes.

While strengthening its manufacturing base by introducing a cyber-physical system (CPS) for all manufacturing processes, JFE Steel is also striving to improve quality and yield through the full-scale introduction of quality prediction technology that uses integrated data from steelmaking to final processing, and to enhance reliability by increasing the frequency of automated testing and inspections. These activities will stabilize facility operations as well as production and quality to safeguard the consistent delivery of high-quality products to customers.

EN Promoting Quality Activities Based on the Companywide Quality Policy
JFE Engineering has established a companywide quality policy stating that "products and services that JFE Engineering designs, procures, manufactures, or constructs must comply with all required rules, regulations, and standards, and quality must satisfy the needs of our customers" and that we will continually undertake improvements. Under this corporate policy, the company continually strives to improve the quality of its products and services.

Specifically, our certified inspectors conduct on-site inspections at each phase of a plant construction project, including procurement, manufacturing, construction, and pilot operations. We also conduct witness inspections by customers during critical processes and at the time of equipment delivery to ensure quality.

In addition, JFE Engineering has published quality-assurance manuals based on the specific characteristics of each product and obtained ISO 9001 certification for each product category.

To further strengthen its quality assurance system, JFE Engineering uses an electronic document processing system in its quality inspections to prevent omissions in inspection data and data tampering, and all inspection data is electronically stored to further ensure traceability.

EN Securing Construction Business Operators
JFE Engineering have been designated as a special construction business operator under the Construction Business Act to undertake mechanical, civil engineering, and building construction work, and assign dedicated managing engineers at construction sites to oversee the technical aspects of construction work. The smooth implementation of plant construction projects depends on licensed specialists. The company is always striving to secure the necessary human resources by encouraging employees to acquire qualifications by granting allowances and through mid-career hiring of licensed personnel.

SH Maintaining and Improving Quality Assurance Level Based on Quality Philosophy
Guided by its quality philosophy of continuing to provide products that satisfy the required quality to ensure that we are always trusted by our customers, JFE Shoji is constantly striving to enhance the level of its quality assurance for customer confidence and satisfaction. Its processing centers in Japan and abroad are systematizing and automating operations to eliminate human errors. Raising employee awareness is essential for preventing human error at every stage, from receiving orders to processing, inspecting and shipping. The company provides quality education for employees by introducing case studies of nonconformance at other companies as well as at Group companies in Japan and abroad. Moreover, we conduct periodic quality audits at all relevant Group companies in and outside of Japan to identify quality assurance risks, and we provide follow-up toward improvement. When follow-up is necessary, individual responses are carried out to maintain and enhance the level of quality assurance.

Proper Export Procedures

Each JFE operating company promotes international peace and security by working against the spread of weapons of mass destruction and excess accumulation of conventional weapons. Specifically, the company carries out internal inspections to confirm the final destinations, customers and applications of its exported products, and then ensures that export procedures are carried out properly. In addition, the Legal Affairs Department conducts internal briefings to disseminate knowledge of export-related laws and regulations, such as the Foreign Exchange and Foreign Trade Act. Also, education on export security controls and related measures is implemented for the employees of Group companies involved in trading.

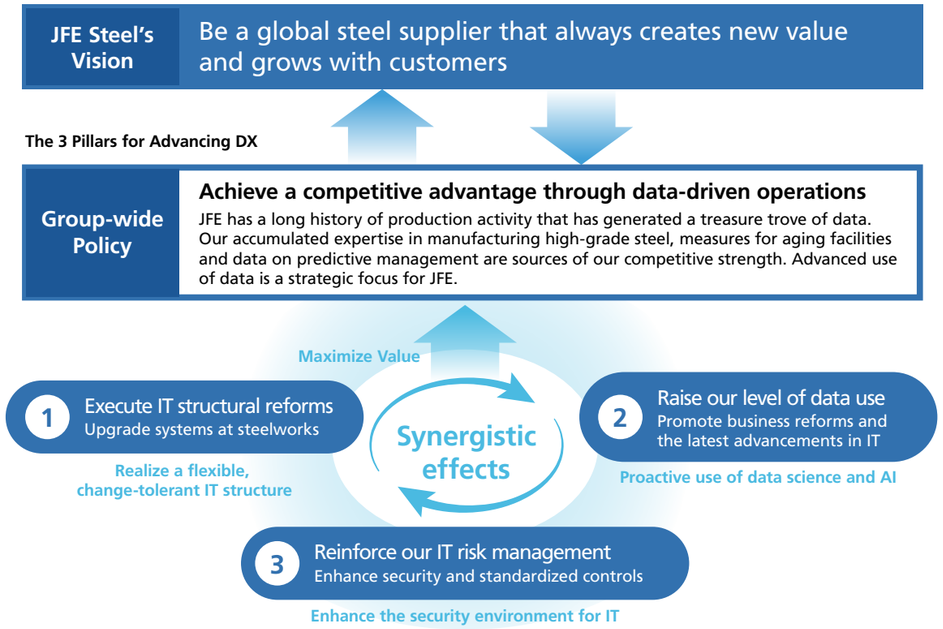
Improving Customer Satisfaction

ST Aggressive Advancement of DX

JFE Steel's Digital Transformation (DX) strategy revolves around technological innovation based on the active introduction of IoT, AI and data science (DS) and the application of data assets. Compared to mills in other countries, we possess an enormous amount of know-how and data accumulated through many years of production operations. Our abundant data assets are the source of our value creation.

We will harness the latest DS and AI technologies to make versatile use of such data in achieving innovative improvements in productivity, enhancing quality, and ensuring stable operations to improve customer satisfaction.

Advancement of Digital Transformation (DX)



For more information on our DX, please refer to:

> DX REPORT (https://www.jfe-holdings.co.jp/en/investor/library/dxreport/index.html)

ST Testing and Research Centers for Collaboration with Customers on Product Development

JFE Steel collaborates with customers in research and development. The Customers' Solutions Lab (CSL) for auto industry customers and the JFE Welding Institute-Center for Integrity against Fatigue and Fracture (JWI-CIF2) are located in eastern Japan, while the Customer Center Fukuyama (CCF), which develops materials and conducts applied technology research, is in western Japan. Using these facilities to strengthen early vendor involvement (EVI)* enables the company to quickly identify customer needs and develop products based on cutting-edge evaluation techniques and innovative production processes.

*Customer participation in product development is from an early stage to facilitate innovative new methods, functions, processes and evaluations for new steel materials.

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Customers' Solutions Lab (CSL)

ST Enhancing Our Response to Customer Needs

In an effort to strengthen the company's total capabilities for better responding to customer needs, its sales department emphasizes enhanced sales education for sales personnel by position at the headquarters and branch offices. Specifically, we develop abilities in areas such as engaging in technical conversations, picking up clues from customer relations and using them in product development, offering suggestions to improve logistics and distribution, and analyzing financial indicators and costs. We also constantly strive to improve our systems so that customer product specifications are accurately reflected in manufacturing, and we will continue to work on improvements.

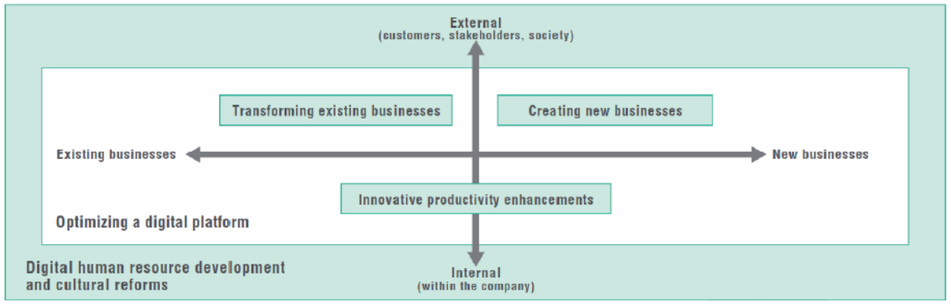
ST Unified Customer Care

JFE Steel regularly conducts customer questionnaires and interviews to draft strategies for greater customer satisfaction. Business strategies are shared among the sales divisions, the business planning functions and steelworks to facilitate unified customer care and proposals that leverage the collective strengths of the JFE Group

EN Create and Continue to care for the Foundation of Life by Maximizing DX

JFE Engineering plans, designs, builds and operates the infrastructure that supports people's lives and industry. Digital transformation (DX) is crucial for accelerating the pace of its work and for maintaining its position at the forefront of the engineering industry. JFE Engineering will aggressively pursue DX beyond simply raising operational efficiency to fundamentally reform its operational processes, add new functions to its products and services, and take on the challenge of developing new businesses that utilize data, to realize a green society and enhance corporate value.

JFE Engineering's DX strategy



For more information on our DX, please refer to:

> DX REPORT (https://www.jfe-holdings.co.jp/en/investor/library/dxreport/index.html)

EN Company Assessments Based on Customer Evaluations

JFE Engineering uses customer surveys, interviews, and contractor performance evaluation forms to collect and assess data on the company's construction management, quality, advanced technologies and innovation. Each division analyzes and applies the data for quality improvement, new product development and the overall strengthening of aftersales service, to ultimately enhance customer satisfaction.

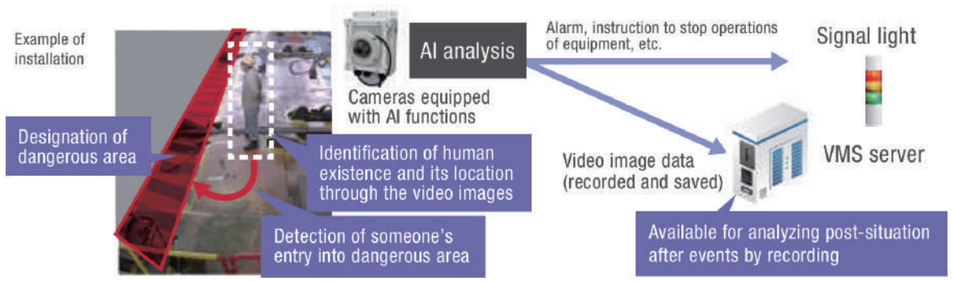
SH Establishing a System to Meet Customer Needs

To respond to diversifying markets and increasingly advanced customer requirements, JFE Shoji is promoting DX solutions that take advantage of the strengths of the JFE Shoji Group. Placing "Safety" as a central theme, JFE Shoji Electronics Corporation, a JFE Shoji Group company, has begun offering a Safety AI System and Safety AI cameras designed for installation on heavy machinery.

These cameras help supervisors detect when workers enter hazardous areas or come close to moving machine components and enable effective monitoring of on-site work activities. In addition, JFE Shoji Electronics provides secure network cameras as well as smartphone-type cameras, which support operational improvements such as reducing the need for physical patrols and facilitating efficient root-cause analysis using recorded video footage.

Overview of the Safety AI System

- Enables the pre-designation of dangerous areas, triggers alarm via a signal light, and automatically stops equipment operation
- In conjunction with the optional VMS*, supports video recording, reviewing, and analysis



*Video management system/software

For more information on our DX, please refer to:
> DX REPORT (https://www.jfe-holdings.co.jp/en/investor/library/dxreport/index.html)

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Promotion of Research and Development

ST Promoting Technological Development to Meet the Needs of Customers and Society at Large

JFE Steel is advancing research and development of innovative technologies in the steelmaking process to contribute to achieving carbon neutrality by 2050. These include CO_2 reduction technology, carbon-recycling blast furnaces with CCU, and hydrogen-based ironmaking (direct reduction). The company is also actively applying data science and robotics to drive technological development that meets the evolving needs of customers and society at large.

In addition, JFE Steel is accelerating the introduction of new products and solutions for each field, with automobiles including EVs and new energy as key areas of R&D.

EN Promoting Research and Development Based on the Long-Term Vision

Guided by its long-term vision, JFE Engineering is prioritizing research and development in two key areas: green transformation (GX) for carbon neutrality and digital transformation (DX) for business sophistication and efficiency. In GX, the company conducts R&D to achieve its FY2035 target of reducing 30 million tonnes of CO_2 emissions. Key initiatives include developing manufacturing technologies for monopile foundations for offshore wind power generation, low-energy CO_2 separation and capture technology that uses a hybrid of membrane separation and physical adsorption methods, and waste-to-chemical technologies that convert waste into chemical raw materials.

Internal Awards

The following technical and product developments were awarded in FY2024.

Internal Awards (FY2024)

	Prize/Award	Project	Recipient
JFE Steel	Grand Prize/ Excellence Award, JFE Steel President's Awards	Establishing a low-cost, high-productivity hot-rolling system at the Fukuyama District by developing the J-Lecoa™ hot-rolled coil stabilization DS technology	Hot Rolling Department, West Japan Works (Fukuyama District)
		Establishing an environmentally harmonized formed coke production technology through advanced technological development—effective use of low-grade resources by expanding formed coke technology	Coke Technology Department
		Significant improvement in freight rate competitiveness for long-distance transport through optimized transportation conditions and methods	Logistics Planning Department
		Establishment of a high-profit product manufacturing system at the Chiba Hot Strip Mill in the short term	Hot Rolling Department, East Japan Works (Chiba Works)
		Establishment of a stable supply system for hot-dip galvanized steel sheets for automobiles under high operation levels	Process Control Department, West Japan Works
		Establishment of a production system for strict-surface-hardness sour-resistant steel	Plate Department, West Japan Works (Fukuyama District)
JFE Engineering	Grand Prize, JFE Engineering President's Awards	Ultimate teamwork between humans and robots: next-generation technology that revolutionizes bolt tightening	Social Infrastructure Headquarters

For more on the external awards, please refer to:
> External Awards (P. 288)

Supply Chain Management

Basic Policy

Through the adoption of the Sustainable Development Goals (SDGs) and the Paris Agreement, the international community has called on companies to actively engage in actions to resolve global issues toward realizing a sustainable society. Existing harmoniously with the global environment, respecting human rights, and providing challenging work environments are some of the JFE Group's commitments in the JFE Standards of Business Conduct and the Group promotes initiatives under these standards. In order to realize a sustainable society, we believe it is important to address these challenges within the Group itself as well as across the entire supply chain. We will continue to push forward with our initiatives supported by the understanding of our suppliers and other business partners.

For risks and opportunities across the JFE Group's value chain, please refer to:
> JFE Value Chain (P. 29)

Promoting Green Procurement

The JFE Group's procurement policies help to conserve resources and protect the environment by ensuring adherence not only to all laws and regulations but also to procurement principles stated in the Charter of Corporate Behavior developed by the Japan Business Federation. Going forward, the JFE Group expects to accelerate such efforts in its supply chains.

Procurement Policy and Initiatives by Each Business

ST JFE Steel Procurement Guidelines and Requests to Suppliers to Promote Sustainability

In pursuit of a sustainable society, JFE Steel established the JFE Steel Procurement Guidelines in accordance with the JFE Group Standards of Conduct and the JFE Group Basic Policy on Human Rights. Under these guidelines, the company procures raw materials and equipment with due consideration for human rights, including the prohibition of child labor and forced labor, as well as legal compliance, and environmental protection. In addition, we purchase raw materials such as tin, tantalum, tungsten, gold, and cobalt only after confirming that they have not been mined in conflict-affected or high-risk areas. We share these guidelines with our business partners and promote sustainability initiatives throughout our supply chain.

For the JFE Steel Procurement Guidelines, please refer to:
> JFE Steel Procurement Guidelines (https://www.jfe-steel.co.jp/en/company/pdf/procurement-guidelines.pdf)

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EN Basic Procurement Policy, and Requests to Suppliers to Promote CSR

Viewing its suppliers as key partners in achieving mutual growth, JFE Engineering strives to nurture mutual trust and reinforce partnership relationships.

The company established the Basic Procurement Policy to implement fair and transparent procurement activities. Under our Procurement Guidelines, we also makes specific requests to business partners and request their compliance. To ascertain the status of suppliers' efforts based on the request for compliance, we conduct a questionnaire survey. After reviewing the results, we follow up with suppliers that particularly require improvement, by providing support materials to assist their programs and requesting corrective action.

Through these efforts, the company will develop CSR activities with its suppliers to promote sustainable procurement.

For JFE Engineering's Basic Policy on Sustainability in the Supply Chain, please refer to:
> Basic Procurement Policy (https://www.jfe-eng.co.jp/en/information/procurement_policy.html)
> Procurement Guidelines (https://www.jfe-eng.co.jp/en/information/procurement_policy.html)

SH Ensuring a Sustainable Supply Chain

The JFE Shoji Group strives to be a prominent company that sustainably grows and develops alongside its customers, the JFE Group, and all other stakeholders. Recognizing that the key for achieving this goal is to ensure sustainability across the supply chain, JFE Shoji established the Basic Policy on Sustainability in the Supply Chain to guide its efforts on such issues as human rights, labor issues, and the global environment.

We are strengthening our end-to-end supply chain, from raw material procurement through processing and distribution, so that we can reliably respond to customer needs. We also seek the understanding and cooperation of our suppliers and other business partners in complying with the policy and will work with them to establish a more sustainable supply chain.

For JFE Shoji's Basic Policy on Sustainability in the Supply Chain, please refer to:
> Basic Policy on Sustainability in the Supply Chain (https://www.jfe-shoji.co.jp/en/sustainability/promote/)

Community

Basic Policy

We are engaged in corporate activities across the globe. Continuing to do business requires that we forge relationships of trust with local communities and realize sustainable growth together by contributing to the development of each region in which we operate as well as by pursuing development at manufacturing sites where our steelworks are located. To this end, the JFE Group is committed to working with communities as stated in the JFE Standards of Business Conduct and is promoting activities that contribute to local communities.

The operation of our steelworks involves massive production facilities and significantly impact the region's employment and economy as well as environmental air and water quality. Our steel business seeks to revitalize local communities as an important means for deepening understanding of the JFE Group among local residents and mutually promoting regional development.

JFE Group Standards of Business Conduct

❸ Work with communities
Actively contribute to host communities as a good corporate citizen by emphasizing harmony and cooperation.

Initiatives

Local Activities

In addition to consistently taking action to ensure safety and reduce the environmental impact of our corporate operations, we also conduct initiatives that serve the public with a focus on protecting the environment, nurturing the next generation, promoting sports and culture, and revitalizing regional communities. Furthermore, we provide paid leave programs that can be used to promote volunteer work to encourage the active participation of employees.

Opening Manufacturing Sites to the Public

Every year, the JFE Group opens its manufacturing facilities, inviting residents in local host communities to participate in demonstrations, tours, and other events.

On-site Events in FY2024

	Location	Event	Date	Attendance
JFE Steel	East Japan Works, Keihin	Keihin Community Festiva	May 26	35,000
	East Japan Works, Chiba	JFE Chiba Festival	October 26	25,000
	West Japan Works, Fukuyama	JFE West Japan Festival in Fukuyama	May 12	60,000
	West Japan Works, Kurashiki	JFE West Japan Festival in Kurashiki	November 3	30,000
	Chita Works	Handa Community Industrial Festival	November 9	12,000
	Sendai Works	JFE Steel Sendai Festival	October 26	1,000
JFE Engineering	Tsu Works	Autumn Festival	October 19	4,000

JFE West Japan Festival in Fukuyama

In addition, on-site recreational facilities are made available for community sports such as soccer, baseball, volleyball and basketball as well as other events sponsored by Group companies. Coaching sessions are offered by company baseball and track teams, which compete in Japan's top-level corporate leagues. Such activities promote sports and health as well as stronger relationships with host communities.

ST Tour of Steelworks

Every year, JFE Steel invites approximately 100,000 guests, mostly elementary and junior high school students from host communities to tour steel production sites at each steelwork, in conjunction with festivals and other events.

ST Education at Elementary Schools

JFE Steel conducts plant tours for students at nearby elementary and junior high schools. In addition, company employees visit schools to give lectures on iron and steelmaking processes, the features of steelworks, environmental initiatives, and other topics to deepen understanding of the steel industry and career opportunities. In FY2024, these lectures were given to 130 students in 10 classes, bringing the total to about 335 classes since these began in FY2012.

Kawasaki Middle School in Kawasaki City, Kanagawa Prefecture

EN Establishment of a System for Promoting Social Co-Existence Activities

In FY2022, JFE Engineering established the Social Co-existence Committee, chaired by the president, to strengthen its social initiatives and increase its contribution to realizing a sustainable society in accordance with the JFE Group Standards of Business Conduct. Under the policies set by JFE Engineering, the committee's activities encompass initiatives implemented through its businesses as well as efforts to address social issues that cannot be resolved through business operations alone. It identifies four priority themes: the environment, disaster prevention, local communities, and nurturing the next generation. The environment and disaster prevention are closely related to the company's business domains, and collaboration with local communities is essential for an organization that does businesses in various locations. Nurturing the next generation is in line with JFE Engineering's stated purpose of strongly supporting daily life and passing community strengths on to future generations. In FY2025, the organizational structure was reorganized, and activities have continued under the Corporate Culture Enhancement Committee. Under the system, leaders have been assigned in each organization to promote activities across the company. Also, the company laid out guidelines for its system in order to create an environment conducive to its activities. In addition, it designed an original logo and selected a catchphrase from entries submitted by employees to spread awareness and promote employee participation.

JFE Engineering emphasizes employee participation in its activities. In FY2024, the company hosted a SpoGOMI event under the slogan "Picking up litter is a sport!" at its Yokohama Head Office as an activity that turns a community cleanup into a fun competition. About 100 employees took part, collecting roughly 144 kilograms of litter and contributing to the beautification of the surrounding area. In addition, at the YOXO FESTIVAL 2025 organized by the Yokohama Future Organization (YOXO), volunteer employees collaborated to design and present programs for children, including a hands-on "slime factory" workshop, during which children experience the process of engineering, procurement, and construction (EPC), a craft workshop themed on the company's businesses, and a board game to learn about carbon neutrality. Looking ahead, we will continue to engage in social co-existence activities to contribute to a sustainable society.

みんなと創る
みんなで生きる

For more information, please refer to:
> JFE Engineering's Social Contribution Activities (https://www.jfe-eng.co.jp/information/en/social_coexistence/)

EN Forest Management in the JFE Forest

JFE Engineering has concluded a forest maintenance agreement with the town of Yuni in Hokkaido, under the Hokkaido Government's Corporate Forest Development in Hokkaido program, and has been managing approximately 7 hectares of town-owned forest there. The purpose of this initiative is to conserve forests and revitalize the community through the proper maintenance and management of local forests. We named the forest where we carry out this initiative the JFE Forest, and in FY2025, we cut down 50-year-old trees that no longer effectively absorbed CO_2 and also planted clean larch seedlings, a tree species with high CO_2 absorption efficiency. In addition, an expert presented a lecture to employees who participated in the tree-planting activities, providing them with an opportunity to deepen their understanding of forests. We will continue to carry out proper maintenance and management of forests.

EN Environmental Protection Activities in the Kumozu River Basin in Mie Prefecture

JFE Engineering is the founding member of a committee set up in 2008 for protecting the environment in the Kumozu River basin in Mie Prefecture, including Tsu City, where the company's Tsu Works is located. Together with the local forestry and fisheries cooperatives, which are also members, and with support from Tsu City, the committee conducts river cleanups and tree planting activities in the river basin, as well as beach cleanups at the mouth of the river and public environmental education, in which employees and their families participate.

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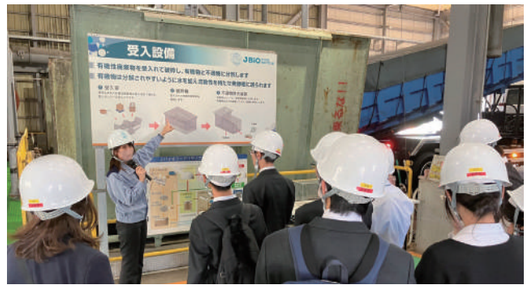
EN Facility Tours and School Lectures

JFE Engineering accepts visitors, mainly children from neighboring communities, and gives them tours of the works, construction sites, and incineration plants it manages under contract. The company also dispatches its employees to schools to provide lectures on the environment and other topics. For example, a lecture on the environment and recycling was given to around 80 second-year students at the Junior High School Attached to Yokohama Science Frontier High School near JFE Engineering's Yokohama Head Office, followed by a visit to the Yokohama Head Office. Students learn through both classroom lectures and on-site experience by touring a food recycling plant operated by a Group company and the Global Remote Center, which remotely monitors over 80 incineration plants and other facilities in Japan and overseas. This initiative has been implemented for seven consecutive years since its launch in 2018.



Food recycling plant tour

Support for External Organizations

Contributing to the realization of a sustainable society is a key management concern for the JFE Group, which actively seeks to address issues in collaboration with external groups and NGOs in pursuing solutions for the 17 SDGs.

UN World Food Programme

The JFE Group seeks to resolve the global hunger issue by supporting the cause and activities of the Japan Association for the World Food Programme*.

*An NPO-accredited supporter of the UN World Food Programme (WFP), which works to eliminate hunger and poverty

Supporting Training for Foreign Medical Professionals

The JFE Group supports the Japanese Council for Medical Training, spearheaded by the Toranomon Hospital in Tokyo. The council offers a training program in which doctors from developing countries, primarily in Southeast Asia, are invited to study in Japan. The program aims to make an international contribution by training participants in Japan's advanced medical practices so trainees can apply their results to raise the medical standards of their home countries and to foster stronger relationships between those nations and Japan. The program also contributes to resolving health issues in local communities by enhancing the medical standards of those countries.

For more information, please refer to:
> JCMT (https://www.jcmt.jp/english/)

Japanese Foundation for Cancer Research

Since its establishment in 1908, the Japanese Foundation for Cancer Research has upheld its basic philosophy of aiming to improve the well-being of people everywhere by achieving better cancer control. The JFE Group supports this foundation, which has played a leading role in research and treatment as well as human resource development in Japan.

Fund to Support Children's Future

The JFE Group endorses the Japanese government's national campaign for creating a society in which every child can grow with dreams and hopes. The Group supports the Fund to Support Children's Future, which provides assistance to NPOs and other groups engaged in activities to eliminate poverty throughout Japan.

Support for Youth Development

Japanese Language Speech Contest

The JFE Group supports the All-China Japanese Speech Contest for university students in China as a way to promote stronger international exchange. The contest has been held since 2006 to further Japan-China relations through language and communication, and JFE has provided support from its launch. The 18th contest was held in FY2024, and the finals took place in Japan. Through this activity, the JFE Group contributes to the development of Japanese language education in China and the promotion of friendly exchanges between the two countries.

Career Education for Students

JFE Steel and JFE Engineering provide plant tours for female junior high school, high school and university students to encourage them to pursue careers in science and technology.

Since 2006, JFE Steel has participated in the Keizai Koho Center's "Business Training for Japanese School Teachers." Teachers from primary, junior high and high schools learn about business operations, human resource development, safety and environment-protection-related initiatives, among other topics, with the intention of sharing that knowledge with their students and leveraging it for better school management. In addition, some facilities invite local junior high students and host work-experience sessions.

As part of career education for high school and junior high school students, Kawasho Foods Corporation, a member of the JFE Shoji group, cooperates with the School Support Center, a specified Nonprofit Corporation, to invite students for training. The participants learn how society is supported by specific kinds of work as well as the products and services related to such work.

Business training for schoolteachers

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FY2024 Internships

The JFE Group annually hosts many trainees and interns from overseas to help them gain practical experience at plants as well as design and construction sites. They also participate in group work.

Number of Interns Accepted by Each Operating Company (FY2024)

JFE Steel	JFE Engineering	JFE Shoji
953 (administrative: 573, technical: 380)	749 (administrative: 184, technical: 565)	378

ST High School Science and Engineering Contest

The Japan Science & Engineering Challenge is a national science-paper contest for high school and technical college students. Under the sponsorship of the Asahi Shimbun Company and TV Asahi Corporation, the contest has been supported by JFE Steel since 2006 to nurture future scientists and engineers.

JFE Steel Award presented to a student from the National Institute of Technology (KOSEN), Niihama College

SH Support for Elementary Schools in Ghana and Nigeria

The JFE Shoji Group has been conducting annual donation campaigns in Ghana and Nigeria since 2011. The donations take into account requests from the local Ministry of Education and schools, and the donated items are mainly selected to contribute to the economic activities of the two countries. In 2024, the 14th donation campaign, the JFE Shoji Group donated 12,500 cans of GEISHA brand canned mackerel with tomato sauce, 460 sets of desks and chairs, and 17,000 notebooks to total of 15 schools in the two countries. School officials and local government agencies expressed many words of gratitude for the donations.

The JFE Shoji Group will continue to provide support for food and education into the future, as a project that symbolizes the Group's commitment.

Students at an elementary school in Ghana

Students at an elementary school in Nigeria

SH Providing Off-Campus Training Opportunities for Special-Needs Schools

The JFE Shoji Group has been providing off-campus training opportunities for students at Special-Needs Schools since FY2017. Training mainly consists of accepting interns to experience working in such jobs as cleaning, maintaining the tea dispenser, and sorting forms. In addition, bread sales trainings are regularly held at a canteen of the company.

As a company that values open relationships with society, the JFE Shoji Group will continue to support self-reliance and social participation so that people with disabilities can lead vibrant lives in their own way.

JFE 21st Century Foundation

The JFE 21st Century Foundation was founded in 1990 through a donation from the JFE Group (the former Kawasaki Steel) to operate as a public-service corporation that contributes to society. It engages in various public services, such as supporting research at universities and cultural development.

- **Issued technical research grants (steel-related technology, global environment, global warming mitigation technology)**
- **Issued grants for Asian historical research**
- **Published and donated textbooks for universities and publications related to steel**
- **Sponsored cultural activities in communities hosting steel facilities**
- **Held Overseas Literary Contest and donated literary works**

For more on the JFE 21st Century Foundation, please refer to:

> JFE 21st Century Foundation (http://www.jfe-21st-cf.or.jp/eng/)
> Social Data: JFE 21st Century Foundation (P. 278)

Support for Technology Research

The foundation has been highly acclaimed by many universities for its support of technology research since FY1991.

In FY2024, it fielded 179 grant requests and provided a total of 56 million yen in the form of grants valued at 2 million yen each for 9 projects involving iron and steel technologies and 19 projects related to environmental technologies, including global warming mitigation technologies.

Support for Asian History Studies

The foundation began awarding grants in support of Asian history studies at Japanese universities in FY2005. In FY2024, 76 applications were received and 12 grants worth 1.5 million yen each were awarded, bringing the total to 18 million yen

Support Activities in Communities Hosting Steel Facilities

The foundation financially sponsors community cultural activities including music, art, traditional events, community revitalization, community activities and the conservation of cultural property.

In FY2024, it sponsored 12 events in regions across Japan where the Group operates its steel business, including Chiba, Kawasaki, and Fukuyama cities.

Supporting the Japan Overseas Educational Services Writing Contest and Anthology Donation

The Japan Overseas Educational Services organizes contests in the areas of essays, poems, tanka and haiku for Japanese students attending elementary and middle schools overseas. The JFE Group has been cosponsoring the contest by offering JFE 21st Century Foundation prizes since FY1991. The foundation also donated 2,200 copies of *Chikyu ni Manabu* (Learn from the Earth), a collection of the winning entries, again in FY2024, to approximately 700 organizations, including elementary and middle schools and public libraries located in the regions where the Group operates its steel business.

List of Social-Contribution Activities

Local Communities and Society

- **Supported World Food Programme**
- **Supported Japanese Foundation for Cancer Research**

> Kurashiki—Plant tours
(https://www.jfe-steel.co.jp/en/company/csr.html#anc01-01)

> Held festivals and events
(https://www.jfe-steel.co.jp/en/company/csr.html#anc01-02)

> Kurashiki—Donated to the Japan National Council of Social Welfare
(https://www.jfe-steel.co.jp/en/company/csr.html#anc01-03)

> Chiba—Donated emergency food supplies to a food bank (Japanese only)
(https://www.jfe-steel.co.jp/company/csr.html#anc01-04)

> Lectured at elementary schools
(https://www.jfe-steel.co.jp/en/company/csr.html#anc01-04)

> Kurashiki and Fukuyama—Joined local cleanup activities
(https://www.jfe-steel.co.jp/en/company/csr.html#anc01-05)

> Chiba, Kurashiki, and Fukuyama—Collaboration with local governments
(https://www.jfe-steel.co.jp/company/csr.html#anc01-07)

> Safety and Health Department—Implemented and promoted Active Exercise™
(https://www.jfe-steel.co.jp/company/csr.html#anc01-08)

> Keihin—Launched on-site daycare centers for local residents (https://www.jfe-steel.co.jp/company/csr.html#anc01-09)

> Kurashiki—Organized on-premise blood donation campaigns (Japanese only)
(https://www.jfe-steel.co.jp/company/csr.html#anc01-10)

> Chiba—Cooperated with traditional events
(https://www.jfe-steel.co.jp/company/csr.html#anc01-11)

> Co-sponsorship of Kawasaki City's 100th anniversary in 2024
(https://kawasakicity100.jp/)

> Nishinomiya—Joined a Nishinomiya tourism event
(https://www.jfe-steel.co.jp/en/company/csr.html#anc01-10)

> Chita—Held a manufacturing class for children
(https://www.jfe-steel.co.jp/en/company/csr.html#anc01-11)

> Fukuyama—Donation for Fukuyama Castle 400th Anniversary Project
(https://www.jfe-steel.co.jp/en/company/csr.html)

- **Supported local festivals**
- **Organized a public viewing of "Dragonfly Street" and Station Square**
- **Joined the Where Do Dragonflies Fly Forum**
- **Supported the Tsurumi Line stamp rally**
- **Volunteered for the Kasumigaura Marathon**
- **Volunteered for disaster reconstruction**
- **Organized in-house fairs for supporting post-disaster reconstruction in Fukushima (providing meals at a cafeteria using local ingredients)**
- **Participated in tree-planting to invigorate a rainforest in the Philippines**
- **Organized environmental events at a contracted incineration plant**
- **Keihin—Hosted plant tours, the Fureai Festival, and the Rikochallenge Summer of 2025 (in collaboration with JFE Engineering)**
- **Comprehensive collaboration agreement between Chiba City and East Japan Works (Chiba District)**

Nurturing the Next Generation

- **Supported Chinese students' Japanese speech contest**
- **Supported the Japanese Council for Medical Training**
- **Supported the Welfare and Medical Service Agency's Children's Future Support Fund**

> Supporting technician education at universities in Vietnam and Myanmar
(https://www.jfe-steel.co.jp/en/company/csr.html)

> Organized internships
(https://www.jfe-steel.co.jp/en/company/csr.html#anc03-02)

> Supported the Japan Science & Engineering Challenge
(https://www.jfe-steel.co.jp/en/company/csr.html#anc03-03)

> Supported career education
(https://www.jfe-steel.co.jp/en/company/csr.html#anc03-05)

> Accepted teachers for private-sector training
(https://www.jfe-steel.co.jp/en/company/csr.html#anc03-06)

> Supported females in choosing science or engineering careers (https://www.jfe-steel.co.jp/en/company/csr.html#anc03-07)

- **Certified as a company supporting child rearing (Kanagawa Prefecture and Nagoya City)**
- **Accepted foreign technical interns (welding training)**
- **Support for elementary schools in Ghana and Nigeria**
- **Providing Off-Campus Training Opportunities for Special-Needs Schools**
- **Supported off-campus training by a special-needs school**
- **Supported a robotics competitions for high schools in Mie Prefecture**
- **Provided welding training for technical high school teachers**
- **Support for the Hilltop Children's Cafeteria in Komaoka**

Environmental Protection

> Constructed a biotope at the Chita Works site
(https://www.jfe-steel.co.jp/company/csr.html#anc04-01)

> Held environmental exhibitions
(https://www.jfe-steel.co.jp/en/company/csr.html#anc04-02)

> Eco-purposed steel slag
(https://www.jfe-steel.co.jp/en/company/csr.html#anc04-04)

> Addressing the plastic waste problem through the development of a steel drinking container (Japanese only)
(https://www.jfe-steel.co.jp/company/csr.html#anc04-04)

> Forest maintenance in the JFE Forest
(https://www.jfe-eng.co.jp/information/social_coexistence/topics_forest/)

> Keihin—Exhibited at the Kawasaki International Eco-Tech Fair (https://www.kawasaki-eco-tech.jp/

- **Donated PET bottle caps**
- **Cooperated with nonprofit Green Bird in volunteer garbage collection**

Sports and Cultural Promotion

> Held local sporting events
(https://www.jfe-steel.co.jp/en/company/csr.html#anc02-01)

> Baseball and racing clubs held instructional classes
(https://www.jfe-steel.co.jp/en/company/csr.html#anc02-02

> Sponsored the Cho Chikun Go Cup
(https://www.jfe-steel.co.jp/en/company/csr.html#anc02-03)

> Keihin Symphonic Band gave performances
(https://www.jfe-steel.co.jp/en/company/csr.html#anc02-05)

Contribution to Local Communities through the Engineering Business

We contribute to realizing a circular economy in local communities by providing utility services, such as electricity, gas, and water, as well as combining our businesses in plastics and food recycling, renewable energy power generation, and waste-to-energy power generation.

> Initiatives for Transitioning to a Circular Economy (P. 124)

Governance: Executive Summary

With its many companies and partners, the JFE Group is engaged in a broad and diverse range of businesses, centered on the steel, engineering, and trading businesses.

Establishing a proper governance system is essential for increasing the autonomy and efficiency of each operating company and for appropriately managing various business risks, including those related to the environment, safety, and disaster prevention. It is also important for ensuring the Group's sustainable growth and improving corporate value over the medium to long term.

We have been enhancing corporate governance through such initiatives as formulating the Basic Policy on Corporate Governance, establishing the Nomination Committee and Remuneration Committee, and evaluating the effectiveness of the Board of Directors.

Upon the approval of the Ordinary General Meeting of Shareholders held in June 2025, the Company transitioned to a company with an Audit & Supervisory Committee. In line with the launch of the Eighth Medium-term Business Plan, we revised the remuneration system for Directors. We reviewed the remuneration structure to increase the proportion of performance-linked remuneration, changing the ratio of basic remuneration, annual bonus, and stock remuneration from 6:2:2 to 2:1:1. In addition, we introduced employee engagement as a new ESG indicator for bonuses and revised the indicators for the calculation of stock remuneration to return on equity (ROE) and relative total shareholder return (TSR).

Thorough compliance is the foundation of our relationship of trust with stakeholders and the basis of our business activities. While we strive to ensure adherence to corporate ethics and compliance as a material issue of management, the JFE Group Sustainability Council, chaired by the president of JFE Holdings, supervises and provides

guidance on compliance efforts, and important measures are reported to and deliberated by the Board of Directors for direction and supervision.

With regard to risk management, JFE Holdings as the holding company is responsible for the comprehensive risk management of the Group and has established a system under which its Board of Directors supervises risk management and confirms its effectiveness. JFE Holdings is continuously improving risk management for the entire Group based on discussions by its Board of Directors.

Objectives and results related to material issues of corporate management concerning governance

> FY2024 KPI Results and FY2025 KPIs (P. 19)

Key Initiatives

- In line with the launch of the Eighth Medium-Term Management Plan, we revised the remuneration system for Directors (P. 239)
- Conducting third-party analysis and evaluation of the Board of Directors' effectiveness (P. 237)
- Disclosure of skills matrix for Directors (P. 235)
- Corporate Ethics Awareness Survey implemented periodically for officers and employees of JFE Holdings and operating companies (P. 249)
- Ongoing oversight and confirmation of the effectiveness of Group-wide risk assessment by the Board of Directors (P. 231)

Corporate Governance

Basic Policy

With the steel business, engineering business and trading business at its core, the JFE Group develops a broad range of businesses in a wide range of areas together with many group companies and partners. Establishing a proper governance system is essential toward improving independence and raising efficiency in each operating company, along with the optimal management of risks, which include those related to the environment, safety, and disaster prevention in the Group. It is also necessary for the sustainable growth of the Group and the medium- to long-term improvement of its corporate value.

With the aim of enhancing the best corporate governance to embody the JFE Groups' Corporate Vision, the Company has established the JFE Holdings Basic Policy on Corporate Governance. The Company has revised the policy pursuant to its transition to a company with an Audit & Supervisory Committee, as approved at the Ordinary General Meeting of Shareholders held in June 2025.

> JFE Holdings, Inc. Basic Policy on Corporate Governance (https://www.jfe-holdings.co.jp/en/common/pdf/company/info/basic-policy.pdf)
> Corporate Governance Report (https://www.jfe-holdings.co.jp/en/common/pdf/company/info/corporate-governance.pdf)

Results

Major topics discussed during FY2024 Board of Directors meetings included the following.

- Progress of the Seventh Medium-term Business Plan
- Establishment of JFE Vision 2035 and the Eighth Medium-Term Business Plan
- Large-scale investments (construction of a Continuous Galvanizing Line (CGL) at JFE Steel's West Japan Works (Fukuyama District), acquisition of interests in the Blackwater coal mine in Australia, etc.), follow-up on investments and loans
- ESG initiatives (e.g., efforts to achieve carbon neutrality, assessment and review of KPIs for material issues of corporate management)

Selected governance data can be accessed from the following link.

> Governance Data (P. 279)

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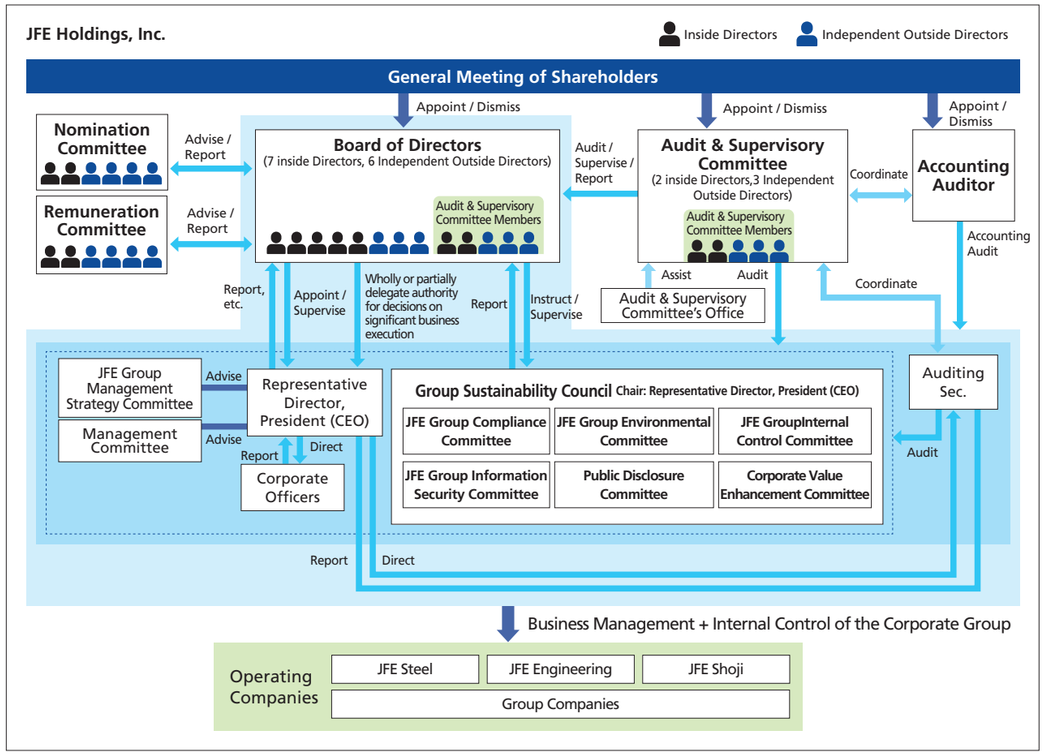
Systems and Initiatives

Corporate Governance System

Group Governance System

The JFE Group comprises a holding company and three operating companies, JFE Steel, JFE Engineering, and JFE Shoji. JFE Holdings, a pure holding company at the core of the Group's integrated governance system, guides Group-wide strategy, risk management, and public accountability.

Each operating company has developed its own system suited to its respective industry, ensuring the best course of action for competitiveness and profitability.

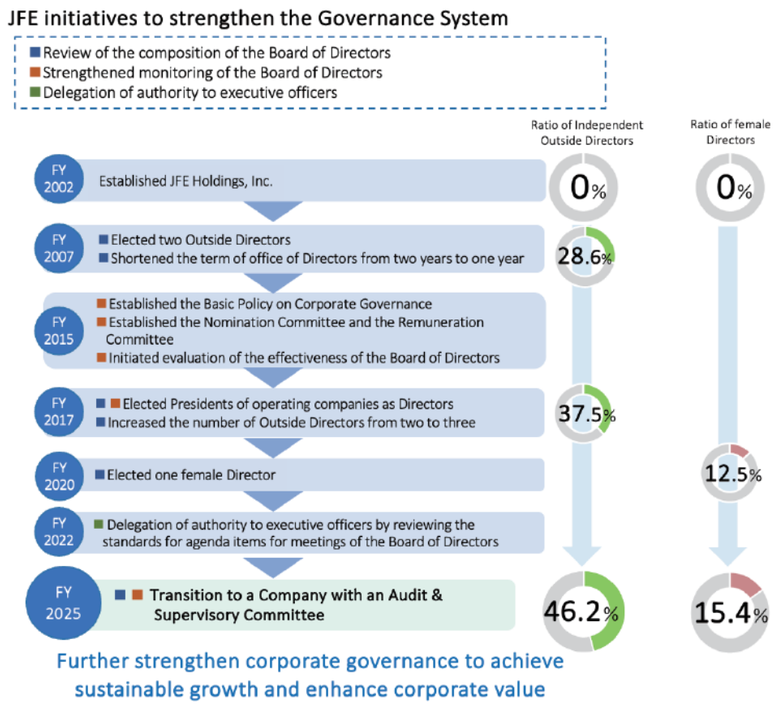


> Governance Data (P. 279)

Governance System

The Company has constructed the following corporate governance system aimed at continuously increasing corporate value and the common interest of shareholders by reinforcing the fairness, objectivity and transparency of management. Upon the approval of the Ordinary General Meeting of Shareholders held in June 2025, the Company transitioned to a company with an Audit & Supervisory Committee to further strengthen the supervisory function of the Board of Directors by accelerating decision-making and enhancing the discussion of management policies and strategies within the Board of Directors.

Major Initiatives to Strengthen the Governance System



Duties of the Board of Directors and other Bodies

Appointment of Independent Outside Directors

The Company appoints several Independent Outside Directors, ensuring that they make up at least one-third of the Board. Candidates for Independent Outside Director are elected from individuals capable of strengthening corporate governance, such as those with extensive management experience in global enterprises or experts with deep professional knowledge, and who meet the Company's Standards for Independence of Outside Directors. Currently, 6 of the 13 Directors are Independent Outside Directors.

The Company elects several Independent Outside Directors who are Audit & Supervisory Committee Members. Independent Outside Directors who are Audit & Supervisory Committee Members will be elected from persons who are appropriate to bear the role of enhancing auditing function such as those who possess abundant experience as management in global enterprises or experts who possess profound knowledge, and meet the Company's Standards for Independence of Outside Directors Currently, of the five Audit & Supervisory Committee Members, three are Independent Outside Directors who are Audit & Supervisory Committee Members.

> Standards for Independence of Outside Directors of JFE Holdings, Inc. (https://www.jfe-holdings.co.jp/en/common/pdf/company/info/independence.pdf)
> Governance Data: Directors (P. 280)

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Approach to Diversity in the Board of Directors

With regard to the composition of the Board of Directors, the Company elects officers following deliberations by the Nomination Committee by focusing on the enhancement of diversity of the Board members, such as their expertise, knowledge and experience in various fields, while balancing with the appropriate size of the Board. The Company also elects Directors who possess a wealth of knowledge and experience as management in global enterprises. In this way, the Company is working to enhance gender and global diversity. Two female Directors are currently in office. The company will continue to systematically engage in initiatives to foster such human resources suitable for candidates for Directors by setting specific targets.

Skill Matrix of Directors

We have established the JFE Holdings, Inc. Basic Policy on Corporate Governance for promoting sustainable growth of JFE Holdings, Inc. and the JFE Group, the medium- to long-term improvement of corporate value, and expressing concretely the JFE Group's Corporate Vision of pursuing best practices in corporate governance and achieving further development in this area. With regard to the composition of the Board of Directors, we strive to enhance the diversity of the Board members, such as their expertise, knowledge, and experience in various fields, and identify necessary skills of corporate management in light of our business and corporate management issues of the Company and the Operating Companies. The Company elects ates for officers following deliberations by the Nomination Committee while balancing with the appropriate size of the Board.

The skills matrix for each Director against identified skills in light of their knowledge, experience, and expertise are summarized below.

		Name	Corporate Management, Management Strategy	Environment	Technology DX	Finance and Accounting	Internal Control Governance	Legal Affairs Compliance	Personnel and labor, Human resources development	Sales, Marketing	Operation with knowledge
Directors	Inside	Yoshihisa Kitano	●	●	●		●				Steel
		Masayuki Hirose	●	●			●			●	Steel
		Masashi Terahata	●	●		●	●	●	●		Steel, Trading
		Kazuyoshi Fukuda	●	●	●		●			●	Engineering
		Yoshifumi Ubagai	●	●			●			●	Steel, Trading
	Outside	Yoshiko Ando		●			●	●	●		—
		Takuya Shimamura	●	●			●			●	—
		Keiichi Kobayashi	●	●	●		●			●	—
Directors who are Audit & Supervisory Committee Members	Inside	Nobuya Hara	●			●	●				Steel
		Nakaba Akimoto					●	●			Steel, Engineering, Trading
	Outside	Tsuyoshi Numagami	●			●	●			●	—
		Yoshihisa Suzuki	●	●	●		●			●	—
		Naoto Nakamura	●				●	●			—

(As of June 25, 2025)

Nomination Committee and Remuneration Committee

JFE Holdings has maintained the Nomination Committee as well as the Remuneration Committee, which acts as an advisory body of the Board of Directors to ensure fair, objective, and transparent personnel affairs and remuneration of the Board of Directors. Both committees are composed of a majority of Outside Directors, and their chairpersons are elected from among Outside Directors.

The Nomination Committee deliberates and reports to the Board of Directors on matters pertaining to the basic policies on the election and dismissal of the President of the Company, proposals for the election of candidates for the President of the Company, succession plans of the President of the Company, and the nomination of candidates for Outside Directors. (Four meetings were held in FY2024, all with 100% attendance.) The Remuneration Committee deliberates on matters pertaining to the basic policy on the remuneration of Directors, etc., of the Company and each Operating Company and reports to the Board of Directors. (Five meetings were held in FY2024, all with 100% attendance.)

> Governance Data: Nomination Committee and Remuneration Committee (P. 281)

Support for Directors

A Board of Directors' Secretariat is set up in the General Administration Dept. to support Outside Directors with necessary communication and arrangements, etc. Furthermore, dedicated staff to support the duties of the Audit & Supervisory Committee, which is composed primarily of Outside Directors who are Audit & Supervisory Committee Members, are allocated in the Audit & Supervisory Committee's Office.

Directors are provided with opportunities and funding to receive training in legal matters, corporate governance, risk management, and other subjects that help them fulfill their roles and duties.

In addition, the Company provides Outside Directors with briefings, etc. prior to the Board of Directors meetings, and gives materials and explanations on each agenda item.

Furthermore, the Company strives to provide adequate information necessary for execution of their duties by providing explanations on important management issues of the Company and the Group companies from time to time, and offering opportunities such as exchanges of opinions with the senior management including the President, attendance of hearings of important business reporting by each department as necessary, convening of Board of Directors meetings at major business bases and inspections of Group companies, etc. In addition, meetings exclusively for Outside Directors serve as venues for freely exchanging information from an independent, objective standpoint.

FY2024 Results

Board of Directors Briefings 12 times

Board of Directors meetings convened at major business bases
1 time JFE Steel East Japan Works (Chiba district)

Tours of major business bases and Group Companies
- **JFE Steel West Japan Steelworks (Kurashiki district)**
- **JFE Steel East Japan Steelworks (Keihin district)**
- **U.S. and Mexico bases (JFE Shoji, 5 JFE Shoji subsidiaries, 1 JFE Steel subsidiary)**

Training for Directors
- **Recent trends involving hostile takeovers (Outside Directors)**
- **JFE Group overview, Medium-term Business Plan progress status, financial status, management issues (newly appointed Outside Directors)**
- **Courses related to insider trading (Inside Directors)**

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Analysis and Evaluation of the Effectiveness of the Board of Directors

In line with the Basic Policy on Corporate Governance, the Board of Directors of the Company has been evaluating the overall effectiveness of the Board of Directors. The process and results of the effectiveness evaluation are as follows.

The Results of the Effectiveness of the Board of Directors in FY2024

- The overall effectiveness of the Board was ensured through robust discussions among members supported by substantial preliminary briefings at the meeting for Outside Directors and Audit & Supervisory Board Members as well as by appropriate management and leadership by the chairperson.
- The accurate and fair auditing of Directors' execution of their duties by Audit & Supervisory Board Members
- Audit & Supervisory Board Members' proactive voicing of opinions and questions regarding the management decision-making and reporting at the Board of Directors meetings have vitalized deliberations at the Board meetings. It was thus determined that the Company is functioning effectively as a company with an Audit & Supervisory Board.

Process of the Evaluation of the Effectiveness of the Board of Directors

The Company conducted a survey aimed at all the Directors and Audit & Supervisory Board Members concerning the following items.

Content of survey
I. Operational framework for the Board of Directors (Composition and operations of the Board of Directors, support and cooperation framework of the Secretariat,and culture)
II. Supervision function of the Board of Directors and functions of the advisory committees (Supervision function and status of discussions at the Board of Directors, status of discussions at the advisory committees, etc.)
III. Relationships with shareholders and stakeholders

→

- **Conduct analysis and evaluation by using a third-party organization**
- **The results of initiatives undertaken, based on the opinions and recommendations obtained from the analysis and evaluation conducted in the previous fiscal year, were examined.**

→

- **Initiatives to enhance the effectiveness of the Board of Directors were discussed and consolidated at meetings of the Board of Directors.**
- **The results of these initiatives were also discussed and examined at meetings of the Board of Directors.**

↑ **Based on the results, we implemented initiatives to increase the effectiveness of the Board of Directors.**

Issues Identified in the Evaluation of Effectiveness for FY2023

- Sustainable corporate growth depends upon considering the ideal state of the Group and its long-term strategies while at the same time further deepening discussions on human capital management and respect for human rights as well as other material management issues.
- From the perspective of enhancing corporate value, we must organize the agenda items for Board of Directors meetings to establish a balance between speedy decision-making with supervisory functions. We must also continue to consider the governance structure, including ways to further enhance diversity.
- To further strengthen risk management across the entire Group, we must continuously consider ways to develop our reporting of risk information, including that of subsidiaries and affiliates, to the Board of Directors.

The FY2024 Initiatives

- Reports were made at meetings of the Board of Directors concerning the direction and other facets of the Group's vision, JFE Vision 2035, together with the Eighth Medium-Term Business Plan, which is its growth strategy for achieving this vision, at each stage of consideration, and the Board of Directors held discussions on medium and long-term corporate value enhancement.
- Reports were made at meetings of the Board of Directors concerning sustainability issues, including the human resources strategy that supports management strategy, DE&I initiatives, the results of engagement surveys and the Company's response, and progress on the implementation and expansion of human rights due diligence aimed at ensuring respect for human rights.
- The Company conducted surveys to ascertain the status of compliance at Group companies and to support initiatives. The findings and responses to these surveys were reported at meetings of the Board of Directors, and it engaged in discussions regarding risk management.
- The Company decided to transition to a company with an Audit & Supervisory Committee to further strengthen the supervisory function of the Board of Directors by accelerating decision-making and enhancing the discussion of management policies and strategies within the Board of Directors.

Issues Identified in the Evaluation of Effectiveness for FY2024

- Pursuant to the transition to a company with an Audit & Supervisory Committee, the Board of Directors should engage in fuller discussions concerning its vision for the future, including its approach to the delegation of executive authority and the scale and diversity of the Board of Directors.
- In addition to important management issues that are discussed on an ongoing basis, such as human capital management and respect for human rights, the Board of Directors should further enhance discussions aimed at analyzing and improving the Company's market valuation.
- The Company should enhance reporting to the Board of Directors on risk information, including that of subsidiaries and affiliates, to further strengthen risk management across the Group.

Initiatives will be proactively undertaken to further increase the effectiveness of the Board of Directors and enhance the corporate value of the Group.

Operating System

Key Decision-Making

With regard to significant matters at each company within the Group, internal rules define clear standards and procedures for decision-making. Significant matters concerning overall Group management are ultimately deliberated and decided by JFE Holdings, Inc. Each Operating Company determines important matters related to itself and its subsidiaries through deliberations at the Management Committee and other relevant bodies followed by decisions of the Board of Directors. At JFE Holdings, Inc., the JFE Group Management Strategy Committee deliberates on matters concerning management strategies for the entire Group, while the Management Committee considers specific significant matters related to the Company, the Operating Companies, or Group Companies. Based on these deliberations, the Board of Directors makes final decisions on significant matters in accordance with the Rules of the Board of Directors.

> Governance Data: Operating System (P. 281)

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Executive Remuneration

Executive remuneration is based on the Basic Policy on Remuneration for Directors and Corporate Officers and the Policy for Deciding the Individual Remuneration for Directors and Corporate Officers founded on discussions and reports by the Remuneration Committee, and it is decided through either a resolution of the Board of Directors or deliberations by the Directors who are Audit & Supervisory Committee Board Members, for an amount within the total limit approved at the General Meeting of Shareholders.

Basic Policy on Remuneration for Directors and Corporate Officers

- The Board of Directors (excluding members of the Audit & Supervisory Committee; hereinafter the same) shall determine remuneration system for Directors and Corporate Officers based on deliberations regarding its appropriateness by the Remuneration Committee to ensure fairness, objectiveness, and transparency.
- The remuneration level for Directors and Corporate Officers shall be determined to secure excellent human resources who are able to put the Group's corporate vision into practice, taking into consideration the business environment of the Group and remuneration levels at other companies in the same industry or of the same scale.
- The ratio between basic remuneration and performance-linked remuneration (annual bonus and stock remuneration) shall be properly established according to the roles and responsibilities, etc., of each Director and Corporate Officer so as to function as sound incentives toward the sustainable growth of the Group.

Outline of Policy for Deciding the Individual Remuneration for Directors and Corporate Officers

- Remuneration for Directors (excluding members of the Audit & Supervisory Committee; hereinafter the same) and Corporate Officers shall be determined by a resolution of the Board of Directors in accordance with the Basic Policy and the Decision Policy, based on reports from the Remuneration Committee.
- Remuneration for the Directors and Corporate Officers is comprised of basic remuneration and performance-linked remuneration (annual bonus and stock remuneration).
- Basic remuneration is paid as a fixed amount, in cash, each month according to position.
- An annual bonus is linked to the Company's single-year performance (calculated based on financial and non- financial indicators) and is paid in cash once a year.
- Stock remuneration is granted as the Company's shares and cash equivalent to the amount of the Company's shares converted to market value through the trust upon retirement.
- The ratios of remuneration by type are structured so that the higher the position, the greater the weight of performance-linked remuneration, and the ratio for the Company's President when performance target goals have been attained is set so that the ratio of basic remuneration, annual bonus and stock remuneration stands at 2:1:1.

The Company pays only basic remuneration to Outside Directors and the Directors who are Audit & Supervisory Committee Members, given their roles of supervising and auditing management from an independent and objective standpoint. Directors who concurrently serve as Executive Directors of operating companies shall not be paid the annual bonus or the Stock Remuneration from the Company.

Furthermore, the calculation method for performance-linked remuneration, as described below, has been revised from FY2025 based on the Eighth Medium-term Business Plan.

Annual bonus

The annual bonus is a remuneration package linked to both financial and ESG performance based on fiscal year results. Financial performance is measured by the total segment profit for a single fiscal year. ESG performance is assessed using the following indicators: employee safety (lost-workday injury rates, with 0% for a fatal accident), climate change (achievement of KPIs related to "Initiatives to Address Climate Change Issues"), and employee engagement (achievement of KPIs related to Enhancement of Job Satisfaction under Promotion of Human Capital Management). Among these, the employee engagement indicator was recently introduced starting in FY2025, recognizing the importance of providing incentives to maximize the capabilities of human resources that drive corporate growth and to enhance job satisfaction. The individual remuneration amount is determined by multiplying the level of achievement of these indicators by a given coefficient for each position.

Directors and Corporate Officers who have been dismissed or have committed any misconduct may lose the right to receive benefits based on a resolution of the Board of Directors. Directors and Corporate Officers who have already received benefits may be asked to return the amount based on a resolution of the Board of Directors if they engage in any misconduct.

Stock remuneration

Under the stock remuneration plan, a payment level is determined based on performance targets set in the Group's Medium-term Business Plan, etc. From FY2025, to further promote value sharing with shareholders and increase awareness of contributing to the improvement of medium- to long-term corporate value, we have selected the target values for ROE (10% or more), as set forth in the Eighth Medium-term Business Plan, and relative TSR (1 or higher) as performance indicators for the performance-linked portion. The level of payment is based on the degree of achievement of each indicator.

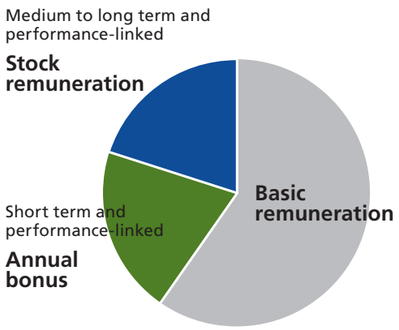
Directors and Corporate Officers who have been dismissed or have committed any misconduct may lose the right to receive benefits based on a resolution of the Board of Directors. Directors and Corporate Officers who have already received benefits may, based on a resolution of the Board of Directors, be required to return the shares and cash already provided if they engage in any misconduct.

To achieve sustainable corporate growth for the Group, the Remuneration Committee and the Board of Directors continue to improve the remuneration system for Directors to serve as an incentive with a higher level of integrity.

The outline of remuneration system for the Company's and Directors (excluding Directors who are Audit & Supervisory Committee Members)

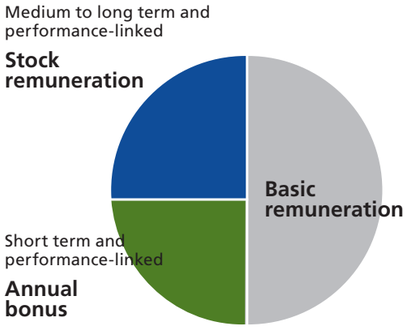
Until 2024

Remuneration ratio of the Company's President upon achievement of the medium-term targets
Basic remuneration : Annual bonus : Stock remuneration = **6:2:2**



From 2025

Remuneration ratio of the Company's President upon achievement of the targets
Basic remuneration : Annual bonus : Stock remuneration = **2:1:1**



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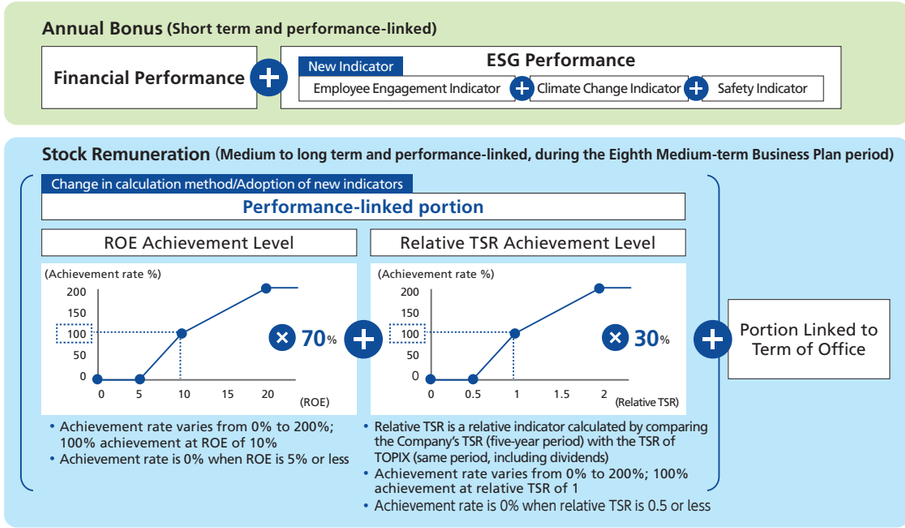


> Governance Data: Executive Remuneration (P. 281)

Internal Control

The JFE Group's internal control system, in accordance with the Basic Policy for Building an Internal Control System, is maintained through various committee regulations including the Rules of the Board of Directors, Regulations for Group Management Strategy Committee, Regulations for Management Committee, Regulations for the JFE Group Sustainability Council, Regulations for Organization and Operations, Regulations for Document Management, Regulations for Addressing Violence Directed at Companies, and a Corporate Ethics Hotline. These regulations are periodically reviewed to ensure their effectiveness.

In addition, we revise and improve the Basic Policy from time to time to boost sustainable corporate value. In line with the transition to a Company with an Audit and Supervisory Committee, as approved at the General Meeting of Shareholders held in June 2025, the Basic Policy for Building an Internal Control System was also revised.

> Basic Policy to Establish the Internal Control Systems (https://www.jfe-holdings.co.jp/en/common/pdf/company/info/Basic_Policy_Internal_Control.pdf)

Strengthening Internal Control

Internal Audits

JFE Holdings, its major operating companies, and key Group companies have internal audit organizations comprising 179 people as of April 1, 2025. These organizations share information to enhance overall auditing within the Group. They also report internal audit plans and findings to the Board of Directors, the Audit & Supervisory Committee, and the JFE Group Sustainability Council on a regular basis to maintain the effectiveness of internal audits.

As part of its commitment to thorough compliance, the JFE Group periodically audits adherence to laws and internal regulations, including the Antimonopoly Law, measures taken to prevent the bribery of public officials, tax laws , security export controls, protection of personal information, as well as safety, disaster prevention, and environmental management. If an audit finds an issue or problem, the internal audit departments of JFE Holdings and the operating company work together to share the information across the Group and incorporate lessons learned in sustainability activities conducted by the Group's companies.

Audits by Audit & Supervisory Committee

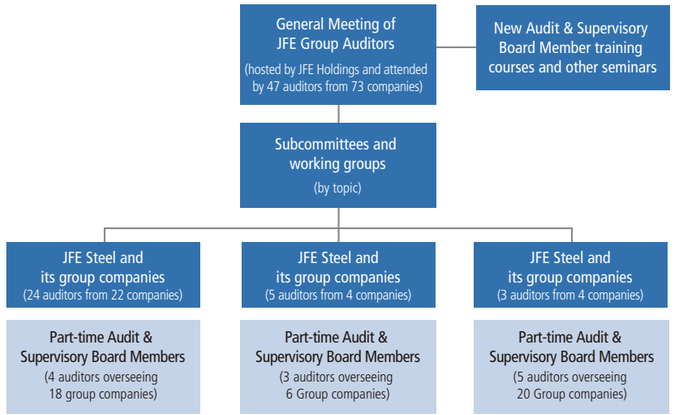
JFE has an Audit & Supervisory Committee composed of five Members including three Outside Directors who serve as Audit & Supervisory Committee Members. Apart from attending the meetings of the Board of Directors, duties are shared between two full-time Audit & Supervisory Committee Members and other members. They also collaborate with the Company's internal auditing department and attend meetings of the Group Sustainability Management Strategy Committee, Management Committee, and Group Sustainability Council, among other important meetings, and express opinions as appropriate. To audit the execution of Directors responsibilities, they engage in activities such as conducting hearings with Directors and Corporate Officers regarding operational status and receiving operational reports from operating companies and Group companies.

A total of 35 full-time Audit & Supervisory Officers (including full-time Audit & Supervisory Committee Members and full-time Audit & Supervisory Board Members) have been appointed to 30 companies, including JFE Holdings. In addition, operating company personnel are dispatched to Group companies as part-time Outside Audit & Supervisory Board Members. Each dispatched Audit & Supervisory Board Member audits an average of 1.5 Group companies (12 Members covered 44 companies).

The JFE Group Board of Auditors includes both full-time Audit & Supervisory Officers of each Group company and part-time Audit & Supervisory Board Members. Subcommittees and working groups created to address specific issues meet autonomously to share information, investigate issues and enhance understanding. The findings of the year's activities are presented at the general meeting of JFE Group Auditors and used for audits.

These activities are executed to enhance overall auditing within the Group.

The JFE Group Board of Auditors



Cooperation between Audit & Supervisory Committee and Accounting Auditor

The Audit & Supervisory Committee holds meetings on a regular basis and as necessary with Ernst & Young ShinNihon, JFE's outside accounting auditor, in which the latter presents its audit plan, completed work and results. The firm also presents an explanation of its quality management system. In turn, the Audit & Supervisory Committee explains their own audit plans and other matters and exchanges opinions to maintain close coordination.

Operating Company Governance

Some Directors and Corporate Officers of JFE Holdings serve concurrently as the Directors or Audit & Supervisory Board Members of operating companies to strengthen governance and information sharing across the Group. To strengthen governance, JFE Holdings' managers attend each operating company's General Meeting of Shareholders and Management Planning Briefing, receive reports on their activities, and discuss the managerial policies of subsidiaries.

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Policy on Listed Subsidiaries and Listed Affiliates

(1) Significance of having listed subsidiaries and affiliates based on group management approach and policies

To put into practice the Group's corporate vision of contributing to society with the world's most innovative technology, and to realize sustainable growth and enhancement of medium- to long-term corporate value, the Company forms a corporate group comprising companies with high expertise, divides business functions within the Group, and conducts businesses development outside of the Group. Within this corporate group, JFE Steel Corporation, a subsidiary of the Company, owns one listed subsidiary and four listed affiliates, described below.

For the listed subsidiary among them, the Company seeks an optimal structure based on the business relationship with JFE Steel Corporation, its parent company, and maintains its listing based on a comprehensive judgement that listing is necessary for the company's growth and increasing the value of the Group as a whole, from the perspective of market recognition and credibility in funding, sales and marketing, and hiring.

In addition, the four listed affiliates maintain their listing as a means to enhance their competitiveness from the perspectives of market recognition and credibility in funding, sales and marketing, and hiring. JFE Steel Corporation holds some shares in the four companies because of associated benefits such as the exchange of steel manufacturing-related technologies and human resources.

Listed Subsidiary

JFE Systems, Inc. (Tokyo Stock Exchange, Standard Market)

The main business of JFE Systems includes system integration consisting of planning, designing, development, operation, and maintenance of information system, system construction utilizing solutions, and the company's own products, and IT infrastructure solutions that support the business system. Computer systems are an important foundation in the steel business that support overall business activities, including order acceptance, production, shipment, and quality management, and in using a variety of data. Guaranteeing the accumulation of know-how and the continuation of personnel exchanges by holding JFE Systems as a subsidiary will also be indispensable for maintaining the competitiveness of JFE Steel in pressing ahead with digital transformation.

JFE Systems, Inc.'s predecessor, Kawasaki Steel Systems R&D Corporation, was listed on the 2nd Section of the Tokyo Stock Exchange in March 2001. As of March 31, 2025, the JFE Group holds 68% shares of JFE Systems, Inc.

Listed Affiliates

Gecoss Corporation (Tokyo Stock Exchange, Prime Market)

Gecoss Corporation is mainly engaged in the rental and sales of temporary construction materials, as well as in design and construction of temporary works, etc. Gecoss Corporation's predecessor, Kawasho Lease System Co., Ltd., was listed on the 2nd Section of the Tokyo Stock Exchange in August 1994 and was subsequently reassigned to the 1st Section of the Tokyo Stock Exchange in September 1996. As of March 31, 2025, the JFE Group as a whole currently holds 39.5% shares of the company.

Shinagawa Refra Co., Ltd. (Tokyo Stock Exchange, Prime Market)

At the Ordinary General Meeting of Shareholders held in June 2025, it was resolved that its trade name would change from Shinagawa Refractories Co., Ltd. to Shinagawa Refra Co., Ltd., effective October 1, 2025. Shinagawa Refra Co., Ltd. is mainly engaged in the manufacture and sale of refractories as well as engineering services such as furnace design and construction. Shinagawa Shirorenga, the predecessor of the company, was listed on the 1st Section of the Tokyo Stock Exchange in May 1949 and subsequently became an affiliate of JFE Steel Corporation. As of March 31, 2025, the JFE Group holds 34.9% shares of Shinagawa Refractories Co., Ltd.

Nippon Chuzo K.K. (Tokyo Stock Exchange, Standard Market)

Nippon Chuzo K.K. is mainly engaged in the formed and fabricated materials business to manufacture a variety of casting products and the engineering business to design and manufacture bridge components, etc. The company was listed on the 2nd Section of the Tokyo Stock Exchange in October 1961. As of March 31, 2025, the JFE Group holds 36.2% shares of Nippon Chuzo K.K.

NIPPON CHUTETSUKAN K.K. (Tokyo Stock Exchange, Standard Market)
NIPPON CHUTETSUKAN K.K. is mainly engaged in the manufacture and sale of ductile iron pipes and polyethylene pipes, as well as water pipe laying works. The company was listed on the 2nd Section of the Tokyo Stock Exchange in July 1962 and subsequently became an affiliate of JFE Steel Corporation. As of March 31, 2025, the JFE Group holds 30.0% shares of NIPPON CHUTETSUKAN K.K.

The aforementioned five companies are subject to rules different from those applicable to other consolidated subsidiaries and affiliates based on the guidelines of the Ministry of Economy, Trade and Industry and the Tokyo Stock Exchange regarding listed subsidiaries, and other measures are also taken so as to ensure that each of the companies conducts autonomous corporate activities exercising autonomy and flexibility. Each company also secures management independence as listed companies mainly by appointing outside directors who are independent from each company, JFE Steel Corporation and the Company and by establishing special committees composed of independent members such as independent outside directors, and makes sure that the interests of the said subsidiary or affiliate, as well as the interests of shareholders of the subsidiary or affiliate other than the Company, will not be unfairly impaired.

With regard to the adjustment and allocation of business opportunities and business areas for the listed subsidiary and affiliates, the Company respects autonomous management decisions made by each company, except in cases where such decisions have a significant impact on the Company's consolidated financial statements.

In addition, each company independently raises and manages funds based on its own financial strategy. At present, the Company does not receive fund deposits from listed subsidiaries or listed affiliates.

With respect to matters necessary for the Group's risk management, prior consultation and reporting are required from each company while securing their independent decision-making, so as to implement risk management as a member of the Group companies.

(2) Measures to ensure the effectiveness of governance systems at listed subsidiaries and affiliates
Each company independently formulates its own proposals regarding the nomination of officers. JFE Steel Corporation fully respects the independence of each company and the decisions made by each company's nomination committee, and exercises its voting rights with the aim of improving each company's corporate value in the medium to long term.

To maximize the benefits of technological and personnel exchanges with each company, the Company and JFE Steel Corporation may recommend director candidates in some cases.

Furthermore, we shall regularly verify the significance of maintaining the listing of the listed subsidiaries and take necessary measures upon confirmation at its Board of Directors. The above details were verified and discussed at a Board of Directors meeting in May 2025.

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Basic Policies for Strategic Shareholdings and Exercise of Related Voting Rights

All shares held by the Company are the shares of subsidiaries or affiliates. In principle, the Company's wholly owned subsidiaries and operating companies, JFE Steel Corporation, JFE Engineering Corporation and JFE Shoji Corporation (hereinafter "Operating Companies"), do not hold listed stocks as strategic shareholdings. Strategic shareholdings, however, are allowed as an exception when holding the stocks of the Company is determined to be necessary for maintaining and achieving growth for the Group.

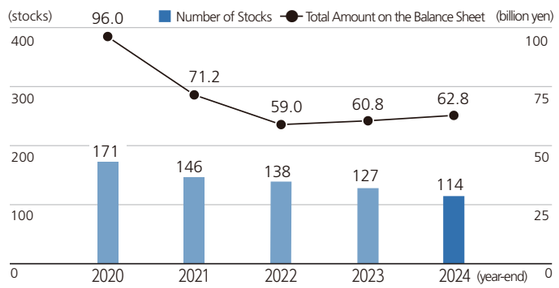
The Board of Directors regularly confirms the relative value of the strategic shareholdings and whether the benefits and risks of such holdings are commensurate with their capital cost, and sell shareholdings that are not significant or if there is a risk of damage to shareholder interests. In FY2024, the Company sold all or part of 11 listed stocks for 14.2 billion yen (market value). Furthermore, the Board of Directors regularly examines the significance of strategic holdings and the return on investment.

The exercise of voting rights of strategic shareholdings is decided upon reviews by operating companies on the content of the proposal and is appropriately implemented in a way that will maximize shareholder interest. To be specific, the content of the proposal is to be checked by the investment application department and the investment control department, and approval will be given to proposals which are considered not to pose any threat to the maximization of interest of these operating companies as shareholders.

Of the shares for investment purposes held by JFE Steel, which has the largest balance sheet amount for investment purposes posted in the consolidated financial statements of the company, those shares of the company held for purposes other than pure investments are shown below.

Number of Stocks and Amount Recorded on the Balance Sheet

	FY2020 year-end	FY2021 year-end	FY2022 year-end	FY2023 year-end	FY2024 year-end
Number of stocks (stocks)	171	146	138	127	114
Total amount recorded on the balance sheet (billion yen)	96.0	71.2	59.0	60.8	62.8



Compliance

Basic Policy

In expanding our businesses in Japan and abroad, it is important that JFE maintains relationships of trust with all stakeholders, including its customers, shareholders and local communities. Trust can only be built upon a strong foundation of ensuring thorough compliance. Misconduct and scandals resulting from compliance violations can instantly shatter the trust that has taken many years to establish. Therefore, JFE believes it is extremely important that all members of the organization deepen their knowledge and awareness of compliance and perform their jobs accordingly. It conducts training on various topics such as the Antimonopoly Act, the Subcontract Act and anti-corruption, including prevention of bribery of public officials, using e-learning and compliance guidebooks and through guidebook reading sessions as well as by other means.

Compliance System

The Compliance Committee chaired by Representative Director, President and CEO of JFE Holdings generally convenes four times a year to deliberate basic policies and issues and then supervise their implementation. Each operating company has a similar in-house system for promoting and supervising compliance. In addition, the JFE Group has introduced a Corporate Ethics Hotline to ensure that crucial information regarding compliance can be communicated directly from the front lines to top management.

For more on the JFE Group Standards of Business Conduct, please refer to the following information.

> JFE Group Standards of Business Conduct (https://www.jfe-holdings.co.jp/en/company/philosophy/guideline.html)

Targets and Results

The JFE Group Standards of Business Conduct guide employees to conduct their business activities based on the Corporate Vision and Corporate Values. They also help to strengthen awareness among all JFE Group executives and employees and ensure adherence to corporate ethics. We promote the initiatives by upholding the Ensure Adherence to Corporate Ethical Standards and Compliance as material issues of corporate management and setting KPIs to achieve those targets.

> FY2024 KPI Results and FY2025 KPIs (P. 19)

Initiatives

Ensure Adherence to Corporate Ethical Standards and Compliance

Compliance Education

The JFE Group's Compliance Guidebook, created as part of our effort to foster corporate compliance culture across the Group, is distributed to all Directors and employees inside and outside Japan for individual and group review. In addition to information about laws and ordinances relevant to our business activities, it provides guidance on which actions comply with internal rules and which do not (such as cartels, collusive bidding, the bribing of public officials, insider trading, harassment, and other acts in violation of laws related to the environment, labor standards, and occupational health and safety). The guidebook also provides a simple explanation of concrete standards for complying with laws and internal rules and for acting in accordance with social mores with over a hundred case studies.

Questions that come up in the course of daily operations as well as situations and cases that test our judgment have been compiled in the guidebook with explanations by the relevant department. The content has been reviewed by legal counsel. The guidebook has been reviewed regularly according to the revisions of relevant laws and rules, and some of the cases described have been added, revised, or omitted since the first edition in 2006 to improve its overall content.

The JFE Group also conducts regular training on compliance with the Antimonopoly Act, insider trading restrictions, security export controls, the Construction Business Act, anti-corruption laws including laws against bribery of public officials, and more.

Whistleblowing System

The JFE Group has established a Corporate Ethics Hotline, a contact point accessible to all officers and employees (including contract workers, part-time workers, and temporary staff, either active or retired) of the JFE Group as well as those of suppliers and other business partners. The purpose of the hotline is to ensure adherence to corporate ethics and compliance and to prevent corruption and human rights abuses. Reports and consultations are accepted via e-mail, a dedicated phone line and postal mail, anonymously if preferred, and an external hotline to an independent law firm is also provided.

To encourage the active sharing of information, the Corporate Ethics Hotline is operated under rules and regulations that ensure strict confidentiality and protect people who report information or seek advice against acts of retaliation. We investigate the facts of any incident that has been reported on and consulted about only after consulting with the whistleblower to protect their privacy, and feedback the investigation results to the whistleblower if requested.

We strive to prevent incidents of misconduct and ensure the early detection and correction of wrongdoing by accepting consultations and reports, ranging from compliance issues such as violation of the Antimonopoly Act, corruption, and bribery, to human rights abuses including misconduct and harassment in the workplace. In the event that violations of laws are confirmed, corrective and remedial measures are taken in the organization involved. Details of the reports and consultation received at the Corporate Ethics Hotline are regularly communicated to full-time Audit & Supervisory Board Members (including full-time Audit & Supervisory Committee Members and full-time Audit & Supervisory Board Members) while the operational status of the system is reported to the Board of Directors for their supervision.

We also accept inquiries, anonymously if preferred, on compliance and other issues from external stakeholders via a form available on the corporate website. The content is handled as confidential and appropriately addressed.

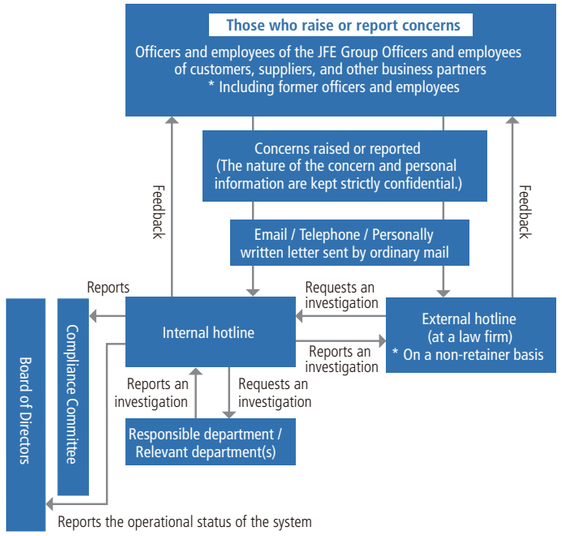
Procedures for handling illegal acts or other violations:

- Departments responsible for compliance at JFE Holdings and each operating company carry out necessary responses, such as implementing the initial response, confirming facts, investigating the cause, and developing measures to prevent recurrence.
- Departments responsible for compliance at each company report on the facts, cause, and recurrence prevention measures to the Compliance Committee at each company to confirm the cause and assess the effectiveness of recurrence prevention measures and the responsibility of related parties.

- Matters such as major violations are reported to the Compliance Committee to be shared across the entire Group and to facilitate horizontal implementation of recurrence prevention measures to make sure that no similar violations occur anywhere in the Group.

> Governance Data: Whistleblowing (P. 282)

Whistleblowing System



Preventing Corruption and Bribery

Under its Standards of Business Conduct, the JFE Group endeavors to comply with laws and ordinances, compete fairly and freely, refrain from illegal business activities, and build and maintain sound and proper relationships with governments and political authorities.

We explicitly prohibit bribery, such as the offering and receiving of illegal payoffs, excessive entertaining or favors, as well as corruption such as embezzlement from a position of advantage and promotion of conflicting interests. The Group strives to thoroughly prevent corruption by stating in its Company rules that these offenses will be penalized.

The bribing of public officials has become a major business risk in recent years due to growing global awareness of corruption and a stronger drive by authorities to expose such wrongdoing. The JFE Group does not tolerate any kind of illegal activity in Japan or any other country, including bribery, such as offering money or other benefits to public officials, and never resorts to these illegal activities to gain profit or resolve problems.

Considering this, the Group issued JFE Group's Basic Policy on Preventing Bribery of Public Officials and disseminate it throughout the Group including operating companies. The JFE Group also maintains various systems to prevent the bribery of public officials, such as by stipulating that efforts be made to use third-party appointment checklists or have an anti-bribery confirmation letter signed when using external parties including agents or consultants who may have connections with overseas public officials.

In addition, based on the results of risk assessments, the JFE Group provides employees with annual training and e-learning programs on the prevention of bribery of public officials.

For more on our stance on preventing bribery, refer to the following information.
> JFE Group's Basic Policy on Preventing Bribery of Public Officials
(https://www.jfe-holdings.co.jp/en/company/philosophy/anti-bribery.html)

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Tax Transparency

The JFE Group upholds the JFE Standards of Business Conduct and complies with both the letter and spirit of the tax laws of each country as well as international rules, including the taxation guidelines issued by the Organization for Economic Co-operation and Development and other international institutions. We will pay taxes in every country where we do business in a timely, appropriate, and fair manner.

Moreover, we seek to forge relationships of trust with the tax authorities in each country by raising transparency and without resorting to tax planning or the use of tax havens to evade taxation.

Resisting Organized Crime

The JFE Group declares in its standards of business conduct that it will firmly resist all antisocial forces and has established the JFE Group Policies for Addressing Antisocial Forces and Regulations for Addressing Violence Directed at Companies to clarify the measures to be taken against antisocial forces, including an initial response manual.

The JFE Group Policies for Addressing Antisocial Forces has been approved by the Board of Directors, and we will seek to establish sound corporate management based on an organized and unified response to the issue within the framework of our system of compliance. We have specifically set up a section responsible for handling antisocial forces in the General Administration and Legal Affairs departments of each Group company to completely discontinue any dealings with antisocial forces. We will also set up rules for reporting and responding to any related incidents and will resolutely stand against antisocial forces by cooperating with law enforcement.

In addition, we will seek to establish thorough awareness of the JFE Group Policies for Addressing Antisocial Forces and specific rules governing our response among all executives and employees by providing e-learning and distributing the Compliance Guide Book.

Compliance with the Antimonopoly Act

The JFE Group, in its JFE Group Standards of Business Conduct, requires complying with laws and regulations, engaging in fair and free competition, conducting legitimate business activities, and acting with integrity in accordance with sound business practices. The JFE Group views past violations of the Antimonopoly Act seriously and established the JFE Group Basic Policy on Competition Law Compliance on the principle of zero tolerance for violating the Antimonopoly Act and other laws and strictly responding to any infringements. Under this policy, the Group establishes and maintains operating rules for contact with competitors, conducting in-house training, and performing internal audits to ensure compliance with the Antimonopoly Act. Periodic reports to the Group Compliance Committee strengthen oversight and support the effective implementation of initiatives.

For the JFE Group Basic Policy on Competition Law Compliance, refer to the following information.
> JFE Group Basic Policy on Competition Law Compliance) (https://www.jfe-holdings.co.jp/en/company/philosophy/competition-law.html)

Confirmation and Improvement through the Employee Corporate Ethics Awareness Survey

The JFE Group regularly conducts a Corporate Ethics Awareness Survey (once every two years) for Directors and employees of the Company as well as the operating companies to confirm the penetration of and thorough compliance with the Group's Corporate Vision, Corporate Values, and Standards of Business Conduct, along with the identification of potential risks. The survey conducted in FY2024 confirmed that many employees sufficiently understood the Group's Vision, Corporate Values, and relevant laws and regulations, with a consistently high awareness of compliance, including adherence in the workplace to the JFE Group's Basic Policy on Preventing Bribery of Public Officials and the Guidelines for Entertainment and Gift. On the other hand, the survey also brought our attention to issues to address going forward. The results of the Corporate Ethics Awareness Survey and the policy responses were reported to the JFE Group Sustainability Council and the Board of Directors in FY2025. Going forward, issues identified will continue to be reflected in the specific initiatives of each company for improvement under the supervision of the JFE Group Sustainability Council and the Board of Directors.

At the time of formulating the Eighth Medium-term Business Plan, the Board of Directors of JFE Holdings reaffirmed that the Group's Corporate Vision and Corporate Values remain the unchanging principles of the JFE Group, serving as a unifying force for the entire organization throughout the 22 years since its founding and far into the future.

Compliance Incidents in the JFE Group

Indictment of JFE Group Company Employees

With regard to the submarine water pipe renewal work that KFE Engineering Corporation contracted with Taketomi Town, Okinawa, in June 2017 and June 2020, a former employee of JFE Engineering Corporation was convicted for violating the Act on Elimination and Prevention of Involvement in Bid Rigging, etc., and for obstructing public contract-related auction bidding. As a result, in May 2024, the Ministry of Land, Infrastructure, Transport and Tourism issued a business suspension order against the company, covering public works related to the water supply facilities construction business throughout Japan, pursuant to the Construction Business Act.

We deeply regret this situation and sincerely apologize for the inconvenience and concern caused to many of the related parties.

We regard this matter very seriously and sincerely. We will strive to regain public trust as early as possible by preventing a recurrence through the implementation of measures addressing the identified causes of the incident.

Inappropriate Conduct in JFE Shoji's Biomass Fuel Trading

JFE Shoji Corporation has confirmed the occurrence of inappropriate conduct* in connection with its biomass fuel trading business involving certain customers.

We deeply regret this situation and sincerely apologize for the inconvenience and concern caused to many of the related parties. We regard this matter very seriously and sincerely. We will strive to regain public trust as early as possible by preventing a recurrence through the implementation of measures addressing the identified causes of the incident.

*With respect to palm kernel shells and wood pellets supplied to biomass power plants, the company's Biomass Fuel Department charged customers prices and marine freight in excess of contractually agreed amounts, thereby obtaining undue profit.

For more on our stance on our measures to prevent recurrence, refer to the following information.

> JFE Shoji Official Website (Japanese only) (https://www.jfe-shoji.co.jp/wjfep/wp-content/uploads/2025/06/news250619.pdf)

Risk Management

Basic Policy

In order to enable the Group to achieve sustainable growth with ever-increasing corporate value through the pursuit of the JFE Group's vision of "contributing to society with the world's most innovative technology," we have properly identified risks across the Group. Our risk management system is subject to ongoing improvement, and effective measures are taken to eliminate as many foreseeable risks as possible.

Risk Management System

JFE Holdings is responsible for comprehensive risk management of the Group in accordance with its Basic Stance for Building an Internal Control System. The Company's Board of Directors fulfills its supervisory responsibility for risk management and has established a system to confirms its effectiveness.

With respect to risks associated with business activities, Corporate Officers responsible for each field recognize and assess these risks. As necessary, risks are further confirmed and assessed at the Group Management Strategy Council or the Management Council, both chaired by the Representative Director and President (CEO) of JFE Holdings, where countermeasure policies and risk management action plans are deliberated and decided. In addition, with respect to ESG-related risks—such as compliance with the Antimonopoly Act and laws related to anti-corruption including bribery of public officials, observance of corporate policy and regulations such as the Corporate Vision and JFE Group Standards of Business Conduct, environment and climate change, human affairs and labor, safety and disaster prevention, human rights abuses such as sexual and power harassment, quality management, financial reporting, and information security—the responsible Corporate Officers recognize and assess such risks. As necessary, these risks are confirmed and assessed by the Representative Director and Group Sustainability Council, chaired by the President (CEO) of JFE Holdings, where countermeasure policy and action plans for risk management are deliberated and decided to ensure a Groupwide response.

The Board of Directors oversees risk management and confirms its effectiveness by regularly receiving reports on Group policy and action plans on risk management, and through deliberation and decision-making on important matters.

We will continue to improve and strengthen Groupwide risk management system in accordance with the discussion by the Board of Directors.

For our risk management policies and systems, refer to the following information.

> Basic Policy for Building Internal Control Systems (Japanese only) (https://www.jfe-holdings.co.jp/company/info/pdf/naibutousei.pdf)
> JFE Group Sustainability System (P. 10)
> Whistleblowing System (P. 247)

Initiatives

Response to Specific Risks

Response to Climate Change Risks

The JFE Group has positioned "Ensuring environmental and Social Sustainability" as one of its key initiatives and formulated the JFE Group Environmental Vision for 2050, which aims to achieve carbon neutrality by 2050. Through this vision, the Group incorporates efforts to address climate change into its business strategies and reflects the principles of the TCFD in its management approaches. In doing so, we are systematically advancing initiatives to address climate change issues and striving to become a front-runner in the development of technologies for achieving carbon neutrality.

For climate change risks and opportunities, refer to the following information.
> Scenario Analysis in Line with the TCFD Recommendations (P. 113)

Intellectual Property Management

The JFE Group meticulously manages intellectual property across its diverse business activities. To prevent infringement on third-party intellectual property, it constantly monitors the latest information on intellectual property and implements all necessary measures.

For intellectual property activities, refer to the following information.
> JFE Group Report (https://www.jfe-holdings.co.jp/en/investor/library/group-report/)

Privacy Protection

JFE has established the JFE Group Privacy Statement for managing information including "My Numbers," which are personally identifiable numbers under Japan's social security and tax number systems.
To maintain the appropriate protection of personal information, employee trainings on the rules, which have been set in place in accordance with the privacy statement, have been conducted as stipulated in applicable laws of each country related to businesses and guidelines.

To reduce information security risks, including cyber-attacks and improper system use such as leaks of personal information, and to promote safe business activities, the JFE-Security Integration and Response Team (JFE-SIRT), comprising the IT division managers of each operating company, participates in the Nippon CSIRT Association, established by private sector volunteers and corporate Computer Security Incident Response Teams (CSIRTs) active in Japan. We seek to enhance the level of our initiatives by exchanging information and coordinating on security incidents.

For privacy protection policies, please refer to the following information.
> JFE Group Privacy Statement (https://www.jfe-holdings.co.jp/en/privacy.html)

Information Security

The JFE Group formulates various rules on information security management to prevent information leakage and system failures due to cyber-attacks and improper system use. Efforts are made to enhance information-security knowledge and awareness of rules among employees through training and education. Additionally, shared IT measures are applied in each Group company and regular information security audits are conducted to reinforce the overall information security management level in the Group.

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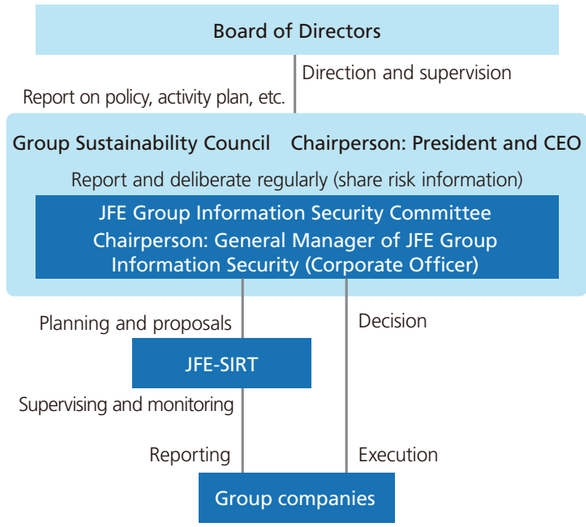
Key issues related to IT, particularly information security, are deliberated by the JFE Group Information Security Committee to determine Group policy.

Applying the policies set by the committee, the JFE-SIRT formulates and implements information-security measures, performs information security audits, offers guidance on responding to incidents and generally enhances the level of Groupwide information security management. The JFE-SIRT reports on its activities to the Group CSR Council as appropriate. In addition, we established JFE Cyber Security & Solutions, Ltd. in April 2024 to acquire and develop independent, high-level security personnel and strengthen security monitoring and other systems.

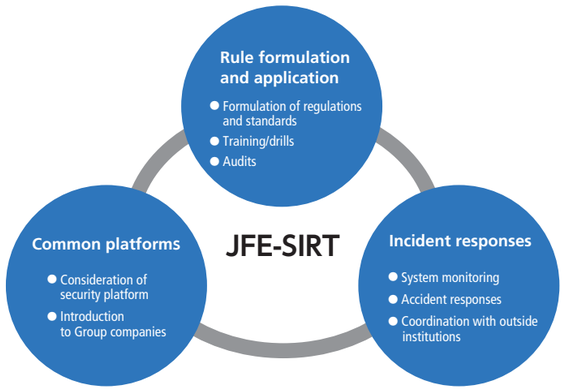
Furthermore, the JFE Group has announced the JFE Group Declaration of Cybersecurity Management. Even as we consider cybersecurity as a vital investment for our digital transformation, we understand its continual enhancement is also a material management concern given the increasing frequency and sophistication of cyber threats. Cybersecurity measures are being accelerated under management leadership, mainly through the JFE-SIRT.

For more details about our cybersecurity measures, please see Security Management in the DX REPORT.
> DX REPORT (https://www.jfe-holdings.co.jp/en/investor/library/dxreport/index.html)

Digital Governance and Cyber Security Framework in the JFE Group



JFE-SIRT Initiatives



Responding to Human Rights Risks within the Supply Chain

The JFE Group procures raw materials, construction materials, and machinery from all over the world. In response to human rights risks associated with the supply chain, the Group established the JFE Group Human Rights Basic Policy in 2018 to take action in accordance with the United Nations Guiding Principles on Business and Human Rights. Each operating company has established raw material purchasing policies, purchasing and procurement policies, and a basic policy on sustainability in the supply chain, and they carry out purchasing in a way that respects human rights, legal compliance, and environmental preservation.

In addition, the Group has been conducting human rights due diligence since FY2021. In April 2023, we revised the JFE Group Human Rights Basic Policy to take account of recent changes in public awareness and issues surrounding human rights. Furthermore, we have endorsed the Ten Principles of the UN Global Compact, which cover protection of human rights, elimination of unfair labor practices, environmental protection, and prevention of corruption. We are a member of the Global Compact Network Japan, an organization that promotes Global Compact activities in Japan. We also participate in the subcommittee activities of the Global Compact Network Japan, and we have been promoting our own initiatives based on information shared with participating companies and organizations. All supply chain members and other stakeholders will continue to be called upon Groupwide to respect and support human rights.

For more details on our human rights due diligence initiatives, refer to Human Rights.

> Human Rights (P. 200)

JFE Group's Business Continuity Plan

Anticipating the possibility of natural disasters caused by typhoons and major earthquakes as well as a rapid expansion of infectious diseases such as a new strain of influenza, the JFE Group has formulated a business continuity plan (BCP) to address contingencies. We conduct regular training based on the BCP while also pursuing other countermeasures.

In the event of a major earthquake, the Group Sustainability Council will promptly discuss and determine the policy on how to deal with the matter, based on predetermined response processes to minimize loss and other damages.

Response to Major Natural Disasters

We are preparing to respond in the event of a major earthquake through measures such as establishing tsunami shelters, maintaining a Companywide line of command under restricted communications and power outages, and securing data backup. We have also strengthened the drainage system at our steelworks to address the impact of typhoons and torrential rains that are occurring with increasing severity in Japan.

Response to Infectious Diseases

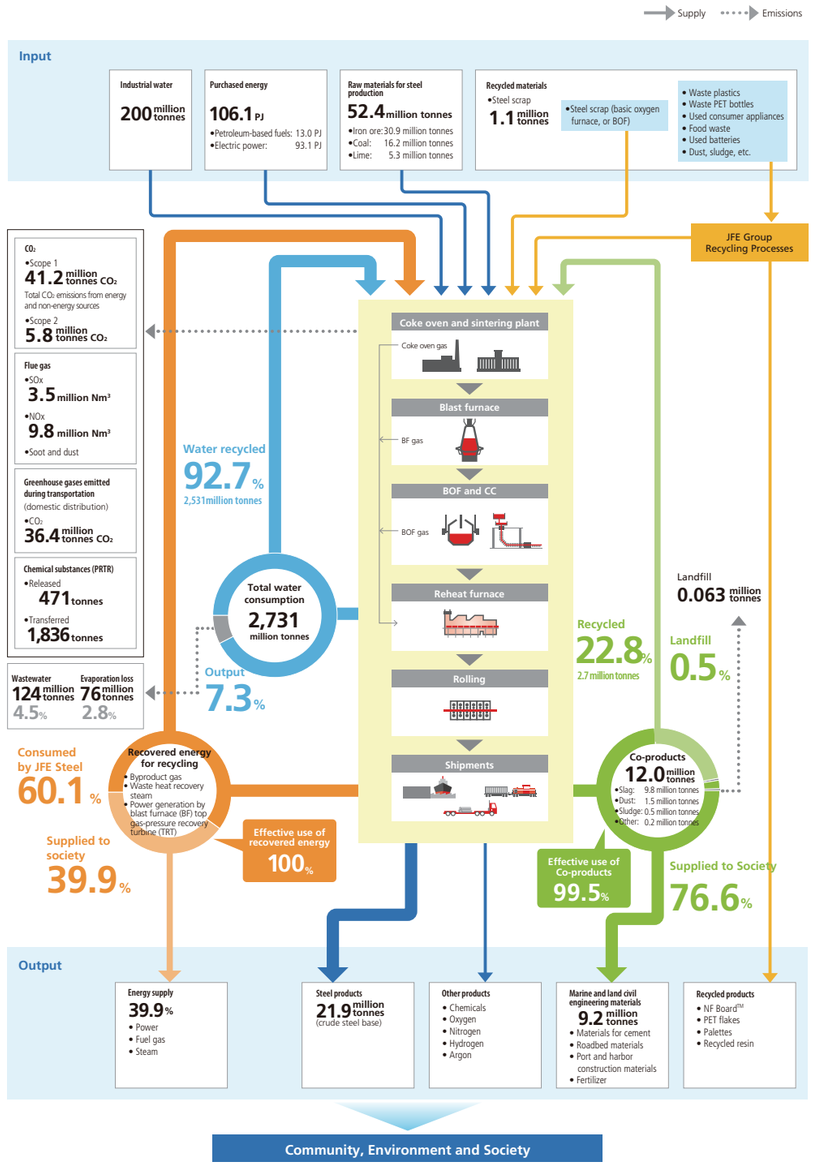
Apart from the development of policies against novel influenza virus infections, we have been taking simulation-proven measures for varying scenarios to maintain key operations and prevent stoppages, including those at steel production sites and steelworks, even if there is an increase in the absence rate due to the spread of a disease. The policies are periodically reviewed and improved by the JFE Group Sustainability Council and other relevant bodies. Moreover, as a measure to protect employees against the threat of infectious diseases, we provide vaccinations and health checkups for employees, as well as their families, who are assigned to countries outside Japan and for those who go abroad for work. In addition to safety information in the destination countries, we also provide information about local infectious diseases and prohibit employees from going abroad to protect their safety, depending on prevailing circumstances.

Environmental Data

Material Flow

JFE Steel works to reduce the environmental impact of its iron and steelmaking processes, including through the effective use of resources. The company recycles 92.7% of the water it uses for production and uses 99.5% of its co-products, such as iron and steelmaking slag. In addition, 100% of co-product gas generated during production is reused as fuel for reheating slabs, generating power for internal use and supplying power to the public.

JFE Steel's Material Flow (Non-Consolidated)



JFE Engineering's Material Flow (Head Office and Works)

Input

Steel	**35.3** kt
Energy	
• Electric power purchased	**27.8** GWh
• Class A heavy oil	**55.7** kl
• Kerosene	**3.4** kl
• Light oil	**262** kl
• Gasoline	**13.7** kl
• City gas	**373** thousand Nm³
• LPG	**99.0** t
Water	**81.3** kt

JFE Engineering

- **Tsurumi Works**
- **Tsu Works**
- **Kasaoka Monopile Factory**

Output and Emissions

Products	**29.7** kt
CO_2	**3.5** kt-CO_2
• Scope 1	**1.9** kt-CO_2
• Scope 2	**1.5** kt-CO_2
Waste discharged	**1.83** kt
• Industrial wastes	**1.57** kt
• General wastes	**0.26** kt
Wastewater (ocean only)	**107** kt
Others (PRTR)	**92** t

Abbreviations for scope of data: JFE Group (All); JFE Steel Group (ST Gr); JFE Steel (ST); JFE Engineering Group (EN Gr); JFE Engineering (EN); JFE Shoji Group (SH Gr); JFE Shoji (SH)

Environmental Indicators

Area	Operating Company	Target	FY2024 Results and Related Pages
Greenhouse Gas and Energy	ST	• Reduce CO_2 emissions by 18% from FY2013 levels by the end of FY2024	P.257-258
	EN	• Reduce CO_2 emissions in its own plants and offices FY2024: 40% reduction from FY2013 levels • Contribute to reduction in CO_2 emissions (FY2024): 12.0 million t per year	P.257-258,260
	SH	• Reduce CO_2 emissions through the procurement of electricity derived from renewable energy • FY2022 domestic CO_2 emissions: Reduce by 10% from FY2019 levels (reduce by 5% per year from FY2019 levels from FY2021 to FY2024)	P.257-258
Chemical Substances	ST	• VOC emissions: –30% from FY2000 (1,078 t or less) • Benzene emissions: –80% from FY1999 (46 t or less) • Dichloromethane emissions: –40% from FY1999 (46 t or less)	P.264
Resource Use	ST	Recycling rate of co-products: 99% or higher	P.266
	EN	Recycling rate at construction sites • Recycling rate of rubble: 99.5% or higher • Recycling rate of sludge: 95.0% or higher • Recycling rate of industrial waste: 85.0% or higher Recycling rate of office recyclable waste • Yokohama head office: 98.0% or higher	P.267-268
	SH	Global recycling of steel scrap • Exceed FY2020 scrap trade volume (FY2024 target: +5% from FY2020)	P.266
Water Use	ST	Maintain efficient use of water Recirculated water usage rate: 90% or higher	P.269

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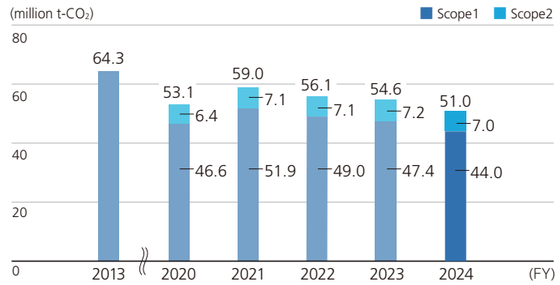
Greenhouse Gas and Energy

CO_2 Emissions of the JFE Group (Scope 1, 2)



Items		Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
Scopes 1 and 2 total*1*2		All	million t-CO_2	53.1	59.0	56.1	54.6	51.0
		ST Gr	million t-CO_2	52.6	58.6	55.7	54.1	50.8
		ST	million t-CO_2	49.1	54.7	52.3	50.0	47.0
		ST subsidiaries	million t-CO_2	3.5	3.9	3.4	4.1	3.8
		EN Gr	million t-CO_2	0.484	0.387	0.422	0.482	0.234
		EN	million t-CO_2	0.0141	0.0103	0.0081	0.0081	0.0058
		EN subsidiaries	million t-CO_2	0.470	0.377	0.414	0.474	0.229
		SH Gr	million t-CO_2	0.0296	0.0319	0.0316	0.0311	0.0298
		SH	million t-CO_2	0.0004	0.0004	0.0004	0.0004	0.0004
		SH subsidiaries	million t-CO_2	0.0292	0.0315	0.0311	0.0307	0.0294
	Scope 1	All	million t-CO_2	46.6	51.9	49.0	47.4	44.0
		ST Gr	million t-CO_2	46.2	51.5	48.6	47.0	43.8
		ST	million t-CO_2	43.8	48.8	46.4	44.1	41.2
		ST subsidiaries	million t-CO_2	2.4	2.7	2.2	2.9	2.6
		EN Gr	million t-CO_2	0.442	0.345	0.395	0.459	0.215
		EN	million t-CO_2	0.0024	0.0024	0.0029	0.0038	0.0033
		EN subsidiaries	million t-CO_2	0.439	0.343	0.393	0.455	0.212

Items		Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
	Scope2*3	All	million t-CO_2	6.4	7.1	7.1	7.2	7.0
		ST Gr	million t-CO_2	6.4	7.0	7.0	7.1	7.0
		ST	million t-CO_2	5.3	5.8	5.9	5.9	5.8
		ST subsidiaries	million t-CO_2	1.1	1.2	1.1	1.2	1.2
		EN Gr	million t-CO_2	0.0424	0.0418	0.0263	0.0232	0.0189
		EN	million t-CO_2	0.0116	0.0079	0.0052	0.0043	0.0025
		EN subsidiaries	million t-CO_2	0.0308	0.0339	0.0211	0.0189	0.0164
		SH Gr	million t-CO_2	0.0296	0.0319	0.0316	0.0311	0.0298
		SH	million t-CO_2	0.0004	0.0004	0.0004	0.0004	0.0004
		SH subsidiaries	million t-CO_2	0.0292	0.0315	0.0311	0.0307	0.0294
Unit CO_2 emissions (numerator: Scopes 1 and 2 total; denominator: sales)		All	t-CO_2/ billion yen	164.4	135.2	106.5	105.5	105.0
CO_2 emissions from energy sources*1, 2	CO_2 emissions (Scope1 and 2 total)	ST Gr	million t-CO_2	50.2	55.8	53.1	51.6	48.4
		ST	million t-CO_2	47.3	52.6	50.4	48.2	45.2
		ST subsidiaries	million t-CO_2	2.9	3.2	2.7	3.4	3.1
		EN Gr	million t-CO_2	0.0625	0.0614	0.0452	0.0363	0.0288
		SH Gr	million t-CO_2	0.0296	0.0319	0.0316	0.0311	0.0298
	Scope1	ST	million t-CO_2	41.9	46.8	44.5	42.3	39.5
	CO_2 emissions (denominator: crude steel production)	ST	t-CO_2 / t-steel	2.08	2.03	2.09	2.06	2.06
CO_2 emissions from non-energy sources		ST Gr*4	million t-CO_2	2.40	2.74	2.59	2.48	2.40
		ST	million t-CO_2	1.82	2.05	1.93	1.79	1.72
		ST subsidiaries	million t-CO_2	0.58	0.69	0.66	0.69	0.68
		EN subsidiaries*5	million t-CO_2	0.42	0.33	0.38	0.45	0.21*6

*1 Scope of data: 77 companies in total.
- JFE Steel and 26 major subsidiaries in Japan and overseas
- JFE Engineering and 13 major subsidiaries in Japan and overseas
- JFE Shoji and 35 major subsidiaries in Japan and overseas

*2 Since FY2021, the figures include data for an expanded list of JFE Steel, JFE Engineering, and JFE Shoji major subsidiaries.
*3 CO_2 emission factors for purchased electricity in FY2024:
- JFE Steel uses the emission factors of the Carbon Neutrality Action Plan of the Japan Iron and Steel Federation for energy purchased in FY2023 (FY2023 figures were updated based on the emission factor).
- JFE Steel's domestic consolidated subsidiaries, the JFE Engineering Group, and the JFE Shoji Group apply the adjusted emission factors of each electric power company for each fiscal year.
- Overseas: Latest IEA emission factors.

*4 Scope of data: JFE Steel and 4 major subsidiaries in Japan.
*5 Scope of data: J&T Recycling Corporation, a major Japanese subsidiary of JFE Engineering.
*6 Reviewed the handling of CO_2 emissions from non-energy sources from fiscal 2024.

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GHG Emissions Based on the GX-ETS Standard

Item	Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
GHG emissions	ST	million t-CO_2	—	—	—	—	47.8

CO_2 Emissions of the JFE Group (Scope3)

Item	Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
Scope3*1*2	All	kt-CO_2e	14,369	20,778	23,184	22,701	21,894
Category 1 Purchased goods and services	All	kt-CO_2e	11,026	17,244	19,750	19,118	18,537
Category 2 Capital goods	All	kt-CO_2e	1,226	1,221	1,166	1,239	1,127
Category 3 Fuel and energy related activities not included in Scopes 1 or 2	All	kt-CO_2e	671	717	736	760	723
Category 4 Upstream transportation and delivery	All	kt-CO_2e	419	454	450	440	434
Category 5 Waste generated in operations	All	kt-CO_2e	45	58	62	133	147
Category 6 Business travel	All	kt-CO_2e	4	5	4	5	5
Category 7 Employee commuting	All	kt-CO_2e	51	59	49	14	14
Category 15 Investments	All	kt-CO_2e	927	1,022	967	993	906

*1 Scope of data:
(Categories 1, 2, 3, 4, 5) JFE Steel, 21 JFE Steel major domestic subsidiaries, JFE Engineering, 1 JFE Engineering major domestic subsidiary, and JFE Shoji.
(Category 6, 7) JFE Steel, JFE Steel's 21 major subsidiaries in Japan, JFE Engineering, JFE Engineering's 13 major subsidiaries in Japan and overseas, and JFE Shoji.
(Category 15) Japan Marine United, and 9 JFE Steel equity-method affiliates (6 in Japan and 3 overseas).
*2 Sources: Green Value Chain Platform (Ministry of the Environment) and others.

Other Greenhouse Gas

Item		Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
GHG emissions other than CO_2		All	kt-CO_2e	96.1	103.0	55.2	117.9	205.3
	Methane (CH_4)	ST Gr	kt-CO_2e	68.3	74.6	35.4	78.5	162.6
		ST	kt-CO_2e	68.3	74.6	35.4	78.5	162.5
		ST subsidiaries	kt-CO_2e	—	0.005	0.005	0.005	0.103
		EN subsidiaries*1	kt-CO_2e	—	—	—	—	1.11
	N_2O	All	kt-CO_2e	27.9	28.5	19.8	39.4	41.6
		ST Gr	kt-CO_2e	15.5	17.7	7.8	37.1	39.5
		ST	kt-CO_2e	15.5	17.7	7.8	37.1	39.5
		ST subsidiaries	kt-CO_2e	—	0.004	0.004	0.004	0.005
		EN subsidiaries*1	kt-CO_2e	12.4	10.8	12.0	2.3	2.1
GHG emitted during transportation*2		ST Gr	million t-CO_2	0.57	0.63	0.61	0.59	0.58
		ST	million t-CO_2	0.34	0.38	0.37	0.37	0.36
		ST subsidiaries	million t-CO_2	0.23	0.25	0.24	0.22	0.22
Contribution to CO_2 emission reductions*3		EN Gr	million t-CO_2/year	9.65	10.57	11.14	11.53	12.00
	Biomass power generation	EN Gr	million t-CO_2/year	2.74	2.86	2.94	2.95	3.12
	Waste power generation	EN Gr	million t-CO_2/year	3.37	3.40	3.72	3.80	3.60
	Others (digestion gas, solar power, wind, waste heat recovery, fuel conversion, energy services, biomass silo, logistics products)	EN Gr	million t-CO_2/year	3.54	3.57	3.59	3.84	4.43
	Recycling (Includes fluorocarbon recovery and energy creation)	EN Gr	million t-CO_2/year	—	0.74	0.89	0.94	0.85

*1 J&T Recycling Corporation, a major Japanese subsidiary of JFE Engineering.
*2 Scope of data: JFE Steel and 9 major subsidiaries in Japan, which are specified consigners designated under the Japanese Energy Saving Act.
*3 Scope of data
- FY2020: Includes JFE Engineering's businesses in Japan and overseas, and its German subsidiary Standardkessel Baumgarte GmbH (SBG).
- From FY2021: Includes JFE Engineering's businesses in Japan and overseas, and J&T Recycling Corporation, JFE Urban Recycle Corporation, and German subsidiary Standardkessel Baumgarte GmbH (SBG).

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Energy Consumption

Items		Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
Energy consumption and unit energy consumption	Energy consumption	All	PJ	592	654	627	612	567
		ST Gr	PJ	591	652	625	611	566
		ST	PJ	545	602	581	557	519
		ST subsidiaries	PJ	45.2	49.6	43.9	53.9	46.5
		EN Gr	PJ	1.2	1.3	1.2	1.2	1.1
		SH Gr	PJ	0.6	0.7	0.7	0.7	0.6
	Unit energy consumption (crude steel production)	ST	GJ/t-steel	24.0	23.3	24.1	23.7	23.6
	Energy consumption (Crude petroleum equivalent)	EN	kℓ	8,000	7,636	7,772	7,756	8,146
	YOY ratio of unit energy consumption	EN	%	91.0	95.5	107.9	94.3	85.0
Recovered energy for recycling	Supplied to society	ST	%	38	38	37	39	40
	Consumed internally	ST	%	62	62	63	61	60

Modal Shift

Items		Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
All transportation	Ship and rail	ST	%	58.4	58.3	59.0	57.9	58.7
	Truck	ST	%	41.6	41.7	41.0	42.1	41.3
Transportation of a distance of 500 km or more	Ship and rail	ST	%	91.6	90.0	92.1	93.6	94.8
	Truck	ST	%	8.4	10.0	7.9	6.4	5.2

Scope of calculation: All products and half-finished products transported in Japan.

Greenhouse Gas and Energy (Supplementary Data)

CO_2 Emissions and Energy Consumption of JFE Steel Group Subsidiaries (FY2024)

Company Name	CO_2 Emissions (unit: kt-CO_2)	Energy Consumption (unit: PJ)
JFE Mineral & Alloy Company, Ltd.	1,630.4	12.64
JFE Bars & Shapes Corporation	510.0	8.97
JFE Chemical Corporation	236.8	3.68
JFE Logistics Corporation	149.9	2.22
JFE Galvanizing & Coating Co., Ltd.	49.1	0.70
JFE Plastic Resource Corporation	20.8	0.17
Mizushima Riverment Corporation	7.7	0.07
JFE Container Co., Ltd.	9.6	0.14
J-Logitec Co., Ltd.	7.5	0.11
Galvatex Corporation	4.3	0.07
JFE Metal Products & Engineering Inc.	7.0	0.08
JFE Welded Pipe Manufacturing Co., Ltd.	6.6	0.06
JFE Techno-wire Corporation	4.2	0.05
JFE Precision Corporation	3.2	0.04
K-Plasheet Corporation	4.7	0.07
JFE Life Corporation	4.8	0.05
Chiba Riverment and Cement Corporation	6.2	0.08
JFE Steel Pipe Co., Ltd.	1.4	0.02
GECOSS CORPORATION	3.0	0.03
JFE Kozai Corporation	2.6	0.02
JFE Ferrite Corporation	3.5	0.06
5 overseas companies	1,113.8	14.30
Total	3,787.4	43.64

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CO_2 Emissions from Energy Sources and Energy Consumption of JFE Engineering Group Subsidiaries (FY2024)

Company Name	CO_2 Emissions(unit: kt-CO_2)	Energy Consumption(unit: PJ)
J&T Recycling Corporation	223.6	0.7
Fujikako, Inc.	1.4	0.030
NORTHERN JAPAN MACHINERY Corporation	0.6	0.012
Asuka Soken Co., Ltd.	0.8	0.013
JFE Pipeline Engineering Corporation	0.4	0.006
JFE Technos Corporation	0.2	0.001
JFE Project One Co., Ltd.	0.1	0.003
Myoko Green Energy Co., Ltd.	0.02	0.0003
Kinpai Co., Ltd.	0.7	0.012
J&M Steel Solutions Company Limited	0.7	0.02
Total	228.6	0.774

Chemical substances

Air Emissions

Items	Scope		Unit	FY2020	FY2021	FY2022	FY2023	FY2024
SOx emissions*1	ST Gr		million Nm³	3.3	3.5	3.3	3.6	3.5
		ST	million Nm³	3.3	3.5	3.3	3.6	3.5
		ST subsidiaries	million Nm³	0.03	0.03	0.04	0.04	0.04
NOx emissions*2	ST Gr		million Nm³	10.4	11.4	10.2	10.1	10.0
		ST	million Nm³	10.3	11.2	10.1	9.9	9.8
		ST subsidiaries	million Nm³	0.14	0.18	0.15	0.16	0.15

*1 10 JFE Steel's consolidated subsidiaries in Japan.
*2 9 JFE Steel's consolidated subsidiaries in Japan.

Discharge to Waterways

Items	Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
COD (chemical oxygen demand)	All*1	t/day	3.1	3.1	3.1	2.6	2.5
	ST	t/day	2.9	2.9	2.8	2.3	2.4
	ST subsidiaries	t/day	0.17	0.23	0.25	0.27	0.09
	EN*2	kg/day	8.7	8.4	6.6	4.8	5.8

*1 Scope of data:
- JFE Steel and 8 consolidated subsidiaries in Japan.
- JFE Engineering

*2 This report uses the maximum value of each year.

PRTR-Registered Substances

Items		Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
PRTR-registered substances*1, 2	Amount released	All*4	t	754	827	750	917	960
		ST Gr	t	596	672	609	790	881
		ST	t	341	380	366	510	471
		ST subsidiaries	t	255	292	243	280	410
		EN Gr	t	158	155	141	126	79
		EN	t	121	116	103	64*3	70
		EN subsidiaries	t	36.7	39.3	37.8	25.1	9.5
	Amount transferred	All*4	t	5,949	9,845	12,809	11,217	11,304
		ST Gr	t	5,910	9,811	12,779	11,193	11,279
		ST	t	1,694	1,378	1,278	1,192	1,836
		ST subsidiaries	t	4,216	8,433	11,501	10,001	9,443
		EN Gr	t	39	34	30	23	25
		EN	t	26	30	26	19	23
		EN subsidiaries	t	12.5	4.4	4.4	3.9	2.5
VOC emissions		ST	t	529	542	513	528	475
Benzene emissions		ST	t	14	16	17	16	11
Dichloromethane emissions		ST	t	22	30	25	25	19

*1 Scope of data:
- JFE Engineering and 3 consolidated subsidiaries in Japan.
- JFE Steel and 16 consolidated subsidiaries in Japan.

*2 Excluding dioxins.
*3 Revised the prior year data to increase accuracy.
*4 JFE Shoji is not included in the scope of the report as the company is not subject to PRTR registration.

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Chemical Substances (Supplementary Data)

SOx and NOx Emissions of JFE Steel Group Subsidiaries (FY2024)

Company Name	SOx Emissions (unit: Nm³)	NOx Emissions (unit: Nm³)
JFE Mineral & Alloy Company, Ltd.	13,438	76,640
Chiba Riverment and Cement Corporation	83	792
Mizushima Riverment Corporation	0	830
JFE Precision Corporation	746	186
JFE Plastic Resource Corporation	0	0
JFE Bars & Shapes Corporation	8,210	15,541
JFE Metal Products & Engineering Inc.	34	2,083
JFE Kenzai Fence Co., Ltd.,	0	0
JFE Galvanizing & Coating Co., Ltd.	1,227	8,055
JFE Container Co., Ltd.	115	0
JFE Welded Pipe Manufacturing Co., Ltd.	0	0
JFE Steel Pipe Co., Ltd.	0	0
Galvatex Corporation	0	625
JFE Techno-wire Corporation	0	0
JFE Kozai Corporation	0	0
GECOSS Corporation	0	0
JFE Logistics Corporation	0	0
J-Logitec Co., Ltd.	0	0
JFE Chemical Corp.	11,230	45,569
K-plasheet Corporation	158	0
JFE Life Corporation	0	0
Total	35,241	150,321

Use of Natural Resources

Input and Products Supplied

Items		Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
Input	Raw materials for steel production	ST	million t	56.2	63.4	60.4	56.1	52.4
	Iron ore	ST	million t	32.9	37.6	35.7	33.4	30.9
	Coal	ST	million t	18.1	19.9	19.1	17.5	16.2
	Lime	ST	million t	5.2	5.9	5.6	5.2	5.3
	Recycled materials (steel scrap)	ST	million t	0.8	1.2	0.9	0.8	1.1
	Raw materials	EN	kt	36.9	38.6	27.9	24.0	35.3
Products supplied	Steel products	ST	million t	22.8	25.9	24.2	23.4	21.9
	Engineering	EN	kt	34.7	37.4	27.0	23.0	29.7

Co-Products and Waste

Items		Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
Co-products	Amount generated*1	ST Gr	million t	13.9	14.4	14.1	13.3	12.6
		ST*2	million t	13.4	13.9	13.5	12.7	12.0
		ST subsidiaries	million t	0.5	0.5	0.6	0.6	0.6
	Amount recycled internally	ST	million t	3.3	3.3	2.9	2.9	2.7
	Internal recycling rate	ST	%	24.9	24.0	21.7	22.4	22.8
	Emissions*1	ST Gr	million t	10.2	10.8	10.8	10.1	9.5
		ST	million t	10.1	10.6	10.6	9.9	9.3
		ST subsidiaries	million t	0.1	0.2	0.2	0.2	0.2
	Used by local communities	ST	million t	10.0	10.5	10.5	9.8	9.2
	Rate of local communities use	ST	%	74.8	75.7	77.8	77	76.6
	Landfill amount*1	ST Gr	million t	0.060	0.094	0.167	0.180	0.146
		ST	million t	0.037	0.042	0.073	0.083	0.063
		ST subsidiaries	million t	0.023	0.052	0.094	0.097	0.083
	Recycling rate	ST	%	99.7	99.7	99.5	99.4	99.5

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Items			Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
Waste	Emissions*3		EN Gr	kt	159.1	249.2	223.7	193.1	151.4
		Offices	EN	t	329.2	235.3	259.4	219.4	263.0
			Yokohama HO	t	256.9	156.7	195.0	157.2	203.5
			Tsu works	t	72.3	78.6	64.4	62.2	52.9
			Kasaoka Monopile Factory	t	—	—	—	—	6.6
		Production	EN	t	1,072.3	803.0	821.4	705.8	1,571.7
			Tsurumi works	t	519.8	364.7	461.6	338.3	1,068.4
			Tsu works	t	552.5	438.3	359.8	367.5	399.6
			Kasaoka Monopile Factory	t	—	—	—	—	103.7
		Construction	EN	t	97,387.9	190,242.3	162,747.2	134,157.5	60,269.0
		Subsidiaries	EN subsidiaries	t	60,296.7	57,960.3	59,841.4	57,990.0	89,319.6
	Recycling rate (offices)		EN	%	96.8	96.1	96.4	92.1	93.0
			Yokohama HO	%	99.1	98.5	98.4	97.7	98.3
			Tsu works	%	87.2	88.4	85.7	87.1	86.7
			Kasaoka Monopile Factory	t	—	—	—	—	0.0
	Recycling rate (production)		EN	%	48.8	46.8	54.0	50.4	53.9
			Tsurumi works	%	72.0	68.3	75.9	60.9	73.5
			Tsu works	%	33.8	28.0	25.0	42.3	47.3
			Kasaoka Monopile Factory	t	—	—	—	—	0.0
	Recycling rate (construction)		EN	%	98.3	98.6	99.3	97.5	97.3
	Landfill		EN	t	2,011.6	3,035.6	1,456.7	3,497.5	1,956.9
		Offices	EN	t	9.1	7.4	7.7	7.4	13.3
			Yokohama HO	t	2.1	2.2	2.9	3.0	2.9
			Tsu works	t	7.0	5.2	4.8	4.4	3.8
			Kasaoka Monopile Factory	t	—	—	—	—	6.6
		Production	EN	t	351.2	322.6	287.7	235.2	344.3
			Tsurumi works	t	75.2	89.4	85.9	80.5	96.4
			Tsu works	t	276.0	233.2	201.8	154.7	144.2
			Kasaoka Monopile Factory	t	—	—	—	—	103.7
		Construction	EN	t	1,651.3	2,705.6	1,161.3	3,254.8	1,599.3
	Recycling rate		EN	%	95.9	96.5	97.4	96.1	92.6

*1 Scope of data: JFE Steel and 22 consolidated subsidiaries in Japan.
*2 Byproducts generated by JFE Steel are mostly reused as offshore, land, or construction materials.
*3 Scope of data: JFE Engineering and 9 consolidated subsidiaries in Japan.

Waste at JFE Engineering Construction Sites

Items		Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
Rubble	Amount generated	EN	t	78,100	159,309	141,888	119,708	46,853
	Recycling rate	EN	%	99.4	99.4	99.9	97.8	99.6
	Landfill amount	EN	t	484	940	173	2,632	189
Sludge	Amount generated	EN	t	12,399	24,350	14,806	9,679	4,827
	Recycling rate	EN	%	98.9	96.9	99.0	99.3	97.1
	Landfill amount	EN	t	135	683	130	56	104
Industrial waste excluding rubble and sludge	Amount generated	EN	t	6,678	6,583	6,054	4,771	8,589
	Recycling rate	EN	%	85.4	81.6	84.4	87.1	83.9
	Landfill amount	EN	t	868	1,083	858	566	1,307

Paper Consumption at JFE Shoji

Items	Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
Consumption of copier paper	SH	boxes	3,021	3,033	2,860	2,934	3,089
	Tokyo	boxes	1,333	1,471	1,376	1,396	1,374
	Osaka	boxes	310	337	351	391	679
	Nagoya	boxes	157	154	177	162	165
	Branch	boxes	1,221	1,071	956	985	871

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Water Use

Water Intake and Discharge

Items	Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
Amount of water intake*1	All	million t	237	246	240	226	228
	ST Gr	million t	236	245	239	224	227
	ST	million t	215	226	220	208	210
	ST subsidiaries	million t	20.9	18.7	18.2	16.1	16.5
	EN Gr	million t	1.296	1.141	1.35	1.24	1.36
	EN	million t	0.072	0.063	0.064	0.073	0.081
	EN subsidiaries	million t	1.223	1.078	1.28	1.17	1.28
	SH Gr	million t	0.160	0.154	0.154	0.145	0.143
	SH	million t	—	—	—	—	—
	SH subsidiaries	million t	0.160	0.154	0.154	0.145	0.143
Amount of water discharged*2	ST Gr	million t	141	144	143	139	137
	ST	million t	123	128	128	125	124
	ST subsidiaries	million t	18.3	15.6	15.4	13.9	13.3
	EN	million t	0.157	0.132	0.122	0.122	0.107
Amount of water consumption*2	ST Gr	million t	3,331	3,442	3,475	3,242	2,974
	ST	million t	3,066	3,207	3,242	3,035	2,748
	ST subsidiaries	million t	265	235	233	207	226
Amount evaporated	ST	million t	92	98	92	83	76
Ratio of amount released and evaporated	ST	%	7.0	7.0	6.8	6.9	7.3
Amount recycled*2	ST Gr	million t	3,096	3,197	3,237	3,017	2,747
	ST	million t	2,851	2,981	3,022	2,826	2,538
	ST subsidiaries	million t	245	216	215	191	209
Recycling rate*2,3	ST	%	93.0	93.0	93.2	93.1	92.4
	ST subsidiaries	%	92	92	92	92	93

*1 Scope of data:
- JFE Steel and 22 consolidated subsidiaries in Japan.
- JFE Engineering and 6 consolidated subsidiaries in Japan.
- 33 JFE Shoji domestic and overseas consolidated subsidiaries.

*2 Scope of data: JFE Steel and 22 JFE Steel consolidated subsidiaries in Japan.
*3 Industrial water circulated (%) = (Total amount – industrial water accepted)/total amount used × 100

Breakdown of Water Intake and Discharge Areas

Items	Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
Total intake	2 operating companies*	million t	214.8	226.1	220.4	208.4	210.1
River/lake		million t	0	0	0	0	0
Groundwater		million t	0	0	0	0	0
Industrial water/ waterworks		million t	214.8	226.1	220.4	208.4	210.1
Ocean		million t	0	0	0	0	0
Rainwater		million t	0	0	0	0	0
Other intake source		million t	0	0	0	0	0
Total discharge	2 operating companies*	million t	123.6	128.8	128.5	125.8	124.3
Ocean		million t	123.1	128.3	128.1	125.4	123.9
Surface water		million t	0	0	0	0	0
Underground/well		million t	0	0	0	0	0
Off-site water processing		million t	0.4796	0.4709	0.4300	0.4158	0.4168
Beneficial use/other use		million t	0	0	0	0	0
Other discharge destinations		million t	0	0	0	0	0

*Scope of data: JFE Steel and JFE Engineering.

Water Use (Supplementary Data)

Water Intake and Discharge at JFE Steel Group Subsidiaries (FY2024)

Company Name	Amount of Intake (unit: kt)	Amount of Discharge (unit: kt)
JFE Mineral & Alloy Company, Ltd.	5,618	5,154
Chiba Riverment and Cement Corporation	13	13
Mizushima Riverment Corporation	11	11
JFE Precision Corporation	127	127
JFE Plastic Resource Corporation	12	3
JFE Bars & Shapes Corporation	4,842	2,932
JFE Metal Products & Engineering Inc.	152	147
JFE Kenzai Fence Co., Ltd.	21	21
JFE Galvanizing & Coating Co., Ltd.	540	288
JFE Container Co., Ltd.	108	108
JFE Welded Pipe Manufacturing Co., Ltd.	29	17
JFE Steel Pipe Co., Ltd.	2	2
Galvatex Corporation	553	553
JFE Techno-wire Corporation	85	5
JFE Kozai Corporation	13	13

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Company Name	Amount of Intake (unit: kt)	Amount of Discharge (unit: kt)
GECOSS CORPORATION	42	37
JFE Logistics Corporation	106	87
J-Logitec Co., Ltd.	3	3
JFE Chemical Corporation	3,557	3,209
JFE Ferrite Corporation	40	40
K-plasheet Corporation	34	35
JFE Life Corporation	560	462
Total	16,468	13,268

Water Intake at JFE Engineering Group Subsidiaries (FY2024)

Company Name	Amount Accepted (unit: kt)
J&T Recycling Corporation	1,277
NORTHERN JAPAN MACHINERY Corporation	0.003
Fujikako, Inc.	0.04
Kinpai Co., Ltd.	0.004
JFE Technos Corporation	0.51
Total	1,277

Environmental Management

Environmental Management System

Items		Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
% covered by ISO 14001 certification	Base	All	%	58	54	52	52	52
		ST Gr	%	21	18	44	44	44
		EN Gr	%	9	8	44	43	43
		SH Gr	%	28	27	64	64	64
	Employees	All	%	70	68	67	72	66
		ST Gr	%	74	72	70	72	71
		EN Gr	%	51	50	50	47	48
		SH Gr	%	89	83	81	80	78
Environmental audit (number of sites)		ST Gr	sites	24	29	28	27	25
		EN Gr	sites	28	52	50	52	53
Environmental education conducted (total participants)		EN Gr	persons	731	1,131	889	897	1282

Environmental Accounting

Breakdown of environmental protection cost		FY2023		FY2024	
		Investment (billion yen)	Cost (billion yen)	Investment (billion yen)	Cost (billion yen)
Management	Impact monitoring and measurement, and EMS expenses and education	1.2	2.4	1.0	2.8
Global warming countermeasures	Saving and efficiently using energy	19.5	36.5	6.3	36.0
	Recycling industrial water	4.9	25.7	2.0	22.6
Conservation of natural resources	Recycling and waste management of internally generated materials, etc.	0	5.7	7.1	5.2
Environmental protection	Air pollution countermeasures	6.9	30.7	6.0	28.2
	Water pollution countermeasures	1.8	11.5	3.3	14.9
	Prevention of soil contamination, noise, vibration, and subsidence	0	0.5	0	0.5
Other	Charges, etc.	—	1.4	—	0.7
R&D	Technologies for protecting the environment, saving energy, and preventing global warming	1.0	9.4	1.2	17.9
Societal activities	Support for nature preservation and forestation, information disclosure, exhibitions, and public relations	—	0.7	—	0.8
Total		35.2	124.4	26.2	129.6

Scope of data: All investment activities of JFE Steel Corporation and R&D activities of JFE Engineering Corporation.

Environmental Accounting (Accumulated)

Items	Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
Energy-saving investment (accumulated)	All	billion yen	546.5	565.4	570.8	590.3	596.6
Environmental protection investment (accumulated)	All	billion yen	742.1	770.9	797.1	811.9	830.6

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Social Data

Human Capital

Employee Data (FY2024[*1])

Items		Scope	Unit	JFE Steel	JFE Engineering	JFE Shoji
Employees		Consolidated*2	persons	41,386	11,102	8,753
	Male		persons	35,981	9,485	5,233
	Female		persons	5,405	1,617	2,108
Management positions*3			persons	11,151	3,807	1,850
	Male		persons	10,295	3,528	1,555
	Female		persons	856	279	295
	Ratio of women in management positions		%	7.7	7.3	15.9
Employees		Non-consolidated	persons	14,624	3,756	997
	Male		persons	13,355	3,174	603
	Female		persons	1,269	582	394
Management positions (manager or higher)*3			persons	1,643	1,721	609
	Male		persons	1,603	1,657	545
	Female		persons	40	64	64
	Ratio of women in management positions		%	2.4	3.7	10.5
Recruits		Non-consolidated	persons	745	263	72
	Male		persons	658	230	42
	Female		persons	87	33	30
	New graduates		persons	482	125	44
	Mid-career professionals		persons	263	138	28
Years of continuous employment (average)			years	17.2	15.7	13.1
	Male		years	16.9	15.8	13.2
	Female		years	20.2	15.3	13.0
Job turnover rate*4 (total 2.1%)			%	1.9	2.6	4.1

Items	Scope	Unit	JFE Steel	JFE Engineering	JFE Shoji
Elderly employees*5	Non-consolidated	persons	905	57	11
Ratio of elderly employees*5		%	6.2	1.5	1.1
Average annual leave taken		day/year	16.4	18.7	16.7
Average overtime		hours/ month	26.4	27.1	31.4
Employees working shorter hours for childcare		persons	92	54	57
Ratio of male employees taking childcare leave*6		%	97.0	97.1	110.3
Average childcare leave taken by male employees		days	27.9	59.6	21.5
Wage gap between men and women*7 (all workers)		%	82.2	67.6	69.9
Full-time employees		%	82.6	67.8	69.8
Part-time workers and fixed-term employees		%	75.0	59.1	60.4
Temporary staff		persons	144	639	39

*1 Personnel composition (excluding managers, temporary staff, and employees working shorter hours for childcare) is as of March 31, 2025. Number of managers, temporary staff, and employees working shorter hours for childcare is as of April 1, 2025, and other personnel as of FY2024.
*2 Scope of data: Operating companies and other consolidated subsidiaries, JFE Steel: 149, JFE Engineering: 80, and JFE Shoji: 97. JFE Shoji's America region is excluded from the gender breakdown. The number of managers is also excluded from the scope of data.
*3 Management positions at JFE Shoji include employees on loan.
*4 Percentage of employees who voluntarily choose to resign from the organization.
*5 Figures for JFE Steel and JFE Engineering include active employees who are age 60 and above (the companies' mandatory retirement age has been raised to 65).
*6 Rate of male employees taking childcare leave or time off related to child rearing = (Number of male employees who took childcare leave + Number of male employees who used the childcare leave program for pre-elementary school children) / Number of male employees whose spouses have given birth.
*7 Calculated in accordance with the provisions of the Act on the Promotion of Women's Active Engagement in Professional Life.

Recruiting*1, 2

Items	Unit	Career-track Positions			On-site Positions at Steelworks	Total
		White-collar	Technical	Total		
Male	persons	150	311	461	469	930
Female	persons	94	35	129	21	150
Total	persons	244	346	590	490	1,080
Ratio of women	%	38.5	10.1	21.9	4.3	13.9

*1 Scope of data: Total figures for the three operating companies.
*2 Target group: New graduates who joined in FY2025 and mid-career professionals who joined in FY2024.

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Employment of People with Disabilities (as of June 1 of Each Year)

Items	Scope	Unit	2020	2021	2022	2023	2024
Employment ratio of people with disabilities	JFE Steel	%	2.51	2.51	2.57	2.52	2.63
	JFE Engineering	%	2.37	2.53	2.58	2.69	2.83
	JFE Shoji	%	2.39	2.39	2.66	2.74	2.84

Human Resource Development

Items	Scope	Unit	FY2022	FY2023	FY2024
Total annual training hours	Total of three operating companies	million hours per year	0.79	0.77	0.78
Training hours per employee	JFE Steel	hours per year	45.2	44.9	45.2
	JFE Engineering	hours per year	20.9	23.4	24.2
	JFE Shoji	hours per year	20.1	22.1	25.2
DX human resource development (accumulated)	JFE Steel (data scientists)	persons	—	610	662
	JFE Steel (citizen developers)	persons	—	456	630
	JFE Engineering	persons	—	179	207

Lost-Work Injuries and Accidents

Items		Scope*1	Unit	2020	2021	2022	2023	2024
Lost-work Injuries and Severity (Rates)	Lost-work injuries*2	JFE Steel	—	0.23	0.10	0.18	0.06	0.15
	Severity*3		—	0.08	0.08	0.08	0.00	0.08
	Lost-work injuries*2	JFE Engineering	—	0.35	0.56	0.26	0.28	0.22
	Severity*3		—	0.01	0.40	0.01	0.42	0.01
	Lost-work injuries*2	JFE Shoji Group	—	0.76	0.60	0.25	0.12	0.37
	Severity*3		—	0.04	0.05	0.02	0.03	0.02
	Lost-work injuries*2	Manufacturing industry average	—	1.21	1.31	1.25	1.29	1.30
	Severity*3		—	0.07	0.06	0.08	0.08	0.06
Number of lost-work injuries	Lost-work injuries	JFE Group	cases	36	26	25	12	21
	Fatal injuries		cases	1	2	1	1	0
	Lost-work injuries	JFE Steel	cases	23	10	18	6	14
	Fatal injuries		cases	1	1	1	0	0
	Lost-work injuries	JFE Engineering	cases	7	11	5	5	4
	Fatal injuries		cases	0	1	0	1	0
	Lost-work injuries	JFE Shoji Group	cases	6	5	2	1	3
	Fatal injuries		cases	0	0	0	0	0

Items		Scope*1	Unit	2020	2021	2022	2023	2024
Lost-work injuries involving employees	Lost-work injuries	JFE Group	cases	15	10	13	6	3
	Fatal injuries		cases	0	0	1	0	0
	Lost-work injuries	JFE Steel	cases	9	5	11	4	2
	Fatal injuries		cases	0	0	1	0	0
	Lost-work injuries	JFE Engineering	cases	2	1	0	1	0
	Fatal injuries		cases	0	0	0	0	0
	Lost-work injuries	JFE Shoji Group	cases	4	4	2	1	1
	Fatal injuries		cases	0	0	0	0	0
Lost-work injuries involving employees of contractors	Lost-work injuries	JFE Group	cases	21	16	12	6	18
	Fatal injuries		cases	1	2	0	1	0
	Lost-work injuries	JFE Steel	cases	14	5	7	2	12
	Fatal injuries		cases	1	1	0	0	0
	Lost-work injuries	JFE Engineering	cases	5	10	5	4	4
	Fatal injuries		cases	0	1	0	1	0
	Lost-work injuries	JFE Shoji Group	cases	2	1	0	0	2
	Fatal injuries		cases	0	0	0	0	0

*1 Scope of data:
- JFE Steel and JFE Engineering: parent company, business associates and contractors in Japan.
- JFE Shoji: parent and consolidated subsidiaries, business associates and contractors in Japan.

*2 Lost-work injuries (rate) = number of employees with lost-work injuries/total working hours × 1,000,000
*3 Severity = number of lost working days/total working hours × 1,000

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Health and Safety Training (FY2024)

Items	Unit	Participants*
Training for managers and supervisors	persons	369
Mental healthcare education for new hires and at rank-based training	persons	1,367

* Total of 3 operating companies.

Occupational Health and Safety

Items	Scope	Unit	FY2021	FY2022	FY2023	FY2024
Ratio of ISO 45001-certified sites*	JFE Steel	%	33	100	100	100
	JFE Engineering	%	100	100	100	67

* Ratio at production sites

Health

Items	Scope	Unit	FY2020	FY2021	FY2022	FY2023	FY2024
Provision rate of health guidance*1	JFE Steel	%	53.0	72.2	71.1	72.7	—
	JFE Engineering	%	39.1	39.4	42.7	41.3	—
	JFE Shoji	%	41.6	52.1	35.0	43.0	—
Smoking rates	JFE Steel*2	%	29.0	27.3	26.6	25.8	25.0
	JFE Engineering	%	23.3	22.9	22.3	21.8	21.4
	JFE Shoji	%	24.9	21.5	21.9	20.6	21.4
Metabolic syndrome rates	Employees insured by the JFE Group's health insurance union (age 40 and above)	%	36.5	36.3	36.0	36.3	36.3
Rate of health examination for dependents	Age 40 and above	%	46.3	51.3	52.3	53.8	56.9

*1 Figures for FY2024 will be added once they are finalized.
*2 Smoking rate for JFE Steel is managed based on calendar year.

Provide Quality Products and Enhance Customer Satisfaction

Customer Training (FY2024)

Training type	Scope	Unit	Participants
Technical presentation by overseas Group companies (number of participating companies*1)	JFE Shoji	persons (companies)	157(17)
National staff training (NS training*2)	JFE Shoji	persons	27

*1 A total of 157 persons from 11 countries participated in the training, with 34 attending face-to-face sessions and 123 online.
*2 Participants came from 10 countries (Thailand, Vietnam, India, Malaysia, Mexico, Indonesia, Philippines, China, U.S.A., and Australia).

Community

Social Contributions (FY2024)

Activities		Scope		Unit	Results
Internships		JFE Group		Persons	2,080
			JFE Steel	persons	953
			JFE Engineering	persons	749
			JFE Shoji	persons	378
Supporting schools in Ghana and Nigeria	Desks and chairs	JFE Shoji		sets	460
	Notebooks			books	17,000
	Canned foods			cans	12,500

JFE 21st Century Foundation

Grants		Projects	Value (million yen)
Technology research (accumulated)		766	1,539.8
Technology research for FY2024	Iron and steel technology research	9	18
	Global environment and global warming prevention technology research	19	38
Asian history studies (accumulated)		186	279
Asian history studies for FY2024		12	18

Activities	Sets Donated
Supporting the Japan Overseas Educational Services Writing Contest and anthology donation (to elementary and middle schools and also public libraries in the regions related to steel*)	2,200

*Donated to 650 elementary schools and middle schools, 60 libraries, etc.

Governance Data

Corporate Governance

Data on Corporate Governance System (as of July 1, 2025)

Items		System Overview
Organizational design type		Company with Board of Directors and an Audit and Supervisory Board
Number of Directors		13
	Number of independent Outside Directors	6
	Number of female Directors	2
Number of Directors (Audit & Supervisory Board Members)		5
	Number of independent Outside Directors (Audit & Supervisory Board Members)	3
	Number of female Directors (Audit & Supervisory Board Members)	1
Term for Directors (years)		1
Term for Outside Directors (Audit & Supervisory Board Members) (years)		2
Term for (Audit & Supervisory Board Members) (years)		1
Term for Outside Directors (Audit & Supervisory Board Members) (years)		2
Corporate Officer System		Adopted
Voluntary advisory committees of the Board of Directors		Nomination Committee and Remuneration Committee

Directors (as of July 1, 2025)

Position		Name	Significant Concurrent Post	Independent Executive	Number of Meetings of the Board of Directors Attended in FY2024	Number of Meetings of the Audit & Supervisory Board
Director	Inside	Yoshihisa Kitano	Chairman of the Board of Directors of JFE 21st Century Foundation (Public Interest Incorporated Foundation)	Attended in FY2024	14/14 (100%)	—
		Masayuki Hirose	Representative Director, President and CEO of JFE Steel Corporation	—	11/11 (100%)	—
		Masashi Terahata	Director of JFE Steel Corporation, Representative Director of JFE 21st Century Foundation (Public Interest Incorporated Foundation)	—	14/14 (100%)	—
		Kazuyoshi Fukuda	Representative Director, President and CEO of JFE Engineering Corporation	—	11/11 (100%)	—
		Yoshifumi Ubagai	Representative Director, President and CEO of JFE Shoji Corporation	—	—	—
	Outside	Yoshiko Ando	Outside Director of Kirin Holding Company, Limited Outside Director of Sansei Technologies, Inc.	○	14/14 (100%)	—
		Takuya Shimamura	Director and Chairman of AGC Inc. Outside Director of EBARA Corporation	○	14/14 (100%)	20/20 (100%)
		Keiichi Kobayashi	Chairman of the Board, Furukawa Electric Co., Ltd. Outside Director, NTT DATA Group Corporation	○	11/11 (100%)	—
Audit & Supervisory Board Member	Inside	Nobuya Hara	Audit & Supervisory Board Member of JFE Steel Corporation	—	14/14 (100%)	20/20 (100%)
		Nakaba Akimoto	Audit & Supervisory Board Member of JFE Engineering Corporation Audit & Supervisory Board Member of JFE Shoji Corporation	—	14/14 (100%)	20/20 (100%)
	Outside	Tsuyoshi Numagami	Professor, Institute for Business and Finance, Waseda University Outside Director of Tokyo Century Corporation Outside Director of EBARA Corporation	○	14/14 (100%)	20/20 (100%)
		Yoshihisa Suzuki	Outside Director of the Board of Kyowa Kirin Co., Ltd. Outside Director, OMRON Corporation	○	—	—
		Naoto Nakamura	Lawyer, Nakamura Law Firm	○	—	—

*Mr. Masayuki Hirose, Mr. Kazuyoshi Fukuda, and Mr. Keiichi Kobayashi were elected for the first time as directors at the previous year's Ordinary General Meeting of Shareholders, on June 25, 2024, and therefore the total number of board meetings attended differs from that of the outside directors.

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Data on Nomination Committee and Remuneration Committee (as of July 1, 2025)

Items		Members	Chairperson	Number of Meetings in FY2024
Nomination Committee		6	Takuya Shimamura (Outside Director)	4
	Inside Director	2		
	Outside Director	2		
	Outside Director (Audit & Supervisory Board Member)	2		
Remuneration Committee		6	Keiichi Kobayashi (Outside Director)	5
	Inside Director	2		
	Outside Director	2		
	Outside Director (Audit & Supervisory Board Member)	2		

Data on Operating System

Committee	Company	Chairperson	Attendees
Group Management Strategy Committee	JFE Holdings	President	Inside Directors (including 3 operating company Presidents), Corporate Officers
Management Committee	JFE Holdings	President	Inside Directors (excluding 3 operating company Presidents), Corporate Officers
	Each operating company	President	Directors, major Corporate Officers and Audit & Supervisory Board Members

Data on Executive Remuneration (FY2024)

Executive remuneration

Position Type	Total Remuneration, etc. (million yen)*1	Total Amount by Remuneration Type (million yen)*1				Number of Executives (Members)
		Basic remuneration	Bonus	Stock remuneration*2		
				Linked to performance	Linked to service length	
Directors (excluding Outside Directors)	283.737	244.463	25.890	0	13.384	7
Audit & Supervisory Board Members (excluding Outside Audit & Supervisory Board Members)*1	78.335	78.335	—	—	—	2
Outside Directors/ Audit & Supervisory Board Members	111.647	111.647	—	—	—	7

*1 Directors' (excluding outside directors) performance-linked remuneration is composed of bonus and stock remuneration. Total amount of performance-linked remuneration for the current fiscal year is 25.890 million yen.

*2 Only directors (excluding outside directors) are included in the scope of the above-mentioned stock remuneration, and the entire amount is non-monetary remuneration. Total amount of stock remuneration expensed for the current fiscal year as non-monetary remuneration is 13.384 million yen.

Officers whose consolidated remuneration exceeded 100 million yen

Name	Position	Company	Total (Consolidated Basis) (million yen)	Per Company (Consolidated Basis) (million yen)	Total Amount by Remuneration Type (million yen)			
					Basic remuneration	Bonus	Stock remuneration	
							Linked to performance	Linked to service length
Yoshihisa Kitano	Director	JFE Holdings	145.977	145.977	120.047	16.370	—	9.560
Masayuki Hirose	Director	JFE Holdings	129.603	9.000	9.000	—	—	—
	Director	JFE Steel		120.603	111.043	—	—	9.560

Ratio of Remuneration for Each

Basic remuneration: fixed (%)	Annual bonus: linked to short-term performance (%)	Stock remuneration: linked to medium- to long-term performance (%)
2	1	1

Note: The ratios above are applicable only when the company's president has attained the performance target goals.

Data on Internal Control System (as of July 1, 2025)

Internal Control System

Items		Number of Companies	Number of People Assigned
Internal audit	Internal audit organization	61	179
Audit by Audit & Supervisory Board	Full-time Audit & Supervisory Board Members	30	35
	Dispatched Audit & Supervisory Board Members (part-time Audit & Supervisory Board member)	44	12

Cooperation of Audit & Supervisory Board members

Items	Number of Meetings in FY2024
Accounting auditor	10
Internal Audit Department	21

*Data on internal audit is as of April 1, 2025.

Compliance

Whistleblowing

Items	Contact Point	Unit	FY2023	FY2024
Cases handled by the Corporate Ethics Hotline and the harassment consultation desk	JFE Holdings and operating companies	Cases	134	161
	Group companies of operating companies		201	153

Independent Assurance Statement

SUSA
Sustainability Accounting Co.,Ltd.

Independent Assurance Statement

September 10, 2025

Mr. Yoshihisa Kitano
Representative Director, President and CEO of JFE Holdings, Inc.

1. Purpose

We, Sustainability Accounting Co., Ltd., have been engaged by JFE Holdings, Inc., ("the Company") to provide limited assurance on the Company's following data during the fiscal year 2024, that were 44.0 million t-CO_2 of CO_2 emissions for Scope1, 7.0 million t-CO_2 of CO_2 emissions for Scope2, 21.9 million t-CO_2e of CO_2 emissions for Scope3 (categories 1, 2, 3, 4, 5, 6, 7, 15), 567 PJ of energy consumption, 228 million tonnes of water intake, 9.5 million tonnes of co-products emissions of JFE Steel Group, and 0.15 million tonnes of wastes emissions of JFE Engineering Corporation (collectively, "the Environmental performance indicators"). The purpose of this process is to express our conclusion on whether the Environmental performance indicators were calculated in accordance with the Company's standards. The Company's management is responsible for calculating the Environmental performance indicators. Our responsibility is to independently carry out a limited assurance engagement and to express our assurance conclusion.

2. Procedures Performed

We conducted our assurance engagement in accordance with International Standard on Assurance Engagement 3000 (ISAE 3000) and International Standard on Assurance Engagement 3410 (ISAE 3410). The key procedures we carried out included:

- Interviewing the Company's responsible personnel to understand the Company's standards
- Reviewing the Company's standards
- Performing cross-checks on a sample basis and performing a recalculation to determine whether the Environmental performance indicators were calculated in accordance with the Company's standards

3. Conclusion

Based on the procedures performed, nothing has come to our attention that causes us to believe that the Environmental performance indicators have not been calculated in all material respects in accordance with the Company's standards.

We have no conflict of interest relationships with the Company.

Takashi Fukushima
Representative Director
Sustainability Accounting Co., Ltd.
2-4, Kojimachi, Chiyoda-ku,
Tokyo, Japan

External ESG Evaluations

JFE Holdings is highly regarded by ESG evaluation organizations in Japan and overseas.

FTSE Blossom Japan Index (Invested in by the GPIF)

JFE Holdings has been selected as a constituent of the FTSE Blossom Japan Sector Relative Index, an investment index provided by FTSE Russell. The index selects companies that demonstrate strong environmental, social, and governance (ESG) practices and is used in the creation or assessment of sustainable investment funds and other financial products.

FTSE Blossom Japan Index

FTSE Blossom Japan Sector Relative Index (Invested in by the GPIF)

JFE Holdings is a constituent of the FTSE Blossom Japan Sector Relative Index, an investment index provided by FTSE Russell. It refers to the ESG assessment made by FTSE Russell as a base and reflects management practices toward climate change risks and opportunities for some constituents that have high carbon intensity (GHG emissions per unit of revenue).

FTSE Blossom Japan Sector Relative Index

FTSE4Good Index Series

JFE Holdings has been selected as a constituent of the FTSE4Good Index Series, an investment index provided by FTSE Russell. This comprehensive ESG index in general applies the same ESG assessment scheme as that used for the FTSE Blossom Japan Index. Constituents have high absolute ESG ratings and are screened from major stocks around the world.

FTSE4Good

Note: FTSE Russell confirms that JFE Holdings, Inc. has been independently assessed according to the index criteria, and has satisfied the requirements to become a constituent of the FTSE Blossom Japan Index, the FTSE Blossom Japan Sector Relative Index and FTSE4Good Index Series. Created by the global index and data provider FTSE Russell, they are designed to measure the performance of companies demonstrating strong Environmental, Social and Governance (ESG) practices. They are used by a wide variety of market participants to create and assess responsible investment funds and other products.

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MSCI Nihonkabu ESG Select Leaders Index (Invested in by the GPIF)

JFE Holdings has been selected for two consecutive years as a constituent of the MSCI Nihonkabu ESG Select Leaders Index, an investment index provided by MSCI Inc. The index is based on MSCI's ESG research, which is used by over 1,000 companies around the world. This comprehensive ESG index reflects ESG risks to the market portfolio and is comprised of constituents with relatively high ESG evaluation within the industry.

2025 CONSTITUENT MSCI NIHONKABU ESG SELECT LEADERS INDEX

MSCI Selection Indexes

JFE Holdings, Inc. is included in the MSCI Selection Indexes, provided by MSCI Inc. and targeting major global companies. Constituents are selected based on MSCI's ESG research to include companies with higher ESG ratings within their particular industry.

MSCI Selection Indexes Constituents 2025

Note: THE INCLUSION OF JFE Holdings, Inc. IN ANY MSCI INDEX, AND THE USE OF MSCI LOGOS, TRADEMARKS, SERVICE MARKS OR INDEX NAMES HEREIN, DO NOT CONSTITUTE A SPONSORSHIP, ENDORSEMENT OR PROMOTION OF JFE Holdings, Inc. BY MSCI OR ANY OF ITS AFFILIATES. THE MSCI INDEXES ARE THE EXCLUSIVE PROPERTY OF MSCI. MSCI AND THE MSCI INDEX NAMES AND LOGOS ARE TRADEMARKS OR SERVICE MARKS OF MSCI OR ITS AFFILIATES.

S&P/JPX Carbon Efficient Index (Invested in by the GPIF)

JFE Holdings has been selected as a constituent of the S&P/JPX Carbon Efficient Index, jointly developed by S&P Dow Jones Indices and the Japan Exchange Group. The weighting of constituents in the index is determined by the status of corporate disclosure for environmental information and the level of carbon efficiency, or carbon emissions per unit of revenue.

S&P/JPX Carbon Efficient Index

Morningstar Japan ex-REIT Gender Diversity Tilt Index (Invested in by the GPIF)

JFE Holdings is a constituent of the Morningstar Japan ex-REIT Gender Diversity Tilt Index provided by Morningstar, Inc. This index is based on the data and evaluation methods of Equileap and is designed to facilitate investment prioritizing companies that have established gender diversity policies embedded in their corporate culture and companies committed to providing equal opportunities for employees regardless of gender.

Evaluation Based on CDP 2024

Established in Britain in 2000, the Carbon Disclosure Project (CDP) is a nongovernmental organization that conducts ESG evaluations. It calls on companies to disclose ESG-related information by responding to CDP questionnaires to facilitate ESG investment decisions by institutional investors.

Currently, the CDP covers four environmental areas: climate change, water security, forests, and plastics and biodiversity, and companies are rated on an eight-point scale (from A to D–) for each. The volume of information collected by the CDP has become one of the largest in the world, with over 2,200 companies in Japan responding to the questionnaires in 2024, which are widely used in various indexes by institutional investors and for socially responsible investment. The JFE Group actively participates in CDP initiatives and responds to questionnaires on climate change and water security every year. Our high rating reflects our complete disclosure of appropriate information for the CDP 2024 questionnaire.

CDP 2024 score: climate change: A–, water security: A–, supplier engagement: A–

White 500 Organization under the 2025 Certified Health and Productivity Management Outstanding Organizations Recognition Program

JFE Engineering was recognized as a White 500 organization, which constitutes the top 500 companies selected under the 2025 Certified Health and Productivity Management Outstanding Organizations Recognition Program. Sponsored by Japan's Ministry of Economy, Trade and Industry and Nippon Kenko Kaigi, the program recognizes organizations that practice excellent health management, including large enterprises and small and medium-sized companies.

The company implements effective, ongoing efforts to improve employee lifestyle habits, such as instilling exercise routines, alleviating sleep-deprivation risks, and reducing smoking rates, based on an analysis of employee health risks. In March 2018, it also established a health management framework, led by the president, and formulated the JFE Engineering Health Declaration, through which it publicly discloses its health management initiatives both internally and externally. These efforts have been highly regarded and led to this certification.

JFE Engineering has been recognized as a White 500 company for five consecutive years, and seven times overall.

SOMPO Sustainability Index

JFE Holdings has been selected for 14 consecutive years as a constituent of the SOMPO Sustainability Index (former: SNAM Sustainability Index), which was launched by Sompo Asset Management Co., Ltd. The index, which comprises companies with highly regarded ESG ratings, contributes to investor asset formation by evaluating corporate value from a long-term perspective.

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DBJ Employees' Health Management Rated Loan Program

The DBJ Employees' Health Management Rated Loan Program is the world's first financing menu that bases loan conditions on DBJ's proprietary system for rating health management for the purpose of selecting and evaluating companies based on their performance in this area.

JFE Holdings' efforts in pursuing employee health management has been highly regarded, and it is rated as a top-ranking company under the program.

DBJ Environmentally Rated Loan Program

The Development Bank of Japan (DBJ) Environmentally Rated Loan Program uses a screening (rating) system developed by DBJ to evaluate environmental management and then assign a corresponding interest rate from three levels. This was the world's first loan program to incorporate environmental ratings in its financing menus. In March 2016, JFE Holdings was rated as a top-ranking company that pursues excellent and advanced environmental initiatives resulting in outstanding environmental-management performance, based on which the company secured a loan under the program.

External Evaluations of Non-ESG Areas

DX Stock 2025

JFE Holdings was selected as a DX Stock 2025 under the Digital Transformation Stock Selection (DX Stock) program, selected by Japan's Ministry of Economy, Trade and Industry, the Tokyo Stock Exchange, and the Information-technology Promotion Agency.

From about 3,800 companies listed on the Tokyo Stock Exchange, this selection program identifies those that are radically transforming their business models and pursuing DX to achieve new growth and strengthened competitiveness. Thirty-one companies, one per industry category, are chosen as DX Stocks, and we were selected for the second consecutive year.

The JFE Group has been highly regarded for its extensive DX initiatives across its companies, including the large-scale migration of core steelwork systems to an open platform, scheduled for completion in FY2025; the promotion of cyber-physical systems integration in steelmaking processes; the expansion of solution-oriented business models; initiatives in the engineering business to advance the technological sophistication of engineering operations by leveraging the Global Remote Center at the Yokohama head office, such as achieving fully autonomous operation of waste incineration plants; and development of DX talent.

External Awards

Recognized as an Environmentally Sustainable Company at the 6th ESG Finance Awards Japan

JFE Holdings was selected as an Environmentally Sustainable Company in the Environmentally Sustainable Companies Category in the 6th ESG Finance Awards Japan, presented by the Ministry of the Environment.

ESG Finance Awards Japan was founded to disseminate and expand ESG finance by commending and widely sharing the initiatives of institutional investors, financial institutions, intermediaries, and companies that have made an outstanding impact by proactively engaging in ESG finance as well as environmental and social projects. JFE Holdings received a special recognition at the second ESG Finance Awards Japan in FY2020 and was selected as an Environmentally Sustainable Company* at the third and fourth awards in FY2021 and FY2022. It also received the Bronze Award as well as selection as an Environmentally Sustainable Company at the fifth awards in FY2023.

Recognizing this award as an acknowledgment of our initiatives, including our efforts to address climate change and our commitment to active dialogue, we will continue to deepen these initiatives and further strengthen information disclosure.

*The Environment Sustainable Category provides investors and companies with concrete examples of businesses that incorporate significant environmental opportunities and risks into their management strategies to enhance corporate value and develop positive environmental benefits while creating that value. Those selected under the category as Environmentally Sustainable Companies meet specific standards for information disclosure.

Please see the following for further details.

> JFE Group Selected as an Environmentally Sustainable Company in the Environmentally Sustainable Company Category at 6th ESG Finance Awards Japan (Japanese only) (https://www.jfe-holdings.co.jp/release/2025/0220/001631/)

World Steel Association 2025 Steel Sustainability Champions

JFE Steel was selected as the 2025 Steel Sustainability Champion by the World Steel Association.

Once a year, the association commends member companies for demonstrating leadership in developing a sustainable steel industry and society and achieving outstanding results in enhancing sustainability.

The JFE Group has been developing innovative technologies to mitigate environmental impact and published the JFE Group Environmental Vision for 2050. We inform stakeholders about our sustainability policies and achievements across a range of areas, including environment, human rights, health and safety, through publications such as the JFE Group Sustainability Report. These endeavors were recognized with the award for the fifth consecutive year.

Looking ahead, we plan to continue contributing to achieve the Sustainable Development Goals (SDGs) by strengthening our sustainability management practices and working to help resolve environmental and other issues in society through business.

Please see the following for further details.

> JFE Steel Recognized as 2025 Steel Sustainability Champion (Japanese only)
(https://www.jfe-steel.co.jp/release/2025/04/250408-2.html)

Winner of the Information Technology Award in the Transformation Category

JFE Engineering received the fiscal 2024 Information Technology Award, in the Transformation category, from the Japan Institute of Information Technology.

The award, now in its 42nd year, recognizes companies and organizations in Japan that have made outstanding efforts in management innovation through IT and achieved excellent results.

At the close of our Seventh Medium-term Business Plan (FY2021–2024), we applied for the award for the first time in four years, and received it for the second time, following the IT Excellence Award in 2020.

In addition, in 2022 we established the DX Headquarters as a companywide organization responsible for promoting digital transformation. We have concurrently developed multiple initiatives, business transformation using AI and IoT, operational efficiency and renewing information systems, building a secure and flexible network/cloud infrastructure, nurturing talent, and fostering cultural reform. This award recognizes that we have consistently produced tangible results as transformation becomes the way we do business.

We will pursue further business transformation by promoting DX across the entire Group and striving for sustainable enhancement of corporate value.

> IT Award (Japanese only) (https://www.jiit.or.jp/im/award.html)

> Announcement of the Recipients of the Fiscal 2024 (42nd) Information Technology Award (Japanese only)
(https://jiit.or.jp/wp/wp-content/themes/JIIT/files/awards/it/pdf_award_news-release_2024_42.pdf)

> For more information about our DX initiatives, please see: (https://www.jfe-eng.co.jp/dx/)

Dissemination and Exchange of Environmental Information

Awards for Technologies and Product Developments (FY2024)

	Prize/Award	Project	Sponsor
JFE Steel	32nd Grand Prize for the Global Environment Award	Project team for creating a seaweed bed and ecosystem using recycled materials at areas around Shinto, Iwakuni City (Koujiro Fisheries Cooperative, National Institute of Technology, Ube College, and JFE Steel)	Fujisankei Communications Group (Secretariat: The Sankei Shimbun)
	FY2024 National Commendation for Invention, Invention Award	Invention of highly weather resistant steel that can be used near coastal areas without coating	Japan Institute of Invention and Innovation
	59th Machinery Promotion Award Minister of Economy, Trade and Industry Award	Automatic measurement apparatus for crater end position in continuous casting to realize high-quality heavy steel plates	Japan Society for the Promotion of Machine Industry
	71st (FY2024) Okochi Memorial Technology Prize	Development of steel for pipeline use in natural gas containing high levels of hydrogen sulfide	Okochi Memorial Foundation
	FY2025 Commendation for Science and Technology Minister of Education, Culture, Sports, Science and Technology	Development of automated blast furnace operation technology to contribute to decarbonization in the steel industry	Ministry of Education, Culture, Sports, Science and Technology
JFE Engineering	50th Excellent Environmental Equipment Award Minister of Economy, Trade and Industry Award	High-efficiency boiler cleaning system that combines water jet and pressure waves	Japan Society of Industrial Machinery Manufacturers

32nd Global Environment Award
Minister of Agriculture, Forestry and Fisheries Award

FY2024 National Invention Award

59th Machinery Promotion Award
Minister of Economy, Trade and Industry Award

71st (FY2024) Okochi Memorial Technology Prize

FY2025 Commendation for Science and Technology
Minister of Education, Culture, Sports, Science and Technology

50th Excellent Environmental Equipment Award
Minister of Economy, Trade and Industry Award

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Third-Party Comments

Yoshinao Kozuma

Emeritus Professor
Sophia University

1. A New Milestone

The JFE Group, having positioned the decarbonization of its steel business as a key management theme, formulated JFE Vision 2035 in May 2025 and set the year 2035 as a new milestone for achieving carbon neutrality (CN) by 2050. JFE Vision 2035 is a long-term vision that presents the Group's desired future state, and its content is closely linked to its climate transition plan. It includes plans to complete the development of super-innovative technologies necessary for achieving CN by around 2035 and to expand business profits (segment profit) to around 700 billion yen, which will provide the financial basis for capital investment required for CN.

This creates a clear pathway for moving forward. In terms of taking action, once the breakthrough technologies have been developed, they can be implemented promptly through large-scale process transformation to achieve CN. In terms of finance, a growth strategy has been presented for securing stable business earnings by establishing an economically sustainable business model. Combined, these measures make the climate transition plan persuasive because they are more concrete and coherent.

2. Evolution of Natural Capital Management

The Eighth Medium-term Business Plan, launched in FY2025, shows an evolution in natural capital management. First, it is significant that the Group established a basic policy and then advanced beyond the previous focus on biodiversity conservation to incorporate the perspective of nature positive, clarifying its intention to not only conserve biodiversity but nurture it. Furthermore, in disclosure, the results of broad and detailed assessments of risks and opportunities based on the LEAP approach have been reported, providing key insights for stakeholders for understanding the JFE Group's natural capital management strategy.

3. Human Capital Strategy Integrated with Business Strategy

The Eighth Medium-term Business Plan positions human resources as the driving force of corporate growth and calls for a structural reform of its human capital management. Its fundamental philosophy is to create a mechanism that links corporate and employee growth to realize the business strategy. Structurally, the strategy consists of measures that will ensure a sufficient quantity of human resources to support the execution of the business strategy, and measures to enhance the quality of human capabilities through DEI and the establishing of a supportive working environment and work engagement. These initiatives are expected to increase the motivation, capabilities, and skills of employees and contribute to a rational reform of human capital management.

4. Future Challenges

The fact that there were no fatal accidents is a significant achievement. However, the number of lost-time injuries has increased, particularly among subcontractor employees, which is a cause for concern. Further strengthening of safety measures is desirable. In addition, as sustainability disclosure in securities reports progresses, the reporting scope of social data remains largely inconsistent with that of financial data, leaving room for improvement going forward.

Mariko Kawaguchi

Specially appointed professor of the Graduate School of Social Design Studies, Rikkyo University

It's hard to believe this is already the ninth year I have been invited to provide a third-party opinion. Since the first occasion, I have understood that the JFE Group was among the first to set ambitious goals for responding to climate change, and has steadily taken action as a leader in Japan's industrial sector. The Company's firm determination has been evident in its annual top management messages, and I have felt the level of seriousness deepen year by year. This year, however, the management's commitment has clearly leaped forward. President Kitano's statement that "the wave of global warming is approaching, and there is no doubt that addressing climate change is the most critical issue" strongly conveys a sense of resolve, and the management decision to commit to an investment on the scale of 4 trillion yen is very convincing. Incidentally, such a business strategy would not have been welcomed nine years ago.

Across the globe, the rising number of extreme weather events, such as severe heatwaves, heavy rains, droughts, and wildfires, is increasingly being attributed to the effects of climate change, yet discussions in Japan linking the two have been relatively rare. Consequently, this year's top management message carries particular impact.

I'm encouraged to see that the Company has taken bold steps this year to strengthen its efforts for realizing a recycling-oriented society and biodiversity, which I pointed out in last year's report. The initiative previously titled "A Recycling-Oriented Society" has been renamed: "Transition to a Circular Economy." I interpret this change as a declaration of the Group's commitment to pursuing an organizational and comprehensive approach for transforming the economic system. In the engineering business, the projects for recycling and converting waste into fuel serve as key infrastructure for the circular economy, while the role of the trading business—efficiently circulating materials and information—is also indispensable. The material and chemical recycling business for used plastics, which began in April 2025, represents a full-fledged circular use of materials. In addition, the food waste-to-power plant that started in November 2024 is a win-win business that contributes to the decarbonization of energy. Furthermore, in the steel business, recycling byproducts generated at plants is important. However, more fundamentally, iron itself is a recyclable resource, and as the transition from blast furnaces to electric furnaces progresses, the steel business as a whole has the potential to become a core driver of the circular economy. I would encourage the Company to take a broader view of the circular economy with the steel industry as its starting point.

In the area of biodiversity, the Company has recently established a basic policy. I expect efforts that have been somewhat vague will become more system-oriented. Although the steel industry may seem to be distant from biodiversity, we must not forget that all forms of life, and not just business operations, fundamentally depend on it.
The JFE Group's operations, such as extracting iron ore and coal from underground and constructing large-scale infrastructure that alters the surface environment, inevitably have a significant impact on biodiversity. This year, with the improved precision of the LEAP approach assessment, I expect further progress in visualizing biodiversity, which will help raise awareness throughout the organization. It's also particularly notable that the Company has evaluated not only its own sites but also the significance of biodiversity conservation and water risks at raw material procurement sources. Biodiversity cannot be conserved without engaging the entire supply chain. Moreover, many raw material sourcing regions are subject to human rights risks. Therefore, I recommend integrating biodiversity assessments with human rights risk evaluations.

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With regard to human capital, you have laid out an overall framework for the Group's human resource strategy. Including an employee engagement indicator in the ESG performance metrics for executive compensation is expected to enhance the effectiveness of this strategy. I hope that many employees will emerge who understand both sustainability considerations and corporate value enhancement and can translate that understanding into their work. In Japan as well, climate change-driven natural disasters are intensifying and ecosystems are rapidly shifting, as reflected in the increasing number of bear sightings in various regions. The role and expectations for the JFE Group have become greater than ever.

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Editorial Policy

Basic Approach

This report provides stakeholders with a comprehensive account of the JFE Group's sustainability-related initiatives and data and elicits feedback toward enhancing the Company's activities and information disclosure. The 2025 report was compiled with a focus on the following.

- Content of the Eighth Medium-term Business Plan, revision of material issues of corporate management, and KPIs for FY2025
- Status of initiatives addressing climate change, such as the development of ultra innovative process conversion technology, expansion in green steel sales, and financial impact assessment in the TCFD scenario analysis
- Policy engagement for addressing climate change
- Status of initiatives addressing the transition to a circular economy, including expanded marketing of eco-products and eco-solutions
- Information disclosure on biodiversity conservation and nature-positive initiatives in line with TNFD guidance
- Mid- to long-term human resources strategy
- Measures to enhance corporate governance, including the transition to a company with an Audit & Supervisory Committee and the revision of the officer remuneration system

Scope of Report

Reporting Period

FY2024 (April 1, 2024 to March 31, 2025)
Reports on some activities undertaken before or after this period are included.

Organization Covered

The report mainly covers the activities of JFE Holdings, Inc. and its three operating companies: JFE Steel Corporation, JFE Engineering Corporation, and JFE Shoji Corporation. It also includes reports on activities of other companies in the JFE Group (417 companies, of which 327 are consolidated subsidiaries and 90 are equity-method affiliates). Quantitative information on the environment includes data from the following JFE Group operating companies.

ST JFE Steel Group: JFE Steel Corporation and 26 domestic and overseas consolidated subsidiaries (total: 27 companies)

21 domestic companies:
JFE Mineral & Alloy Company, Ltd., Chiba Riverment and Cement Corporation, Mizushima Riverment Corporation, JFE Precision Corporation, JFE Plastic Resource Corporation, JFE Bars & Shapes Corporation, JFE Metal Products & Engineering Inc., JFE Galvanizing & Coating Co., Ltd., JFE Container Co., Ltd., JFE Welded Pipe Manufacturing Co., Ltd., JFE Steel Pipe Co., Ltd., Galvatex Corporation, JFE Techno-wire Corporation, JFE Kozai Corporation, JFE Logistics Corporation, JFE Chemical Corporation, JFE Life Corporation, GECOSS Corporation, JFE Kenzai Fence Co., Ltd., J-Logitec Co., Ltd., K-plasheet Corporation

5 overseas companies:
Nova Era Silicon S.A., JFE Steel Galvanizing (Thailand) Ltd., Thai Coated Steel Sheet Co., Ltd., Philippine Sinter Corporation, PT. JFE Steel Galvanizing Indonesia

EN JFE Engineering Group: JFE Engineering Corporation and 14 domestic and overseas consolidated subsidiaries (total: 15 companies)

13 domestic companies:
J&T Recycling Corporation, JFE Environmental Service Corporation, NORTHERN JAPAN MACHINERY Corporation, Fujikako, Inc., Asuka Soken Co., Ltd., JFE Pipeline Engineering Corporation, JFE Technos Co., Ltd., J Farm Corporation, JFE Business Support YOKOHAMA Corporation, JFE Project One Co., Ltd., JFE Environment Technology Co., Ltd., Myoko Green Energy Co., Ltd., Kinpai Co., Ltd.

1 overseas subsidiary:
J&M Steel Solutions Co., Ltd.

SH JFE Shoji Group: JFE Shoji Corporation and 35 domestic and overseas consolidated subsidiaries (steel-processing companies) (total: 36 companies)

19 domestic subsidiaries:
JFE Shoji Electrical Steel Co., LTD., JFE Shoji Coil Center Corporation, JFE Shoji Kohnan Steel Center Co., Ltd., JFE Shoji Tinplate Center Corporation, Aichi Kanzai Kogyo Corporation, Kyushu-Tech Corporation, JFE Shoji Kohnan Steel Center Co., Ltd., Shinnihon-kogyo Corporation, Taisei Kogyo Corporation, Toyo Kinzoku Corporation, Tochigi Shearing Corporation, Naigai Steel Corporation, Nagano Can Corporation, Niigata Steel Corporation, Nihon Jiseizai Kogyo Co., Ltd., Hokuriku Kogyo Corporation, Hokuriku Steel Co., Ltd., Mizushima Steel Corporation, Mizushima Metal Products Corporation

16 overseas subsidiaries:
Dongguan JFE Shoji Steel Products Co., Ltd., Guangzhou JFE Shoji Steel Products Co., Ltd., Zhejiang JFE Shoji Steel Products Co., Ltd., Jiangsu JFE Shoji Steel Products Co., Ltd., JFE Shoji Steel Philippines, Inc., Central Metals (Thailand) Ltd., Steel Alliance Service Center Co., Ltd., JFE Shoji Steel Vietnam Co., Ltd., JFE Shoji Steel Hai Phong Co., Ltd., JFE Shoji Steel Malaysia Sdn. Bhd., PT. JFE Shoji Steel Indonesia, JFE Shoji Steel India Private Limited, VEST Inc., JFE Shoji Steel de Mexico, S.A. de C.V., JFE Shoji Steel Service Center Bajio, S.A.P.I. de C.V., JFE Shoji Power Canada Inc.

Reference Guidelines

GRI Sustainability Reporting Standards 2016, 2018, 2019, 2020, and 2021
Ministry of the Environment (Japan): Environmental Reporting Guidelines 2018
Ministry of the Environment (Japan): Environmental Accounting Guidelines 2005
Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)
Recommendations of the Task Force on Nature-related Financial Disclosures (TCFD)

Publication Date

Website: September 2025, PDF file: September 2025
(previous report: September 2024; next report: scheduled for September 2026)

Related Reports

The following information is available at:

> https://www.jfe-holdings.co.jp/en/

Company Information

Outline of the JFE Group, corporate governance, etc.

Shareholder and Investor Information

JFE Group business information, financial data, stock and rating information, etc.

JFE Group Report (Integrated Report)

Financial information including the JFE Group's mid- to long-term business strategies, business performance, management strategies, and non-financial information, including initiatives on sustainability and corporate governance.

Guidelines Content Index

GRI Standard Content Index

GRI 1: Foundation 2021

Statement of use	The JFE Group has reported the information cited in this GRI content index for the period from April 1, 2024 to March 31, 2025 with reference to the GRI Standards.
GRI 1 used	GRI 1: Foundation 2021

Note: We refer to the JFE GROUP REPORT 2025 (Integrated Report), Securities Report from April 1, 2024 to March 31, 2025, and Corporate Governance Report published on June 25, 2025.

GRI 2: General Disclosures 2021

Disclosure		Pages	
		Sustainability report	Other
1. The organization and its reporting practices			
2-1	Organizational details	—	> Outline of JFE Holdings (https://www.jfe-holdings.co.jp/en/company/info/) > Global Network (https://www.jfe-holdings.co.jp/en/g-about/global.html)
2-2	Entities included in the organization's sustainability reporting	> Editorial Policy (P.294)	—
2-3	Reporting period, frequency and contact point	> Editorial Policy (P.294) > Submit Comments on the JFE Group Sustainability Report (Japanese Only) (https://frlb.f.msgs.jp/webapp/form/25459_frlb_1/index.do)	> Contact Us (https://www.jfe-holdings.co.jp/en/contact.html)
2-4	Restatements of information	> Environmental Data (P.255) > Social Data (P.273)	—
2-5	External assurance	> Independent Assurance Statement (P.283)	—
2. Activities and workers			
2-6	Activities, value chain and other business relationships	> Policy Engagement (P.90) > JFE Group Value Chain (P.29)	JFE GROUP REPORT (Integrated Report): P.48-50
2-7	Employees	> Social Data (P.273)	JFE GROUP REPORT (Integrated Report): P.92
2-8	Workers who are not employees	—	—
3. Governance			
2-9	Governance structure and composition	> Corporate Governance (P.232) > Social Data (P.273)	—
2-10	Nomination and selection of the highest governance body	> Corporate Governance (P.232)	JFE GROUP REPORT (Integrated Report): P.78-80
2-11	Chair of the highest governance body	—	Corporate Governance Report: P.18

Disclosure		Pages	
		Sustainability report	Other
2-12	Role of the highest governance body in overseeing the management of impacts	> Sustainability Management (P.10) > Environmental Management (P.46) > Human Rights (P.200) > Risk Management (P.251)	Securities Report: P.27-38
2-13	Delegation of responsibility for managing impacts	> Sustainability Management (P.10)	—
2-14	Role of the highest governance body in sustainability reporting	> Sustainability Management (P.10)	—
2-15	Conflicts of interest	> Corporate Governance (P.232)	Corporate Governance Report: P.3
2-16	Communication of critical concerns	> Compliance (P.246)	—
2-17	Collective knowledge of the highest governance body	—	—
2-18	Evaluation of the performance of the highest governance body	> Corporate Governance (P.232)	—
2-19	Remuneration policies	> Corporate Governance (P.232)	JFE GROUP REPORT (Integrated Report): P.83
2-20	Process to determine remuneration	—	JFE GROUP REPORT (Integrated Report): P.83-84
2-21	Annual total compensation ratio	—	—
4. Strategy, policies and practices			
2-22	Statement on sustainable development strategy	> Message from the CEO (P.1)	JFE GROUP REPORT (Integrated Report): P.8-15
2-23	Policy commitments	> Human Rights (P.200)	JFE GROUP REPORT (Integrated Report): P.88-89
2-24	Embedding policy commitments	> Supply Chain Management (P.220) > Environmental Management (P.46) > Human Rights (P.200) > Compliance (P.246) > Corporate Governance (P.232) > Risk Management (P.251)	—
2-25	Processes to remediate negative impacts	> Human Rights (P.200) > Compliance (P.246)	—
2-26	Mechanisms for seeking advice and raising concerns	—	—
2-27	Compliance with laws and regulations	> Environmental Management (P.46) > Compliance (P.246)	—
2-28	Membership associations	> Policy Engagement (P.90)	—
5. Stakeholder engagement			
2-29	Approach to stakeholder engagement	> Sustainability Management (P.10)	—
2-30	Collective bargaining agreements	> Human Rights (P.200)	—

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GRI 3: Material Topics 2021

Disclosure		Pages	
		Sustainability report	Other
2. Disclosures on material topics			
3-1	Process to determine material topics	> Sustainability Management (P.10)	—
3-2	List of material topics	> Sustainability Management (P.10)	—
3-3	Management of material topics	> Sustainability Management (P.10) > Supply Chain Management (P.220) > Environmental Management (P.46) > Initiatives to Address Climate Change Issues (P.53) > Scenario Analysis in Line with the TCFD Recommendations (P.113) > Initiatives to Transition to a Circular Economy (P.124) > Biodiversity Conservation and Nature Positive (P.151) > Providing Quality Products and Enhancing Customer Satisfaction (P.214) > Occupational Health and Safety (P.191) > Promoting Diversity, Equity and Inclusion (DEI) (P.180) > Promoting Talent Acquisition and Development (P.178) > Improving Work Engagement (P.185)	—

GRI 200: Economic topics

Disclosure		Pages	
		Sustainability report	Other
GRI 201: Economic Performance 2016			
201-1	Direct economic value generated and distributed	> Environmental Management (P.46) > Community (P.222)	Securities Report: P.2-3,13,76,131
201-2	Financial implications and other risks and opportunities due to climate change	> Scenario Analysis in Line with the TCFD Recommendations (P.113) > Environmental Management (P.46)	—
201-3	Defined benefit plan obligations and other retirement plans	—	Securities Report: P.145
201-4	Financial assistance received from government	—	—
GRI 202: Market Presence 2016			
202-1	Ratios of standard entry level wage by gender compared to local minimum wage	—	—
202-2	Proportion of senior management hired from the local community	—	—

Disclosure		Pages	
		Sustainability report	Other
GRI 203: Indirect Economic Impacts 2016			
203-1	Infrastructure investments and services supported	> Environmental Management (P.46) > Community (P.222)	—
203-2	Significant indirect economic impacts	> Message from the CEO (P.1) > JFE Group Value Chain (P.38) > Sustainability Management (P.10) > Initiatives to Address Climate Change Issues (P.53)	—
GRI 204: Procurement Practices 2016			
204-1	Proportion of spending on local suppliers	—	—
GRI 205: Anti-corruption 2016			
205-1	Operations assessed for risks related to corruption	—	—
205-2	Communication and training about anti-corruption policies and procedures	> Compliance (P.246)	—
205-3	Confirmed incidents of corruption and actions taken	> Compliance (P.246)	—
GRI 206: Anti-competitive Behavior 2016			
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	—	—
GRI 207: Tax 2019			
207-1	Approach to tax	> Compliance (P.246)	—
207-2	Tax governance, control, and risk management	—	—
207-3	Stakeholder engagement and management of concerns related to tax	—	—
207-4	Country-by-country reporting	—	—

GRI 300: Environmental topics

Disclosure		Pages	
		Sustainability report	Other
GRI 301: Materials2016			
301-1	Materials used by weight or volume	> Environmental Data (P.255)	—
301-2	Recycled input materials used	> Initiatives to Transition to a Circular Economy (P.124) > Environmental Data (P.255)	—
301-3	Reclaimed products and their packaging materials	> Initiatives to Transition to a Circular Economy (P.124) > Environmental Data (P.255)	—

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Disclosure		Pages	
		Sustainability report	Other
GRI 302: Energy 2016			
302-1	Energy consumption within the organization	> Initiatives to Address Climate Change Issues (P.53) > Environmental Data (P.255)	—
302-2	Energy consumption outside of the organization	—	—
302-3	Energy intensity	> Initiatives to Address Climate Change Issues (P.53) > Environmental Data (P.255)	—
302-4	Reduction of energy consumption	> Initiatives to Address Climate Change Issues (P.53) > Environmental Data (P.255)	—
302-5	Reductions in energy requirements of products and services	> Policy Engagement (P.90)	—
GRI 303: Water and Effluents 2018			
303-1	Interactions with water as a shared resource	> Biodiversity Conservation and Nature Positive (P.151)	—
303-2	Management of water discharge-related impacts	> Initiatives to Transition to a Circular Economy (P.124) > Environmental Data (P.255)	—
303-3	Water withdrawal	> Biodiversity Conservation and Nature Positive (P.151) > Environmental Data (P.255)	—
303-4	Water discharge	> Environmental Data (P.255)	—
303-5	Water consumption	> Biodiversity Conservation and Nature Positive (P.151) > Environmental Data (P.255)	—
GRI 304: Biodiversity 2016			
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	—	—
304-2	Significant impacts of activities, products, and services on biodiversity	> Biodiversity Conservation and Nature Positive (P.151)	—
304-3	Habitats protected or restored	> Biodiversity Conservation and Nature Positive (P.151)	—
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	—	—
GRI 305: Emissions 2016			
305-1	Direct (Scope 1) GHG emissions	> Initiatives to Address Climate Change Issues (P.53) > Environmental Data (P.255)	—
305-2	Energy indirect (Scope 2) GHG emissions	> Initiatives to Address Climate Change Issues (P.53) > Environmental Data (P.255)	—
305-3	Other indirect (Scope 3) GHG emissions	> Initiatives to Address Climate Change Issues (P.53) > Environmental Data (P.255)	—

Disclosure		Pages	
		Sustainability report	Other
305-4	GHG emissions intensity	> Initiatives to Address Climate Change Issues (P.53) > Environmental Data (P.255)	—
305-5	Reduction of GHG emissions	> Initiatives to Address Climate Change Issues (P.53) > Environmental Data (P.255)	—
305-6	Emissions of ozone-depleting substances (ODS)	—	—
305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	> Environmental Management (P.46) > Environmental Data (P.255)	—
GRI 306: Waste 2020			
306-1	Waste generation and significant waste-related impacts	> Environmental Data (P.255)	—
306-2	Management of significant waste-related impacts	> Initiatives to Transition to a Circular Economy (P.124) > Environmental Data (P.255)	—
306-3	Waste generated	> Initiatives to Transition to a Circular Economy (P.124) > Environmental Data (P.255)	—
306-4	Waste diverted from disposal	> Initiatives to Transition to a Circular Economy (P.124) > Environmental Data (P.255)	—
306-5	Waste directed to disposal	> Initiatives to Transition to a Circular Economy (P.124) > Environmental Data (P.255)	—
GRI 308: Supplier Environmental Assessment 2016			
308-1	New suppliers that were screened using environmental criteria	—	—
308-2	Negative environmental impacts in the supply chain and actions taken	—	—

GRI 400: Social topics

Disclosure		Pages	
		Sustainability report	Other
GRI 401: Employment 2016			
401-1	New employee hires and employee turnover	> Promoting Diversity, Equity and Inclusion (DEI) (P.180) > Social Data (P.273)	—
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	—	—
401-3	Parental leave	> Social Data (P.273)	—

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Disclosure		Pages	
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GRI 402: Labor/Management Relations 2016			
402-1	Minimum notice periods regarding operational changes	—	—
GRI 403: Occupational Health and Safety 2018			
403-1	Occupational health and safety management system	> Occupational Health and Safety (P.191)	—
403-2	Hazard identification, risk assessment, and incident investigation	> Occupational Health and Safety (P.191)	—
403-3	Occupational health services	> Occupational Health and Safety (P.191)	—
403-4	Worker participation, consultation, and communication on occupational health and safety	> Occupational Health and Safety (P.191)	—
403-5	Worker training on occupational health and safety	> Occupational Health and Safety (P.191)	—
403-6	Promotion of worker health	> Occupational Health and Safety (P.191)	—
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	> Occupational Health and Safety (P.191)	—
403-8	Workers covered by an occupational health and safety management system	—	—
403-9	Work-related injuries	> Social Data (P.273)	—
403-10	Work-related ill health	> Occupational Health and Safety (P.191)	—
GRI 404: Training and Education 2016			
404-1	Average hours of training per year per employee	> FY2024 KPI Results (P.19)	—
404-2	Programs for upgrading employee skills and transition assistance programs	> Promoting Talent Acquisition and Development (P.178)	—
404-3	Percentage of employees receiving regular performance and career development reviews	—	—
GRI 405: Diversity and Equal Opportunity2016			
405-1	Diversity of governance bodies and employees	> Promoting Diversity, Equity and Inclusion (DEI) (P.180)	—
405-2	Ratio of basic salary and remuneration of women to men	—	—
GRI 406: Non-discrimination 2016			
406-1	Incidents of discrimination and corrective actions taken	—	—
GRI 407: Freedom of Association and Collective Bargaining 2016			
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	—	—

Disclosure		Pages	
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GRI 408: Child Labor 2016			
408-1	Operations and suppliers at significant risk for incidents of child labor	—	—
GRI 409: Forced or Compulsory Labor 2016			
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	—	—
GRI 410: Security Practices 2016			
410-1	Security personnel trained in human rights policies or procedures	—	—
GRI 411: Rights of Indigenous Peoples 2016			
411-1	Incidents of violations involving rights of indigenous peoples	—	—
GRI 413: Local Communities 2016			
413-1	Operations with local community engagement, impact assessments, and development programs	> Community (P.222)	—
413-2	Operations with significant actual and potential negative impacts on local communities	Not applicable	—
GRI 414: Supplier Social Assessment 2016			
414-1	New suppliers that were screened using social criteria	—	—
414-2	Negative social impacts in the supply chain and actions taken	> JFE Group Value Chain (P.29)	—
GRI 415: Public Policy 2016			
415-1	Political contributions	—	—
GRI 416: Customer Health and Safety 2016			
416-1	Assessment of the health and safety impacts of product and service categories	> Providing Quality Products and Enhancing Customer Satisfaction (P.214)	—
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	—	—
GRI 417: Marketing and Labeling 2016			
417-1	Requirements for product and service information and labeling	—	—
417-2	Incidents of non-compliance concerning product and service information and labeling	Not applicable	—
417-3	Incidents of non-compliance concerning marketing communications	—	—
GRI 418: Customer Privacy 2016			
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	—	—

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Chapter 1: Basic Information of Environmental Reporting	
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(1) Boundary	> Editorial Policy (P.294)
(2) Reporting period	> Editorial Policy (P.294)
(3) Reporting standards and guidelines	> Editorial Policy (P.294) > Guidelines Content Index (P.297)
(4) Overview of the environmental report	> Editorial Policy (P.294)
2. Trends in key performance indicators	
(1) Trends in major performance indicators	> Material Issues of Corporate Management (P.13)

Chapter 2: Items to Be Included in Environmental Reporting	
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1. Top Management Commitments	
(1) Top management commitments to the JFE Group's response to material environmental issues	> Message from the CEO (P.1)
2. Governance	
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(2) Manager responsible for material environmental issues	> Environmental Management (P.46) > Scenario Analysis in Line with the TCFD Recommendations (P.113)
(3) Roles of the board of directors and board of executive officers in the management of material environmental issues	> Environmental Management (P.46) > Scenario Analysis in Line with the TCFD Recommendations (P.113)
3. Stakeholder Engagement	
(1) Corporate policies to stakeholders	> Environmental Management (P.46)
(2) Overview of stakeholder engagement activities conducted in the reporting period	> JFE Group Value Chain (P.29) > Stakeholder Engagement (P.38)
4. Risk Management	
(1) Environment-related risk identification, assessment, and management processes	> Sustainability Management (P.10) > Scenario Analysis in Line with the TCFD Recommendations (P.113) > Human Rights (P.200) > Risk Management (P.251)
(2) Positioning of the above processes in the JFE Group's overall risk management	> Sustainability Management (P.10) > Risk Management (P.251)
5. Business Model	
(1) JFE Group business model	> JFE Group Value Chain (P.29) JFE GROUP REPORT (Integrated Report): P.50
6. Value Chain Management	
(1) Value chain overview	> JFE Group Value Chain (P.29)
(2) Green procurement policy, objectives, and results	> Supply Chain Management (P.220)
(3) Status of eco-friendly products and services	—

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7. Long-term Vision	
(1) Long-term vision	> Message from the CEO (P.1) > Initiatives to Address Climate Change Issues (P.53) > Scenario Analysis in Line with the TCFD Recommendations (P.113)
(2) Time period covered by the long-term vision	> Message from the CEO (P.1) > Initiatives to Address Climate Change Issues (P.53) > ScScenario Analysis in Line with the TCFD Recommendations (P.113)
(3) Reasons why that time period was selected	> Scenario Analysis in Line with the TCFD Recommendations (P.113)
8. Strategy	
(1) JFE Group business strategy for contributing to the achievement of a sustainable society	> Message from the CEO (P.1) > Material Issues of Corporate Management (P.13) > Scenario Analysis in Line with the TCFD Recommendations (P.113) > Policy Engagement (P.90)
9. Methodology for Identifying Material Environmental Issues	
(1) Procedure by which the JFE Group identified its material environmental issues	> Material Issues of Corporate Management (P.13) > Scenario Analysis in Line with the TCFD Recommendations (P.113)
(2) List of identified material environmental issues	> Material Issues of Corporate Management (P.13) > Scenario Analysis in Line with the TCFD Recommendations (P.113)
(3) Reasons that the identified environmental issues were judged material	> Material Issues of Corporate Management (P.13) > Scenario Analysis in Line with the TCFD Recommendations (P.113)
(4) Boundaries of the material environmental issues	> JFE Group Value Chain (P.29) > Material Issues of Corporate Management (P.13) > Scenario Analysis in Line with the TCFD Recommendations (P.113)
10. JFE Group Material Environmental Issues	
(1) Policies and/or action plans	> Compliance (P.246) > JFE Group Value Chain (P.29) > Material Issues of Corporate Management (P.13) > Initiatives to Address Climate Change Issues (P.53) > Scenario Analysis in Line with the TCFD Recommendations (P.113)
(2) Targets and results of policies/action plans based on performance indicators	> Material Issues of Corporate Management (P.13) > Stakeholder Engagement (P.38)
(3) Methodologies used for calculating each performance indicator	> Material Issues of Corporate Management (P.13)
(4) Aggregation scope of data for each performance indicator	> Material Issues of Corporate Management (P.13) > Editorial Policy (P.294)
(5) Financial impact of risks and opportunities, and calculation methodologies if the financial impact is significant	> Environmental Management (P.46) > Scenario Analysis in Line with the TCFD Recommendations (P.113) > Environmental Data (P.255)
(6) Assurance report by an independent third party	> Independent Assurance Statement (P.283)

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Reference: Major Environmental Issues and Their Performance Indicators	
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(1) Scope 1 emissions	> Initiatives to Address Climate Change Issues (P.53) > Environmental Data (P.255)
(2) Scope 2 emissions	> Initiatives to Address Climate Change Issues (P.53) > Environmental Data (P.255)
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Emission Intensity	
(1) Greenhouse gas emission intensity	> Initiatives to Address Climate Change Issues (P.53) > Environmental Data (P.255)
Energy Usage	
(1) Breakdown of energy usage and overall energy usage	> Initiatives to Address Climate Change Issues (P.53) > Environmental Data (P.255)
(2) Renewable energy usage as a percentage of overall energy usage	—
2. Water Resources	
(1) Water resource inputs	> Initiatives to Transition to a Circular Economy (P.124) > Environmental Data (P.255)
(2) Water intensity	—
(3) Water discharge	> Environmental Data (P.255)
(4) Status of water stress, if the entity has sites or supply chains located in areas with water stress	> Biodiversity Conservation and Nature Positive (P.151)
3. Biodiversity	
(1) Impact of business activities on biodiversity	> Biodiversity Conservation and Nature Positive (P.151)
(2) Status and extent of the dependency of the JFE Group's business activities on biodiversity	> Biodiversity Conservation and Nature Positive (P.151)
(3) Business activities that contribute to biodiversity conservation	> Biodiversity Conservation and Nature Positive (P.151)
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4. Resource Circulation	
Resource Inputs	
(1) Volume of nonrenewable resource inputs	> Environmental Data (P.255)
(2) Volume of renewable resource inputs	> Environmental Data (P.255)
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(4) Rate of recycled and reused resources (= volume of recycled materials used/volume of resource inputs)	> Initiatives to Transition to a Circular Economy (P.124) > Environmental Data (P.255)

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Resource Waste	
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(1) Volume of chemical substances in storage	—
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(3) Volume of chemical substances transferred	> Environmental Data (P.255)
(4) Volume of chemical substances handled (volume used)	—
6. Pollution Prevention	
General	
(1) Status of legal compliance	> Environmental Management (P.46)
Air quality conservation	
(1) Air-pollutant emissions volume, emission concentration in air pollution regulations	> Environmental Management (P.46) > Environmental Data (P.255)
Water pollution	
(1) Water pollution load, emission concentration in emissions regulations	> Biodiversity Conservation and Nature Positive (P.151) > Environmental Data (P.255)
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(1) Status of soil pollution	> Environmental Management (P.46) > Biodiversity Conservation and Nature Positive (P.151)

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Recommended Disclosures	Overview of TCFD Recommendations	Contents
Governance Disclose the organization's governance around climaterelated risks and opportunities.	a. Describe the board's oversight of climate-related risks and opportunities	> Corporate Governance (P.232) > Risk Management (P.251) > Initiatives to Address Climate Change Issues(Governance) (P.55)
	b. Describe management's role in assessing and managing climate-related risks and opportunities	
Strategy Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy and financial planning where such information is material.	a. Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	> JFE Group Long-term Vision "JFE Vision 2035" and Eighth Medium-Term Business Plan (P.25) > JFE Group Value Chain (P.29) > Initiatives to Address Climate Change Issues (JFE Environmental Vision for 2050) (P.54) > Initiatives to Address Climate Change Issues (JFE Group's Climate Change Strategy) (P.57) > Scenario Analysis in Line with the TCFD Recommendations (P.113)
	b. Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	
	c. Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	
Risk Management Disclose how the organization identifies, assesses, and manages climate-related risks.	a. Describe the organization's processes for identifying and assessing climate-related risks	> Risk Management (P.251) > Environmental Management (P.46) > Initiatives to Address Climate Change Issues(Risk Management) (P.56)
	b. Describe the organization's processes for managing climate-related risks	
	c. Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management	
Metrics and Targets Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities.	a. Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	> JFE Group Long-term Vision "JFE Vision 2035" and Eighth Medium-Term Business Plan (P.25) > Material Issues of Corporate Management (P.13) > Initiatives to Address Climate Change Issues (Metrics and Targets) (P.59, 73)
	b. Disclose Scopes 1 and 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and related risks	> Initiatives to Address Climate Change Issues (Metrics and Targets) (P.59, 73) > Environmental Data (P.255)
	c. Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	> Material Issues of Corporate Management (P.13) > Initiatives to Address Climate Change Issuess(JFE Environmental Vision for 2050) (P.54) > Initiatives to Address Climate Change Issues (Metrics and Targets) (P.59, 73)