

# JFE Group's Value Creation

The JFE Group has contributed to the development of industry and society through the provision of products and services based on steel. In this section, we introduce the value creation story of the JFE Group throughout our current position and future aims.

- 17 The Value of Steel
- 19 Market Trends and Business Risks and Opportunities
- 21 Material Issues of Corporate Management
- 23 Material Issues of Corporate Management and KPIs
- 27 Process of Value Creation
- 29 Business Model (Steel Business and Trading Business)
- 31 Business Model (Engineering Business)



JFE Steel

## Contribution to Society with Steel

Steel has played a key role, spanning the centuries, as a basic material that broadly supports society. It will continue to be an essential material. Through steel, JFE Steel is in a position to contribute to society, meeting the various needs of people while prioritizing safety, reliability, and consideration for the global environment.

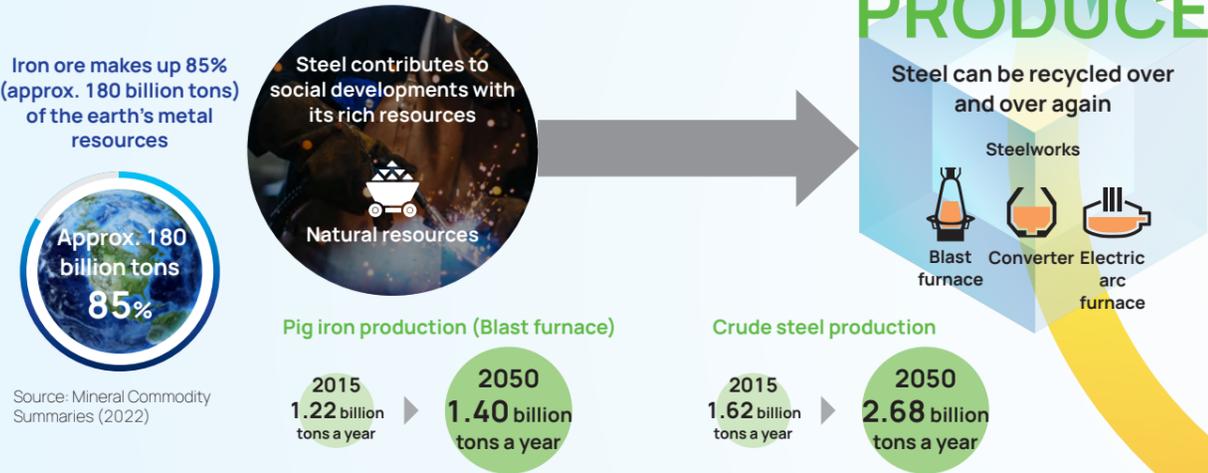
## The Value of Steel

# Steel supports safe and comfortable lives for an abundant world in the future

### Steel's Life Cycle Assessment (LCA)

Steel establishes a highly sophisticated value chain of Produce-Use-Recycle thanks to its excellent recyclability, and is reborn as anything over and over again. Therefore, it is important to evaluate steel's environmental impact by encompassing the entire life cycle including recycling. JFE Steel participated in the initiative to quantify the life cycle environmental impact of steel products, which is led by the Japan Iron and Steel Federation, as one of the core members, and developed an ISO/JIS Standard\*1 for the calculation. The results provided through the use of this standard have shown that the more superior the recyclability of material is, the less environmental impact such as global warming becomes. In Japan, there are 15 blast furnace and electric arc furnace steelmakers, including JFE Steel, that compile and disclose\*2 average data for life cycle inventory (LCI) for each steel product.

\*1 ISO 20915: Life Cycle Inventory Calculation Methodology for Steel Products (2018.11)  
 \*2 https://www.jisf.or.jp/en/activity/lca/data/index.html



Iron ore makes up 85% (approx. 180 billion tons) of the earth's metal resources



Source: Mineral Commodity Summaries (2022)

Steel contributes to social developments with its rich resources



Pig iron production (Blast furnace)



Crude steel production



### High economic efficiency and low environmental impact

Steel can be reliably produced in large volumes to support our lives and society. Steel is also an environmentally friendly material, emitting far less CO<sub>2</sub> than other materials during production. Steel is an essential material for the safe and comfortable lives of people, and it is key to the sustainable development of society.

#### Mass production at low cost

Steel is a material with rich reserves and a long history of development. It can be stably mass produced at a reasonable price, contributing to the sustainable development of society.

#### Global demand (2020) Price\*



#### Extremely low environmental impact at the manufacturing stage when compared to other materials

The functional equivalent of greenhouse gas (GHG) emissions of steel at the manufacturing stage is 1/4 to 1/5 of that of aluminum and carbon fiber.

#### GHG emissions during material production (CO<sub>2</sub> equivalent) (kg-CO<sub>2</sub>/kg)



Source: World Auto Steel data

#### Japan's steel industry keeps the top energy efficiency in the world

The Japanese steel industry (converter furnace steel) produces steel with the lowest environmental impact when compared to other major countries in the world as a result of its longstanding efforts toward environmental conservation, including developing and spreading the use of energy-saving technologies.

#### The world's quotient, with Japan as 100 (2019)



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

### Excellent recyclability

Steel is a material with excellent recyclability, such as its property enabling magnetic separation and retrieval. Even after a final product made of steel ends its life in society, it is reborn over and over again into a high-quality, high-functional product through highly efficient separation and retrieval technologies, thereby reducing environmental load throughout its life cycle.

#### Closed-loop recycling of steel

Steel can be recycled many times as the raw material of products made in the same steel material while maintaining the original properties of the iron material itself. Closed-loop recycling is superior to open-loop recycling\* that recycles other materials in terms of sustainability. This is due to the fact that it is designed to reduce the amount of natural resources being newly introduced, moreover reduce the discharge of environmentally hazardous substances, and reduce waste.



\* A limited form of material recycling that involves application of the heat generated from the incineration of materials as well as recycling where the material may deteriorate or change in quality.

Steel can be reborn as anything over and over again



#### Steel stock



#### Demand for steel



Contributing to sustainable development of our lives and economy by the world's best energy-saving and environmental technologies

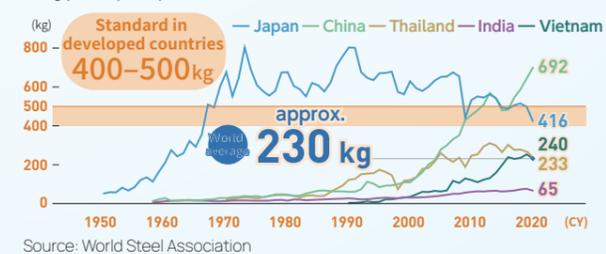
### Foundation for life and society

In our lives, steel helps reduce our burden on the environment. For example, by using high-tensile steel (thinned-down steel sheets that keep their strength) in automobiles, automobile weight can be substantially reduced without sacrificing passenger safety during vehicle collisions, thereby contributing to lower CO<sub>2</sub> emissions in society as a whole.

#### The potential to grow on a global level

The world average of the annual consumption of steel currently stands at approximately 230 kg per capita. Going forward, 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 per capita, year)

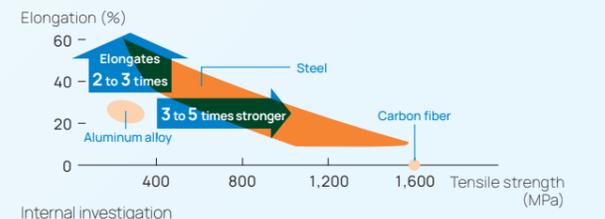


Source: World Steel Association

#### Potential for evolution

Steel can be elongated two to three times more than aluminum at the same strength, and is three to five times stronger at the same extended rate, making it the optimal material for the world-class structures of the times, such as Tokyo Skytree. Steel still has considerable potential for evolution. The emerging needs of society will make steel evolve, and contribute to a productive future.

#### Comparison of strength and elongation between steel, aluminum, and carbon fiber



Internal investigation

# Market Trends and Business Risks and Opportunities



## Market Trends

### Steel Business and Trading Business

Global demand for steel is likely to steadily increase over the long term amid economic growth in emerging countries, centered on Asia. Over the long term, we believe steel will retain its advantages over other materials, such as its overwhelming scale of production capacity, high economic viability, low environmental burden, and high processability.

With a falling birthrate and aging population shrinking the market in Japan, and depending on global economic conditions, demand for steel in Japan and other countries could have an impact on the JFE Group's steel sales volume and prices. In overseas markets, competition could intensify as a result of structural changes, such as higher exports from China as domestic demand weakens, and expansion in steel production capacity in emerging countries.

In response to such changes in the external environment, JFE is taking the following measures.

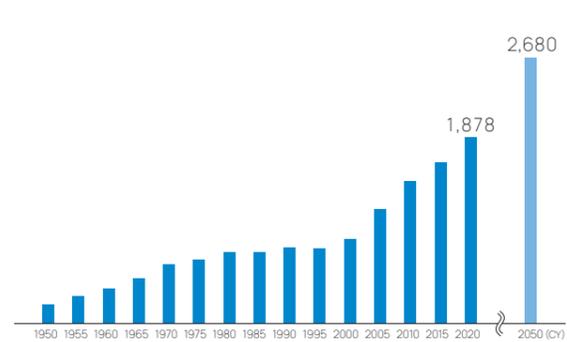
#### Steel business

- 1) Optimize production volume in tandem with changes in supply-demand balance for steel in Japan and overseas
- 2) Build an optimal production structure by retiring and consolidating facilities
- 3) Enhance cost competitiveness through strategic investments
- 4) Increase sales ratio of technologically advanced products
- 5) Produce steel locally by investing in overseas steelmakers and a vertically integrated structure overseas

#### Trading business

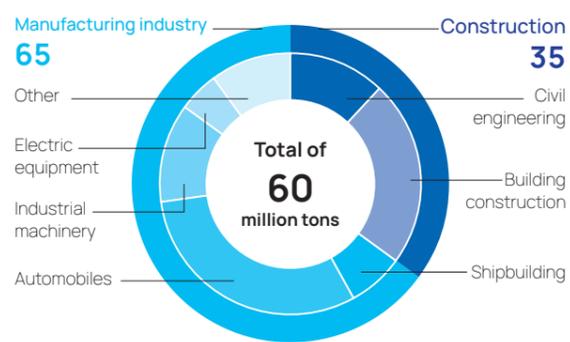
- 1) Strengthen sales capabilities in Japan through a restructuring of distribution functions, upgrade processing equipment
- 2) Strengthen distribution and processing functions in our four-pronged global structure
- 3) Increase sales of JFE Steel's products in high-value-added fields
- 4) Use JFE Group materials (including alliance partners) and products of other suppliers overseas

Global crude steel output (millions of tons)



Source: World Steel Association (actual), Japan Iron and Steel Federation (estimates)

Consumption of steel in Japan (%)



### Engineering Business

Public works infrastructure accounts for a majority of the engineering business portfolio, and in recent years domestic demand has been brisk for the upgrading of environmental plants, bridges, and other core infrastructure. There is considerable potential demand for moving public services from the government to the private sector, owing to aging lifestyle infrastructure, worker shortages, and insufficient financial resources in Japan. We are expanding the operation & maintenance business by establishing new regional power utilities in collaboration with local governments, which we have been doing for a while, and we also established an integrated utility company for gas, water, and wastewater services, a first in Japan.

Regarding private-sector demand, initiatives are gaining momentum to reduce greenhouse gas emissions after the national government declared its goal of becoming carbon

neutral by 2050. In light of changes in society, in 2021 we decided to invest in a new plant to manufacture foundational structures attached to the seabed (monopiles) for offshore wind power generation, and are preparing to commence production in April 2024. To address the needs of companies for recycling, we are participating in the PET bottle recycling business and expanding bases in the food recycling business.

The JFE Group aims to forge a corporate structure where earnings are less affected by whether orders are received for public works projects that depend on the aims and policies of the national and local governments. We aim to build a stable business foundation while addressing the changing needs of society, such as by expanding our operation & maintenance business, such as the recycling business.



## Major Risks and Opportunities for the JFE Group

Major changes in external environment	Risks	Opportunities
<b>Climate change problem</b> Special Feature: The JFE Group Challenge (1) ▶ Advancing the Commercialization of the Wind Power Generation Business P.51 Special Feature: The JFE Group Challenge (2) ▶ Contributions to Resolving Climate Change P.55 ▶ Information Disclosure Based on the TCFD Recommendations P.57	<ul style="list-style-type: none"> <li>• Sharply growing needs for decarbonization of (blast furnace) steelmaking process</li> <li>• Higher burden of investments to introduce ultra-innovative technologies</li> <li>• Carbon tax</li> <li>• Disruptions to supply chains from natural disasters</li> <li>• Risk of flooding of bases due to rising sea level</li> <li>• Competition from other materials</li> <li>• Tougher environmental regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Development of ultra-innovative technologies and securing of competitive advantages</li> <li>• Contribution to reduction of CO<sub>2</sub> emissions by supplying high-performance steel, such as high-tensile steel and electrical steel</li> <li>• Expansion of electric arc furnace steelmaking and electric arc furnace engineering business</li> <li>• Stronger demand for renewable energy solutions</li> <li>• Stronger response to disasters caused by climate change</li> </ul>
<b>Resource and energy problems</b> ▶ Business Strategies P.41	<ul style="list-style-type: none"> <li>• Depletion of resources, harder to obtain raw materials and equipment, rising prices</li> <li>• Higher prices for scrap waste, harder to obtain materials, lower grade ores</li> <li>• Risk of depletion of water resources, risk of pollution at drainage sites</li> </ul>	<ul style="list-style-type: none"> <li>• Renewed attention on recyclability of steel</li> <li>• Expansion of logistics business and opportunities to use scrap</li> <li>• Stronger waste-to-resource demand (plastic recycling, power generation with food waste)</li> </ul>
<b>Falling birthrate and aging population in Japan</b> ▶ Human Capital P.61	<ul style="list-style-type: none"> <li>• Labor shortage</li> <li>• Disruptions of skill transfer to next generation</li> <li>• Weaker domestic demand for steel</li> <li>• Decrease in EPC orders and projects due to shrinking private-sector investment</li> </ul>	<ul style="list-style-type: none"> <li>• Secure talented personnel with work-style reforms</li> <li>• Introduce new technologies to reduce personnel and save labor (stronger needs for automation, remote monitoring)</li> </ul>
<b>Globalization of markets, development of emerging countries</b> ▶ Business Strategies P.41	<ul style="list-style-type: none"> <li>• Expansion of steel production capacity in emerging countries</li> <li>• Constraints on export transactions due to higher duties and import restrictions</li> <li>• Country risk, impact from higher commodity prices and foreign exchange fluctuations</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in demand for steel in growth markets</li> <li>• Greater use of high-value-added products</li> <li>• Increase in infrastructure projects in emerging countries</li> </ul>
<b>Aging of infrastructure facilities</b> ▶ Business Strategies P.41	<ul style="list-style-type: none"> <li>• Impact from accidents and larger damage from natural disasters due to aging infrastructure</li> <li>• Contraction in domestic public utilities business from transition to preventive maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• Stronger demand for infrastructure renewal, including reinforcement against natural disasters</li> <li>• Provision of high-quality products and services to meet demand for longer-living infrastructure</li> <li>• Business expansion from privatization of public services</li> </ul>
<b>Development of AI and IoT technologies</b> ▶ DX Strategy P.39	<ul style="list-style-type: none"> <li>• Information leaks and system damage due to cyberattacks and illicit use of systems</li> </ul>	<ul style="list-style-type: none"> <li>• Creation of new value added and expansion of service offerings with DX and AI</li> </ul>

# Material Issues of Corporate Management

## Material Issues of Corporate Management (Materiality)

The JFE Group has identified material issues and set key performance indicators (KPIs) to address these issues with the objective of maximizing the creation of social value and minimizing its negative impact on society as Group capital is deployed to satisfy the needs of diverse stakeholders. In 2016, we identified our material CSR issues. In fiscal 2021, based on

the Seventh Medium-term Business Plan, we embarked on a new initiative and identified material issues in corporate management by adding economic issues to our existing CSR issues. We will demonstrate the Group's vision of "contributing to society with the world's most innovative technology" by working to address these issues.

### Process for identifying material issues

#### FY2016: Identifying material CSR issues

- Discuss issues at Groupwide meetings
- Prioritize issues based on stakeholder expectations and business relevance (impact on society)

#### FY2021: Identifying material issues of corporate management

##### STEP 1 Reevaluate existing material CSR issues

The material CSR issues were reassessed for their importance in terms of relating to current operations, stakeholder expectations, and achievement of KPIs.

##### STEP 2 Set material economic issues

Identify issues from an economic viewpoint based on sources of competitive advantages in the Seventh Medium-term Business Plan and the JFE Group's business model.

##### STEP 3 Select 20 material issue candidates

Economic-related issues were added to the list of reassessed material CSR issues and deliberated by the Group Management Strategy Committee, screening out 20 material issue candidates.

##### STEP 4 Identify the 13 most important material issues

The Group Management Strategy Committee and the Board of Directors discussed the candidates, and identified 13 material issues as the most important for the JFE Group

The JFE Group has set and worked toward achieving KPIs for the identified material issues. In fiscal 2021, we evaluated the results in the previous fiscal year, revised KPIs based on these results and the opinions of stakeholders, and undertook fresh initiatives to address issues. The fiscal 2021 KPIs for material

issues of corporate management were deliberated and evaluated, and fiscal 2022 KPIs were set following examination by operating companies, discussion at management meetings, and deliberations by the Group Management Strategy Committee and the Board of Directors.

## CSR Initiatives and Promotion Structure

The JFE Group, aware of its responsibility as a corporation and member of society, believes that fulfilling its CSR to build a better society is a central tenant of its management principles.

Chaired by the president of JFE Holdings, the JFE Group CSR Council has been established as an organization for supervising and guiding Groupwide CSR initiatives. Various committees are set up under the JFE Group CSR Council to deliberate Group policy, assess the state of policies, share information about issues, problems that arose, and examples of how they were addressed, supervising and guiding the Group's CSR initiatives. Moreover, of the matters discussed by the JFE Group CSR Council, the Group's basic policy, action plans, details of important measures, and responses to critical events are periodically reported to and deliberated by the Board of Directors, which gives directions and supervision. Each operating company sets up their own councils to coordinate with the JFE Group CSR Council, working together Groupwide to improve and prevent deterioration in the JFE Group's corporate value.

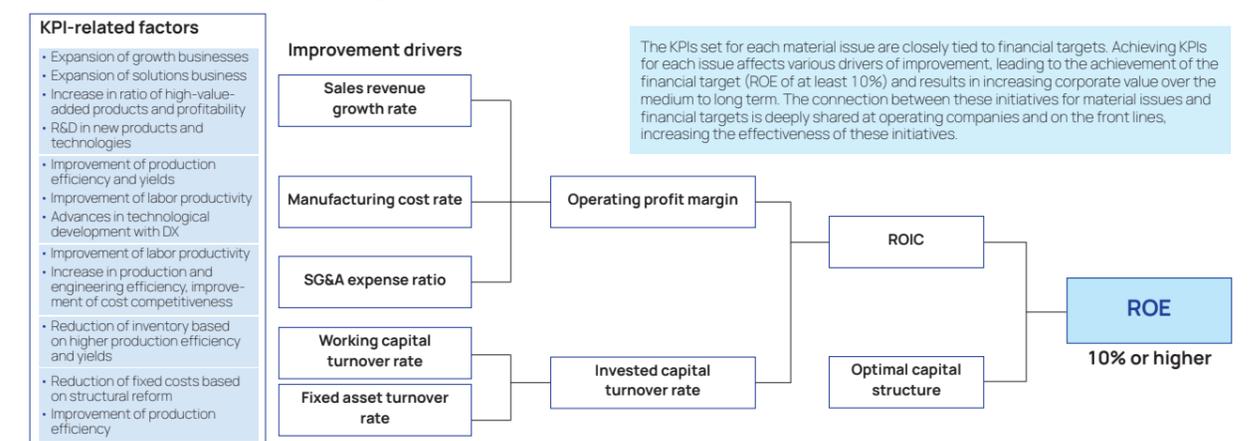
### CSR Promotion Structure



	Areas of Focus	Details	Material Issues	Relevant SDGs
Activity	Contribute to resolving climate change issues (initiatives for achieving carbon neutrality by 2050) → P.55	<ul style="list-style-type: none"> <li>● Initiatives for achieving carbon neutrality by 2050</li> <li>• Reduce the JFE Group's CO<sub>2</sub> emissions</li> <li>• Contribute to reduction of CO<sub>2</sub> emissions in society</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce the JFE Group's CO<sub>2</sub> emissions</li> <li>• Contribute to reduction of CO<sub>2</sub> emissions across the society</li> </ul>	
	Ensure occupational safety and health → P.63	<ul style="list-style-type: none"> <li>● Prioritize safety first</li> <li>● Maintain the physical and mental health of employees and their families</li> </ul>	<ul style="list-style-type: none"> <li>• Prevent workplace accidents</li> <li>• Ensure the health of employees and their families</li> </ul>	
	Recruit and nurture diverse human resources → P.61	<ul style="list-style-type: none"> <li>● Maintain work environments where all personnel can maximize their abilities</li> <li>● Accumulate and hand down technologies and skills</li> </ul>	<ul style="list-style-type: none"> <li>• Pursue diversity and inclusion</li> <li>• Strengthen human resources development</li> <li>• Create workplaces that motivate employees</li> </ul>	
	Reinforce resilience of production and engineering capabilities (realize world-class earnings power through DX and other measures)	<ul style="list-style-type: none"> <li>● Pursue world-class earnings power</li> <li>● Promote DX and other measures to improve production efficiency, yields, and labor productivity</li> <li>• Shift focus of steel business from quantity to quality (structural reform)</li> <li>• Reduce costs to strengthen cost competitiveness and ensure quality competitiveness</li> </ul>	<ul style="list-style-type: none"> <li>• Increase efficiency and enhance cost competitiveness in production and engineering</li> <li>• Raise quality of products and services and ensure reliable supply</li> </ul>	
	Strengthen competitiveness of products and services (promote the growth strategy by providing high-value-added solutions)	<ul style="list-style-type: none"> <li>● Improve margins and ensure stable earnings power</li> <li>• Increase ratio of high-value-added products and services</li> <li>• Ensure stable earnings power based on the sales strategy, including technological solutions and expansion of growth businesses</li> </ul>	<ul style="list-style-type: none"> <li>• Expand business by increasing value added in products and services with advanced technologies</li> <li>• Sales strategies for realizing sustainable growth</li> </ul>	
Basis of activity	Thoroughly enforce compliance → P.82		<ul style="list-style-type: none"> <li>• Ensure adherence to corporate ethical standards and compliance</li> </ul>	
	Respect human rights → P.85		<ul style="list-style-type: none"> <li>• Respect human rights across the supply chain</li> </ul>	

Please see page 23 for KPIs for each priority issue.

### Improvement in ROE by achieving KPIs



# Material Issues of Corporate Management and KPIs

The JFE Group has set key performance indicators (KPIs) for its initiatives to address priority issues, and worked toward achieving its targets. In fiscal 2021, the Company revised its material CSR issues, adding economic material issues to the list, and defined key issues for management. As a unified Group, we aim to contribute to the realization of sustainable growth for both the JFE Group and society as a whole by tackling these key issues for management.

■ Groupwide ■ JFE Steel ■ JFE Engineering ■ 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	Material Issues	Operating Company	FY2021 KPIs	Initiatives and Results for FY2021	Assessment	FY2022 KPIs	
Contribute to resolving climate change issues (initiatives for achieving carbon neutrality by 2050)	Reduce the JFE Group's CO <sub>2</sub> emissions	JFE Steel	<ul style="list-style-type: none"> <li>Formulate an investment plan for CO<sub>2</sub> reduction using new benchmarks for steadily achieving the target of reducing CO<sub>2</sub> emissions by 18% from FY2013 levels by the end of FY2024</li> <li>Achieve 35% of its CO<sub>2</sub> reduction target by energy conservation and technological development in FY2021</li> <li>Create a structure for promoting technological development with a focus on carbon-recycling blast furnaces toward achieving carbon neutrality by 2050</li> </ul>	<ul style="list-style-type: none"> <li>Completed formulation of the investment plan for achieving the CO<sub>2</sub> reduction targets for FY2024 by utilizing investment evaluation methods that incorporate contributions to CO<sub>2</sub> reductions in investment decisions for the first time</li> <li>Despite operating equipment capable of reducing emissions equivalent to 41% of the CO<sub>2</sub> reduction target from energy conservation and technological development, a delay in the realization of the effects of energy conservation and technological development meant that the actual result was 25%</li> <li>Created an efficient structure for promoting technological development by establishing four dedicated departments; in addition, established the Carbon Neutral Advancement Committee as a body to discuss and decide on significant issues in relation to carbon neutrality in a centralized manner</li> </ul>	△	<ul style="list-style-type: none"> <li>Achieve 50% of the CO<sub>2</sub> reduction target from energy conservation and technological development for the target of reducing CO<sub>2</sub> emissions by 18% from FY2013 levels by the end of FY2024</li> <li>Complete the approval of investment plans for reducing CO<sub>2</sub> emissions by 90% cumulatively for CO<sub>2</sub> reduction targets from energy conservation and technological development for the target of reducing CO<sub>2</sub> emissions by 18% from FY2013 levels by the end of FY2024</li> <li>Formulate a CO<sub>2</sub> reduction plan aimed at realizing the CO<sub>2</sub> reduction target for FY2030 (30% or more) with an eye on achieving carbon neutrality by 2050</li> </ul>	
		JFE Engineering	<ul style="list-style-type: none"> <li>Reduce CO<sub>2</sub> emissions in its own plants and offices</li> <li>FY2024: 40% reduction from FY2013 levels</li> </ul>	<ul style="list-style-type: none"> <li>Reduced CO<sub>2</sub> emissions by 34% through the installation of zero-emission power generation, etc. at the Yokohama head office (FY2013: 15,600 tons / FY2021: 10,300 tons)</li> <li>Steadily proceeded toward achieving the target for FY2024</li> </ul>	△	<ul style="list-style-type: none"> <li>Reduce CO<sub>2</sub> emissions in its own plants and offices</li> <li>FY2024: 40% reduction from FY2013 levels</li> </ul>	
		JFE Shoji	<ul style="list-style-type: none"> <li>Reduce CO<sub>2</sub> emissions through the procurement of electricity derived from renewable energy</li> <li>Reduce domestic CO<sub>2</sub> emissions by at least 20% from FY2019 levels by the end of FY2024 (Reduce by 5% per year from FY2019 levels from FY2021 to FY2024)</li> </ul>	<ul style="list-style-type: none"> <li>FY2021 CO<sub>2</sub> emissions of domestic operating companies: reduced by 10.7% from FY2019 levels</li> </ul>	○	<ul style="list-style-type: none"> <li>Reduce CO<sub>2</sub> emissions through the procurement of electricity derived from renewable energy</li> <li>FY2022 domestic CO<sub>2</sub> emissions: reduce by 10% from FY2019 levels (Reduce by 5% per year from FY2019 levels from FY2021 to FY2024)</li> </ul>	
	Contribute to reduction of CO <sub>2</sub> across the society	JFE Steel	<ul style="list-style-type: none"> <li>Launch sales and implement eco-friendly products and technologies*: at least 15 cases in FY2021 (the cumulative total of at least 60 cases for the period from FY2021 to FY2024)</li> <li>* Products and technologies that contribute to saving energy and resources, reduce waste and environmentally hazardous substances, and do not require hazardous substances for manufacturing or use.</li> </ul>	<ul style="list-style-type: none"> <li>FY2021: 16 cases (11 new products, 5 new technologies) (FY2021-FY2024 cumulatively: 16 cases)</li> </ul>	○	<ul style="list-style-type: none"> <li>Launch sales and implement eco-friendly products and technologies*: at least 15 cases in FY2022 (the cumulative total of at least 60 cases for the period from FY2021 to FY2024)</li> <li>* Products and technologies that contribute to saving energy and resources, reduce waste and environmentally hazardous substances, and do not require hazardous substances for manufacturing or use.</li> </ul>	
		JFE Engineering	<ul style="list-style-type: none"> <li>Provide renewable energy power generation facilities</li> <li>Help reduce CO<sub>2</sub> emissions in society by expanding the bases of the recycling business (for plastic, food, etc.)</li> <li>Contribute to reduction in CO<sub>2</sub> emissions (FY2021): 10 million tons per year</li> </ul>	<ul style="list-style-type: none"> <li>Contributed to reduction in CO<sub>2</sub> emissions (FY2021): 10.56 million tons per year</li> </ul>	○	<ul style="list-style-type: none"> <li>Contribute to reduction of CO<sub>2</sub> in society by providing renewable energy power generation facilities and expanding the basis of the recycling business (for plastic, food, etc.)</li> <li>Contribute to reduction in CO<sub>2</sub> emissions (FY2022): 11 million tons per year</li> </ul>	
		JFE Shoji	<ol style="list-style-type: none"> <li>Global resource recycling of steel scrap</li> <li>Promote steel scrap transactions to exceed the volume for FY2020 (FY2024 target: +5% from FY2020)</li> </ol>	<ol style="list-style-type: none"> <li>Despite an expansion in volume in Japan in response to an increase in demand for blast furnaces, sales volumes for overseas markets declined due to sharp fluctuations in market conditions and a surge in freight costs</li> <li>Fell short of target as the volume of scrap transactions was lower than FY2020 overall (-20% from FY2020)</li> </ol>	×	<ol style="list-style-type: none"> <li>Global resource recycling of steel scrap</li> <li>FY2022 scrap transactions: Above the transaction quantity for FY2020 (FY2024 target: +5% from FY2020)</li> </ol>	
Activity	Ensure occupational safety and health	Groupwide	<ul style="list-style-type: none"> <li>Workplace fatalities: Zero occurrences</li> <li>Lost-work injuries rate</li> <li>below 0.10 ■ below 0.25 ■ below 0.45</li> </ul>	<ul style="list-style-type: none"> <li>Workplace fatalities: 2 occurrences</li> <li>Lost-work injuries rate</li> <li>0.10 ■ 0.56 ■ 0.60</li> </ul>	×	<ul style="list-style-type: none"> <li>Workplace fatalities: Zero occurrences</li> <li>Lost-work injuries rate</li> <li>below 0.10 ■ below 0.25 ■ below 0.45</li> </ul>	
		JFE Steel	<ul style="list-style-type: none"> <li>[Key measures]</li> <li>(1) Enhance safety</li> <li>Install electromagnetic locks at the secondary mill entrances: 100% by FY2024</li> <li>(2) Restructure the safety and health management system</li> <li>ISO 45001 certification in all districts: 100% by FY2022</li> </ul>	<ul style="list-style-type: none"> <li>[Key measures]</li> <li>(1) Installed electromagnetic locks at the secondary mill entrances: FY2021 target of 30% / Achieved 40%</li> <li>(2) ISO 45001 certification in all districts: completed certification in Chita works and Fukuyama district in FY2021</li> </ul>	×	<ul style="list-style-type: none"> <li>[Key measures]</li> <li>(1) Enhance safety</li> <li>Install electromagnetic locks at the secondary mill entrances: 60% by FY2022, 100% by FY2024</li> <li>(2) Restructure the safety and health management system</li> <li>ISO 45001 certification in all districts: 100% by FY2022</li> </ul>	
		JFE Engineering	<ul style="list-style-type: none"> <li>[Key measures]</li> <li>(1) Eliminate falling accidents (100% implementation of following measures)                             <ul style="list-style-type: none"> <li>Pre-operation checks (curing openings in high locations and edges of work floors)</li> <li>Strict adherence during operations (use of safety belts)</li> </ul> </li> <li>(2) Eliminate accidents involving being caught in heavy machinery or struck by flying/falling objects (100% implementation of following measures)                             <ul style="list-style-type: none"> <li>Pre-operation checks (ensure on-site understanding of work plans)</li> <li>Strict adherence during operations (no entry measures, allocation of worksite guides)</li> </ul> </li> <li>(3) Multifaceted management of occupational safety and health using IT                             <ul style="list-style-type: none"> <li>Conduct remote safety patrols on premises by integrating multiple video images</li> <li>Introduce an AI-based system for detecting intruders</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>[Key measures]</li> <li>(1) Focused efforts on checking equipment and preventing unsafe behavior through patrols in order to implement 100% of the measures listed on the left for eliminating falling accidents</li> <li>(2) Focused efforts on checking work plans and offering guidance in order to implement 100% of the measures listed on the left for eliminating accidents involving being caught in heavy machinery or struck by flying/falling objects</li> <li>(3) Multifaceted management of occupational safety and health using IT                             <ul style="list-style-type: none"> <li>Expanded areas covered by remote safety patrols on premises</li> <li>Continued verification test of an AI-based system for detecting intruders</li> </ul> </li> </ul>	×	<ul style="list-style-type: none"> <li>[Key measures]</li> <li>(1) Implement 100% of the following key points for eliminating falling and tumbling, getting wedged between or caught in machinery, and being struck by flying or falling objects                             <ul style="list-style-type: none"> <li>Pre-operation checks (curing openings in high locations and edges of work floor, ensuring on-site understanding of work plans, and covering and enclosing/turning off of machinery)</li> <li>Strict adherence during operations (use of safety belts, no entry measures/allocation of worksite guides)</li> </ul> </li> <li>(2) Multifaceted management of occupational safety and health using IT                             <ul style="list-style-type: none"> <li>Complete development of an AI-based system for detecting intruders (plan)</li> </ul> </li> </ul>	
		JFE Shoji	<ul style="list-style-type: none"> <li>[Key measures]</li> <li>(1) Install safety sensors (100% of plan)</li> <li>(2) 100% implementation of crane operation drills (at least once a year at each company)</li> </ul>	<ul style="list-style-type: none"> <li>[Key measures]</li> <li>Implemented all key measures according to plan</li> <li>(1) Installation of safety sensors (January-December): Completed 100% of plan</li> <li>(2) Implementation of crane operation drills (January-December): At least once a year at each company; implemented 100% of drills</li> </ul>	○	<ul style="list-style-type: none"> <li>[Key measures]</li> <li>(1) Installation of safety fences, covers, etc. (100% of plan)</li> <li>(2) 100% implementation of crane operation drills (at least once a year at each company)</li> </ul>	
	Ensure the health of employees and their families	Groupwide	<ol style="list-style-type: none"> <li>Provision rates of healthcare guidance</li> <li>60% (2023 target)</li> </ol>	<ol style="list-style-type: none"> <li>Provision rates of healthcare guidance (preliminary figures)</li> <li>54.3% ■ 30.6% ■ 32.1%</li> </ol>	×	<ol style="list-style-type: none"> <li>Provision rates of healthcare guidance</li> <li>60% (2023 target)</li> </ol>	
		Groupwide	<ol style="list-style-type: none"> <li>Reduce rates of smokers (ensure employee health and prevent exposure to passive smoke)</li> <li>1.5% reduction per year (total for operating companies)</li> </ol>	<ol style="list-style-type: none"> <li>1.5% reduction per year (total for operating companies)</li> </ol>	○	<ol style="list-style-type: none"> <li>Reduce rates of smokers (ensure employee health and prevent exposure to passive smoke)</li> <li>1.5% reduction per year (total for operating companies)</li> </ol>	
	Recruit and nurture diverse human resources	Pursue diversity and inclusion	Groupwide	<ol style="list-style-type: none"> <li>Rates for female recruits                             <ul style="list-style-type: none"> <li>Career-track (white-collar position): 35% or more</li> <li>Career-track (technical position): 10% or more</li> <li>On-site position: 10% or more</li> </ul> </li> <li>Career-track (white-collar position): 35% or more</li> <li>Career-track (technical position): 10% or more</li> <li>Production/construction position: 10% or more (four-year average)</li> <li>Career-track position: 30% or more</li> </ol>	<ol style="list-style-type: none"> <li>Rates for female recruits                             <ul style="list-style-type: none"> <li>Career-track (white-collar position): 45%</li> <li>Career-track (technical position): 3%</li> <li>On-site position: 10%</li> </ul> </li> <li>Career-track (white-collar position): 41%</li> <li>Career-track (technical position): 15%</li> <li>Production/construction position: 11%</li> <li>Career-track position: 37%</li> </ol>	△	<ol style="list-style-type: none"> <li>Rates for female recruits                             <ul style="list-style-type: none"> <li>degree of gender parity</li> <li>Career-track (white-collar position): 10% or more</li> <li>On-site position: 10% or more</li> </ul> </li> <li>Career-track (white-collar position): degree of gender parity</li> <li>Career-track (technical position): 15% or more</li> <li>Production/construction position: 10% or more (four-year average)</li> <li>Career-track position: degree of gender parity</li> </ol>
			Groupwide	<ol style="list-style-type: none"> <li>Females in managerial positions: 5 times the 2014 August figure (FY2025 target)</li> </ol>	<ol style="list-style-type: none"> <li>Female in managerial positions: 4.2 times the 2014 August figure</li> </ol>	△	<ol style="list-style-type: none"> <li>Female in managerial positions: 10% or more in the position of section manager or above. Of whom, 20% or more to be in management and sales departments (FY2030 target)</li> </ol>
			Groupwide	<ol style="list-style-type: none"> <li>Rate of male employees taking childcare leave or time off related to child rearing: at least 90%</li> </ol>	<ol style="list-style-type: none"> <li>Rate of male employees taking childcare leave or time off related to child rearing: 89% (total for operating companies)</li> </ol>	△	<ol style="list-style-type: none"> <li>Rate of male employees taking childcare leave or time off related to child rearing</li> <li>Aim for all male employees whose spouses have given birth to take such leave or time off</li> </ol>
	Strengthen human resources development	Groupwide	<ul style="list-style-type: none"> <li>Training hours per person</li> <li>40 hours or more per year ■ 20 hours or more per year ■ 20 hours or more per year</li> </ul>	<ul style="list-style-type: none"> <li>Training hours per person</li> <li>37.6 hours per year ■ 19.2 hours per year ■ 19.1 hours per year</li> </ul>	△	<ul style="list-style-type: none"> <li>Training hours per person</li> <li>40 hours or more per year ■ 20 hours or more per year ■ 20 hours or more per year</li> </ul>	
Groupwide		<ul style="list-style-type: none"> <li>Annual leave acquisition rate of at least 75% (total for operating companies)</li> </ul>	<ul style="list-style-type: none"> <li>Annual leave acquisition rate of 78% (total for operating companies)</li> </ul>	○	<ul style="list-style-type: none"> <li>Annual leave acquisition rate of at least 75% (total for operating companies)</li> </ul>		
Create workplaces that motivate employees	JFE Steel	<ul style="list-style-type: none"> <li>Engagement survey</li> <li>Affirmative response to questions about motivation: at least 75%</li> </ul>	<ul style="list-style-type: none"> <li>Engagement survey</li> <li>Affirmative response to questions about motivation: 69%</li> </ul>	△	<ul style="list-style-type: none"> <li>Engagement survey</li> <li>Affirmative response to questions about motivation: at least 75%</li> <li>Note: Set as a Groupwide target from FY2022</li> </ul>		

Material Issues of Corporate Management and KPIs

■ Groupwide ■ JFE Steel ■ JFE Engineering ■ JFE Shoji

Areas of Focus	Material Issues	Operating Company	FY2021 KPIs	Initiatives and Results for FY2021	Assessment	FY2022 KPIs	
Activity	Increase efficiency and enhance cost competitiveness in production and engineering	JFE Steel	1. Improve labor productivity by 20% by the end of FY2024 < FY2021 KPI > • Establish investment plans for automation, remote operation and robotics with a focus on DX • Set milestones for investment and number of personnel for each fiscal year • Plan and systemize concrete labor policies to smoothly facilitate structural reform of the Keihin district	1. Improve labor productivity • Set milestones and number of personnel for each fiscal year aimed at improving labor productivity by 20% • Established approximately 250 investment plans for automation, remote operation, and robotics during the Seventh Medium-term Business Plan under revision due to issues with the feasibility of a portion of the plans in terms of investment efficiency and other variables • Labor and management reached agreement on a special system designed to achieve structural reform of the Keihin district	△	1. Toward improving labor productivity by 20% by the end of FY2024 • Steadily implement FY2022 milestones for improving labor productivity and enhance the accuracy of plans for FY2023 and FY2024 • Approve and implement FY2022 investments for improving labor productivity, such as automation and remote operation • Steadily consolidate the steel sheet manufacturing line for cans in Chiba	
		JFE Engineering	2. Achieve stable quality and enhance yields through measures including introduction of quality prediction technology based on integrated data encompassing the entire process from steelmaking to final processing using DS* Improve yields by 0.5% in FY2021 to achieve 2% by FY2024 * Data Science	2. FY2021 Actual yields: 87.8% (+1.7% from FY2020) After taking into consideration changes in the product mix at the end of FY2024: +0.8%	○	2. Achieve stable quality and enhance yields through measures including introduction of quality prediction technology based on integrated data encompassing the entire process from steelmaking to final processing using DS* Improve yields by 1.0% in FY2022 from FY2020 levels to achieve 2.0% by FY2024 (based on figures after adjustments to the sales mix) * Data Science	
	Reinforce resilience of production and engineering capabilities (realize world-class earnings power through DX and other measures)	Raise quality of products and services and ensure reliable supply	JFE Engineering	Increase the efficiency of engineering operations by introducing DX technologies Engineers for big data analysis utilizing Pla'cello*: 1,200 * Pla'cello: Proprietary data analysis platform using AI.	Engineers for big data analysis: About 1,500 (FY2020: about 800)	○	Increase the efficiency of engineering operations by introducing DX technologies Engineers for big data analysis utilizing Pla'cello*: 1,800 * Pla'cello: Proprietary data analysis platform using AI.
			JFE Steel	1. Make steady progress on capital investments to improve the level of quality assurance and product testing, and achieve 100% automation from test measurement to mill sheet data entry for the four priority items: tensile test, molten steel analysis, thickness measurement for hot and cold rolled steel sheets, and coating weight measurement. In addition, achieve 100% automation from test instructions, sample collation to test measurement and mill sheet data entry for automotive products.	1. Focused investments in four items (tensile test, molten steel analysis, thickness measurement for steel sheets for automobiles, and coating weight measurement) for improving the level of quality assurance and product testing, thereby achieving 100% automation from test measurement to mill sheet data entry for the four items and 100% automation from test instructions to mill sheet data entry for automotive products by the end of FY2021.	○	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 • Establish automated technology for testing and inspections (impact test fracture rate, hole expansion, etc.) other than the four priority items (tensile test, molten steel analysis, thickness measurement for hot and cold rolled steel sheets, and coating weight measurement) to improve the level of quality assurance and product testing
			JFE Engineering	2. Strengthen the manufacturing infrastructures using DX Aim to apply to equipment listed below in FY2021 to implement CPS* in all production processes by the end of FY2024. Kurashiki's new continuous casting DS operations, hot rolling CPS (temperature model/Kurashiki), cold rolling CPS (automatic operation/Kurashiki) and integrated quality CPS (galvanizing/Fukuyama) * CPS: Cyber-Physical System	2. Level of achievement of FY2021 plan Kurashiki's new continuous casting DS ... 100% (operated J-dscm® and others) Hot rolling CPS ... 90% (completed installation of warp measuring devices, warp prediction model under adjustment) Cold rolling CPS ... 100% (completed development of base for automated operation) Integrated quality CPS ... 100% (operated an integrated quality system)	△	2. Strengthen the manufacturing infrastructures using DX Achieve CPS* installation rate of 36% or more on a companywide basis in FY2022 to implement CPS in all production processes by the end of FY2024. * CPS: Cyber-Physical System
		JFE Shoji	1. Secure a stable number of certificated managing engineers	1. Amid high levels of revenue, secured a stable number of managing engineers	○	1. Secure a stable number of certificated managing engineers	
			2. No major quality problems	2. No major quality problems	○	2. No major quality problems	
			1. Make consistent investment in processing and distribution operations	1. Carried out selective investments necessary for this fiscal year to ensure stable product supply Amount of investment (approved amount) • Reinforcement: 4.4 billion yen • Renewal and safety: 3.7 billion yen • System: 3.5 billion yen Total: 11.6 billion yen	○	1. Make consistent investment in processing and distribution operations	
	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	JFE Steel	1. Pursue strategic research and development focusing on priority development fields* Develop new products and technologies FY2021: at least 20 cases (at least 80 cases in total from FY2021 to FY2024) * Automobiles, energy, infrastructure construction materials, DX technology, and green transformation (GX) technology	1. FY2021: 21 cases (13 new products and 8 new technologies) (total from FY2021 to FY2024: 21 cases)	○	1. Pursue strategic research and development focusing on priority development fields* Develop new products and technologies FY2022: at least 20 cases (at least 80 cases in total from FY2021 to FY2024) * Automobiles, energy, infrastructure construction materials, DX technology, and green transformation (GX) technology
			JFE Steel	2. Increase the mix of high-value-added products* to 50% in FY2024 (sell 10.9 million tons, 50% of sales excluding half-finished products, by FY2024) < FY2021 KPIs > Sales of high-value-added products: 9.3 million tons (up 1.5 million tons from FY2020) * Products that offer technological advantages and are recognized by customers for their added value while having greater earnings power than commodity products.	2. Sold of high-value-added products: 9.74 million tons	○	2. Sales of high-value-added products*: 10.3 million tons (up 2.5 million tons from FY2020) * Products that offer technological advantages and are recognized by customers for their added value while having greater earnings power than commodity products.
JFE Engineering			3. As a step toward triple earnings in the solution business by FY2024 from the FY2020 level, focus efforts on receiving orders for the new solutions business model (utilization of DS, provision of maintenance technologies, etc.) and secure first order. With an eye on receiving continuous orders thereafter, update external sales platform and maintenance know-how.	3. Concluded first contract in the field for provision of maintenance technologies as a result of focusing efforts on activities for receiving orders for the new solutions business model; Commercialized a solutions model that provides data science utilization technologies via the cloud and entered detailed discussions with a customer for the first project	○	3. As a step toward triple earnings in the solution business by FY2024 from the FY2020 level • Continuing from FY2021, focus efforts on activities for receiving orders for the new solutions model; In particular, along with concluding a contract for the first project providing data science utilization technologies via the cloud, build a platform that provides services on a subscription basis • In the existing solutions business, expand product offerings and develop new customers while increasing revenue in FY2022 by 50% from FY2020 levels by steadily executing projects	
Sales strategies for realizing sustainable growth		JFE Steel	• Develop technologies in four priority fields of waste to resources, carbon neutrality, combined utility service and DX, and at least 60% of R&D expenses on these four fields. • Number of patent applications: at least 80 per year	• R&D expenses on these four fields: 64% • Number of patent applications: 67	△	• Develop technologies in four priority fields of waste to resources, carbon-neutrality, combined utility service, and DX, and at least 65% of R&D expenses on these four fields. • Number of patent applications: at least 80 per year	
		JFE Steel	• Expand the earnings difference between high-value-added products (A-rank products) and commodity products to 5,000 yen per tons by FY2024 < FY2021 KPI > Aim for 25% of target	• Fell slightly short of target, achieving only 20% of target for earnings difference with commodity products In FY2021, earnings for A-rank products and commodity products both improved as prices soared in overseas markets due in part to the recovery from the COVID-19 pandemic; In particular, although earnings improved markedly for commodity products such as mill scale steel, the earning difference did not reach milestone	△	• Expand the earnings difference between high-value-added products (A-rank products) and commodity products to 4,000 yen per tons by FY2024 (revise evaluation method eliminating the impact of market fluctuations and product mix differences) < FY2022 KPI > Aim for 50% of target	
		JFE Engineering	Expand the stable earnings base Expand the operating businesses • Sales: 250 billion yen • Expand bases: at least 3 bases Recycling business (food, plastics, electronic appliances, etc.), regional electricity retail new power business, waste processing business, and water and sewage operations business	• Operating businesses Sales: 250 billion yen • New bases: 3 bases 1 food recycling base, 1 plastics recycling base, and 1 regional electricity retail new power business base	○	Expand the stable earnings base Expand the operating businesses • Sales: 255 billion yen • Expand bases: at least 3 bases Recycling business (food, plastics, electronic appliances, etc.), regional electricity retail new power business, waste processing business, and water and sewage operations business	
JFE Shoji	• Increase competitiveness of products and services by improving value added in supply chain management through business expansion Make investments to improve value added in supply chain: at least 5 per year	• Made 5 investments per year that were necessary to acquire new functions and improve functions in existing businesses	○	• Increase competitiveness of products and services by improving value added in supply chain management through business expansion Make investments to improve value added in supply chain: at least 5 per year			
Basis of activity	Thoroughly enforce compliance	Groupwide	1. Steady execution of training to foster and maintain a sense of compliance (100% attendance from the target audience) 2. Improve employee awareness of ethics reflected in the Corporate Ethics Awareness Survey (next survey is scheduled for FY2022)	1. 100% attendance (rank-based compliance training, training on different laws and regulations, etc.) 2. Implemented initiatives addressing various issues from the results of the previous survey	○	1. Steady execution of training to foster and maintain a sense of compliance (100% attendance from the target audience) 2. Improve employee awareness of ethics reflected in the Corporate Ethics Awareness Survey (100% attendance from the target audience)	
	Respect human rights	Groupwide	1. 100% attendance from the target audience for human rights awareness training 2. Implement human rights due diligence	1. Attendance: 100% 2. Implemented human rights due diligence for the Company and major Group companies	○	1. 100% attendance from the target audience for human rights awareness training 2. Implement human rights due diligence	

# Process of Value Creation

**External conditions with significant impact**

- Climate change
- Resource and energy problems
- Falling birthrate and aging population
- Market globalization, development of emerging countries
- Aging of infrastructure and equipment
- Advances in AI and IoT

**Input**

---

**Intellectual capital**

R&D expenses (FY2021): 39.6 billion yen  
 Number of registered patents: Approx. 26,000 patents (about 14,000 in Japan, 12,000 overseas)

**Manufacturing capital**

Number of blast furnaces (as of April 2022):  
 West Japan Works: 6, East Japan Works: 2  
 Number of bases (as of April 2022):  
 117 locations in 22 countries and regions (Group total)  
 Capital investment (FY2021): 340.9 billion yen

**Natural capital**

Steel raw materials (FY2021): 59.3 million tons (iron ore, coal, and limestone)  
 Recycled raw materials (FY2021): 1.2 million tons (steel scrap)

**Social and other related capital**

Number of customers (delivery destinations) (FY2021): Approx. 24,000 customers  
 \* Total of JFE Steel, JFE Engineering, and JFE Shoji (FY2021)

**Human capital**

Number of employees (as of the end of March 2022): 64,295 persons (Group consolidated)  
 Annual training hours (FY2021): Approx. 0.7 million hours a year (total of operating companies: approx. 33 hours a year per employee)  
 Safety investments: 10 billion yen annually

**Financial capital**

Total equity (IFRS) (as of the end of March 2022): 2,070.7 billion yen



## Be essential to society

**Increase economic value**

- Increase cash flow
- Achieve world-class earnings power
- Ongoing investment in technological development
- Return value to stakeholders
- Establish a robust financial foundation

**Increase environmental and social value**

- Become carbon neutral
- Contribute to safe and comfortable lives
- Secure excellent human resources and enhance job satisfaction
- Create a prosperous coexistence with local communities

**FY2021 results**

- Contributions to resolving climate change
  - JFE Steel  
Reductions in CO<sub>2</sub> emissions: 9% (comparison with FY2013)
  - JFE Engineering  
Contribution of CO<sub>2</sub> emissions reductions: 10.56 million tons
  - JFE Steel  
Recycled water resource usage: 93.0%
- Earnings capabilities
  - JFE Group revenue: 4,365.1 billion yen
  - JFE Group business profit: 416.4 billion yen
- Increase competitiveness
  - <DX>  
JFE Steel  
Data scientists: 450
  - <World-class technological capabilities>  
JFE Steel  
Ratio of high-value-added products: 45%
  - JFE Group  
Domestic patent publications: 1,055
  - \* Total patents published in Japan and patents published under Patent Cooperation Treaty, designated to be transferred to Japan
- Dividends
  - JFE Group  
Dividends per share: 140 yen

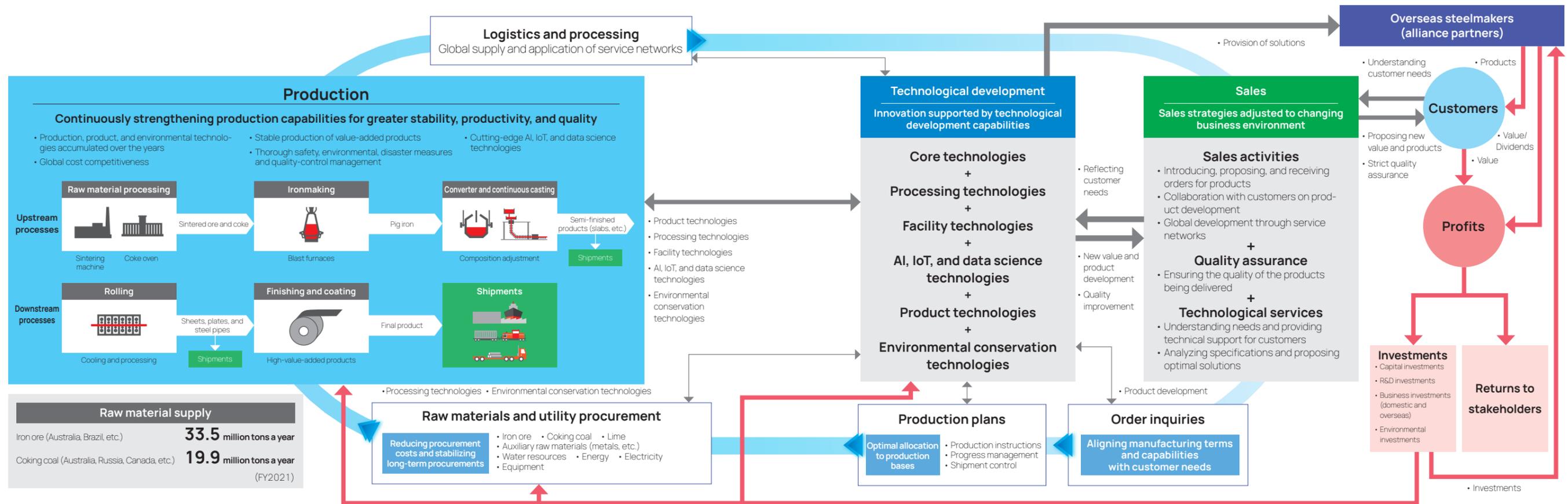
## Business Model (Steel Business + Trading Business)

# A business model that creates a JFE brand associated with high added value

The competitive advantages of JFE's steel and trading businesses are on three fundamental capabilities: (1) **leading-edge technological development capabilities focused on customer needs**, (2) **production capabilities constantly being developed and enhanced at production sites**, and (3) **sales capabilities underpinned by solid relationships of trust with customers** established over years by JFE Steel and JFE Shoji. We create new value tailored to customer needs and provide optimized solutions based on these three strengths. These competitive advantages, treasured assets accumulated through many decades of effort and not easily matched by other companies, are the driving force behind our sustainable growth.

Leveraging competitive advantages through our business model Measures SteelBusiness P.41 TradingBusiness P.47

Production	Technology	Sales
<p><b>Two major integrated steelworks with highly competitive strengths</b></p> <p>JFE has two major integrated steelworks, one each in western and eastern Japan, that boast world-class costs, products, and technologies. Both facilities leverage the highly competitive technologies, intellectual property, and know-how accumulated by JFE over many decades.</p>	<p><b>Technological development to realize value creation</b></p> <p>JFE continuously elevates its technological capabilities to world-class levels to meet Japanese demands for top-quality steel, which in turn enables the company to compete globally and create new value through advanced technological development.</p>	<p><b>Responding to needs in our stable customer base</b></p> <p>JFE has built a solid and highly stable global customer base—one that cannot be easily matched by rivals—thanks to its practice of collaborating from the early development stage to accurately address the exacting needs of its many customers.</p>



### Steel business overview

JFE provides highly functional steel products to customers worldwide as a blast furnace steelmaker with operations of the integrated steelworks, where it can produce final products from iron ore as raw materials. As a global strategy, we are expanding solutions-oriented businesses and deepening our "insider business" model\*, starting with the overseas steelmakers in our alliance.

\* In regions where growth is accelerating, we invest in leading partners with local credibility, and locally process and sell steel manufactured by these partners.

#### JFE Steel's production bases

### Trading business overview

The JFE Shoji Group is engaged in businesses ranging from steel materials, machinery, nonferrous metals, chemicals, biomass fuels, and ships to food and electronics, with an overarching focus on steel products. Through a global network encompassing 96 companies, JFE Shoji provides services that add value to supply chain operations.

## Business Model (Engineering Business)

# Business model that strongly supports the lives of people

The sources of our competitive edge in the engineering business are (1) our engineering capabilities (engineering, procurement, and construction (EPC)) centered on building infrastructure that supports industry and human life, and (2) know-how to operating, maintenance & managing accumulated over the years, especially in waste-to-energy power generation and waterworks plants, which (3) paired with our diverse human resources and DX projects, leads to more abundant life in the future. Leveraging these three advantages, we aim to help the world become carbon neutral while promoting a circular economy. We aim to be an engineering company that is constantly leading the world and adapting to the change of the times.

As long as people in the world long for more comfortable and abundant life, there will never be an end to our mission. We will provide optimal solutions for society and strive to realize a sustainable society.

### The source of competitive advantages that reinforce our business model

Measures P.44

#### Engineering, procurement, and construction

**Project execution capabilities with abundant experience and global structure**

In a variety of fields, such as energy, the environment, and bridges, JFE has constructed numerous highly functional and high-quality structures that satisfy customer needs, covering everything from engineering to project handover. Moreover, we will strengthen our competitiveness by building out a global engineering system at overseas bases.

#### Operating business

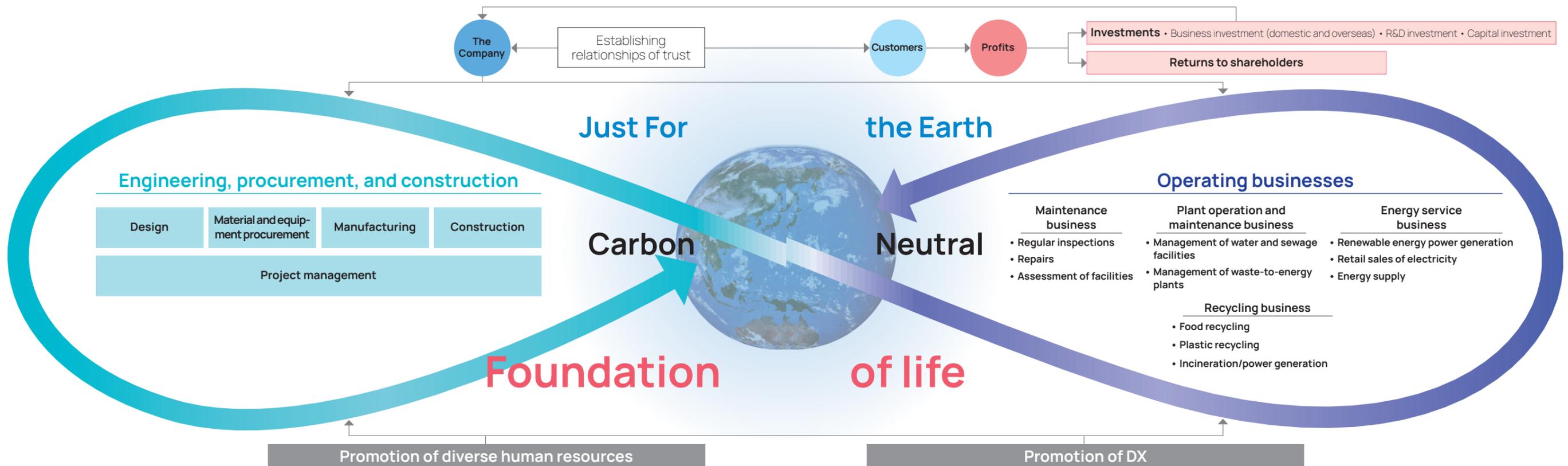
**Business management capabilities with strengths in manufacturing expertise**

We have accumulated operational know-how in plants in particular, such as waste-to-energy power generation and water-works, and in the public services field, the company has an extensive track record in public-private projects. We also engage in our own recycling operations and renewable energy power generation business, and are expanding our presence in operation & maintenance business domains around the world.

#### Diverse human resources and DX

**Diverse human resources to support the business and promotion of DX to support the evolution of the company**

Approximately 40% of our employees have diverse backgrounds, such as women, foreign nationals, and mid-career hires. We also strive to create work environments that draw out the best abilities of each and every employee. We support the advancement of "creation" and "responsibility" while digitalizing operations with AI and IoT.



### Business overview

By focusing on these business fields, which are needed around the world all the time, we propose integrated services



- Waste-to-energy plants
- Industrial waste processing



- Food waste recycling
- Plastic recycling
- Incineration/power generation



- Water and sewage treatment plants
- Water and sewerage pipelines

from business planning to EPC and operating businesses.



- LNG terminals
- Oil and gas pipelines
- Chemical plants



- Electricity retailing
- Renewable energy power generation
- Energy service provider



- Transportation and logistics infrastructure (Bridges, ports, and harbor facilities)
- Disaster prevention infrastructure (Seawalls and breakwaters)
- Industrial machinery (Cranes and steam turbines)