Sources of Value Creation

The JFE Group has contributed to the development of industries and society through its products and services centered around steel. In this section, we introduce the value creation framework of the JFE Group.

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The Value of Steel

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

Life Cycle Assessment of Steel

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 for each steel product.

*1 ISO 20915: Life Cycle Inventory Calculation Methodology for Steel Products (2018.11) JISQ 20915: Life Cycle Inventory Calculation Methodology for Steel Products (2019.6) *2 https://www.jisf.or.jp/en/activity/lca/data



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 CO₂ 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*

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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 (CO₂ equivalent) (kg-CO₂)
- 990 Aluminum Carbon fiber Steel (CFRP) ensperunit of weight 2.3 11.3 22.0 (CO₂ equivalent) (kg-CO₂/kg) 67 100 45 Functionally equivalent weight (kg)

Source: World Auto Steel data

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

Steel scrap used

2015

0.56 billion

tons a year

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.



for the Earth (RITE)



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

> Processing and different manufacturing Automobiles, construction materials, etc

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.





Source: World Steel Association

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-guality, highly-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 openloop 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.

Excellent recyclability



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



Foundation for life and society

In our lives, steel helps reduce our burden on the environment. For example, by using hightensile 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 CO₂ emissions in society as a whole.

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



Corporate Vision / Corporate Values / Standards of Conduct / Our Vision

CORPORATE VISION

Contributing to society with the world's most innovative technology

CORPORATE VALUES

Challenging Spirit. Flexibility. Sincerity.



Our Vision

To remain an essential presence in any era

The JFE Group continues to take on challenges to be essential to society's sustainable development and to create safe, comfortable lives for people everywhere through products and services focused on iron.



Steel business: JFE Steel

JFE Steel is an integrated steelmaker, from iron ore to steel product, with world-class productivity and technological development capabilities. JFE Steel supplies high-performance steel products to the world.



Trading business: JFE Shoji

As the core trading company of the JFE Group, JFE Shoji handles a broad range of products, primarily steel but also materials such as steel raw materials, food, and electronics. It has a global business presence with supply chains encompassing Japan and the entire world.

> Through multiple businesses centered on steel production, we deliver the diverse value inherent in steel to the world, while aiming for a sustainable society.

STANDARDS OF CONDUCT

All JFE Group personnel are required to faithfully adhere to the following Standards of Conduct in all corporate activities. These standards embody the JFE Group's Corporate Vision and go hand-in-hand with its Corporate Values.

Senior managers are responsible for communicating these standards to employees of Group companies and their supply chain partners, and creating effective systems and mechanisms to ensure adherence to ethical standards.

Senior managers are also responsible for measures to prevent the recurrence of any violation of these standards. Additionally, they must report violations promptly and accurately to internal and external stakeholders, determine the persons of relevant authority and accountability, and resolve matters rigorously.

- 1. Provide quality products and services
- 2. Be open to society
- 3. Work with communities
- 4. Globalize
- 5. Exist harmoniously with the global environment
- 6. Maintain proper relations with governments and political authorities
- 7. Maintain crisis readiness
- 8. Respect human rights
- 9. Provide challenging work environments
- 10. Comply with laws and ordinances





Engineering business: JFE Engineering

JFE Engineering is a comprehensive engineering company that designs, builds, and operates plants and structures, supporting both industry and everyone's daily lives, particularly in the energy, environment, and social infrastructure fields.



Shipbuilding business: Japan Marine United

A leading shipbuilding company with top-class domestic construction capabilities and technological expertise. The company constructs large general merchant ships, various naval vessels, and icebreakers.



Contributing to society with our technological capabilities

Providing unique, highly functional products and services to society through world-class technological capabilities



Featuring high strength and high deformation perfor-mance, the HBL™ Series of thick steel plate is instrumental in making building structures taller and more resilient to earthquakes while saving welding-related labor. Contributes to resource conservation and CO₂ reduction by reducing the heaviness of steel plate through the application of high-strength steel

larine Blocks™ for

weed beds and coral reefs



Increases the lifespan of train rails, helps reduce rai maintenance costs of railway operators

SP 3 pearlitic steel rail with excellent year resistance for heavy cargo railway

J-TerraPlate™ large and heavy steel plates for offshore wind power generation



Al-driven rebar arrangement inspectior

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Gradient Si Super Core™ contributes to energy savings of electrical equipment



JESOLVA™ technology for using automotive steel sheets

production system for bottle-to-b , a first in the Chubu and West Japa ed the operational experience of ... Ltd. and J&T Recycling Corporat

ET Bottle MR Center has an inte

o-bottle ray

Bottle to bottle

Contributes to lighter and improved performance of vehicles by expanding applications for ultra-high-strength steel sheet with our unique application technologies

> EFORMA[™] Series of highly formable ultra-high-strength steel sheet

tributes to reliable production of high-strength, lightweight parts and expands applications for high-strength steel sheet by providing high-perfor mance, optimal steel sheet that meet meets required characteristics in parts

njiro™ insulation-coated pure-iron der for soft magnetic comp

Contributes to thinner monitors



Nippon Kokan (1912-)

Kawasaki Steel (1950-)

• Robust sales base

- Advanced technological
- capabilities
- High-efficiency steelworks
- and manufacturing plants



Base structures, such as monopiles for wind tu

production costs

bines J-TerraPlate™ improves work efficiency in manufacturing and contributes to reductions in

RESTEX™ Crack Arrest Steel Plate

for Large Containership

This steel plate offers exceptional performance by minimizing damage to ship hulls by preventing brittle cracks in weld zones from spreading.



JFESCRUM[™] solutions for the construction field



JFESCRUM™ is a one-stop solution for resolving various challenges in construction, from research and development to manufacturing and technical support.

J-STAR[™] Weld high-efficiency ultra-narrow groove welding system

JGreeX™

JGree[×]

02 emissions than conventional products, which elps reduce CO₂ emissions related to the use of teel products by customers, calculated using the products on method



vnsizing of ectrical equipment with high-performance n ils that excel in energy conversion efficiency

JFE Resolus™ production solution business



The JFE Group is keen to offer customers the tech-nologies it has developed and knowledge it has accu-mulated under the JFE Resolus™ solution brand.

Development of industry

Updates to social infrastructure s of Value 2 eatior

Contributions to carbon neutrality

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Business Model (Steel Business and 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

Technology

Technological development to realize value creation

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.

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.



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 overseas markets accelerating, we invest in leading partners with local creditability, and locally process and sell steel manufactured by these partners.



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 97 companies, JFE Shoji provides services that add value to supply chain operations.

Production

Two major integrated steelworks with highly competitive strengths

Sales

Measures Steel Business P.53 Trading Business P.59

Responding to needs in our stable customer base

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.



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-toenergy 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

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.

manufacturing expertise We have accumulated operational knowhow in plants in particular, such as waste toenergy power generation and waterworks, 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 and maintenance (O&M) business domains around the world.

Establishing The Custome Profits relationships of trust **Just For** the Earth Engineering, procurement, and construction Maintenance Material and equip-Manufacturing business Design Construction ment procurement Carbon Neutral Regular inspections plants Repairs Project management Assessment of facilities facilities Food recycling • Plastic recycling Foundation of life Promotion of diverse human resources Promotion of DX



Operating business

Business management capabilities with strengths in manufacturing expertise

Diverse human resources and DX

C Measures

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 Al and IoT.



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

Carbon neutrality

Shift focus from quantity to quality

Advance growth strategies

Greatly improve competitiveness with DX strategy



Intellectual capital

R&D expenses (FY2023): ¥43.8 billion Number of registered patents: Approx. 28,000 patents (about 14,000 in Japan, 14,000 overseas)



Number of blast furnaces (as of April 2024): West Japan Works: 6, East Japan Works: 1 Number of bases (as of April 2024): 117 locations in 23 countries and regions (Group total) Capital expenditures (FY2023): ¥346.1 billion

Natural capital

Steel raw materials (FY2023):56.1 million tons
(iron ore, coal, and limestone)Recycled raw materials (FY2023):0.8 million tons
(steel scrap)

Social and other related capital

Number of customers (delivery destinations) (FY2023): Approx. 24,000 customers * Total of JFE Steel, JFE Engineering, and JFE Shoji (FY2023)

Human capital

Number of employees (as of the end of March 2024): 62,218 persons (Group consolidated) Annual training hours (FY2023): Approx. 0.77 million hours a year (total of operating companies: approx. 39 hours a year per employee)

Safety investments: ¥10 billion annually

Total equity (IFRS) (as of the end of March 2024): ¥2,538.5 billion

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 value 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

FY2023 results

the for

• Contributions to resolving climate change	
Reductions in CO₂ emissions: About 17% (comparison with FY2013)	
JFE Engineering Contribution of CO ₂ emissions reductions:	
JFE Steel Recycled water resource	usage: 93.1%
• Earnings capabilities	
JFE Group revenue: JFE Group business profit:	¥5,174.6 billionn ¥298.2 billion
 Increase competitiveness 	
<dx> JFE Steel</dx>	Data scientists: 610
 VWorld-class technological capabilities > JFE Steel Ratio of high-value-added products: 50% JFE Croup Demostic patient publications: 1, 100 	
* Total patents published in Japan and patents published under Patent Cooperation Treaty, designated to be transferred to Japan	
 Dividends 	
JFE Group D	vividends per share: ¥100

Toward a Sustainable Future

JFE is building a sustainable future.

