# Business Strategies





# Steel Business

Sustainable growth through restructuring and climate-change initiatives

JFE Steel is establishing a more optimal production system and new growth strategies in Japan in response to structural changes in the external environment. Simultaneously, the company is also tackling environmental issues through measures such as CO<sub>2</sub> emissions reduction to grow sustainably as a company valued by society.

### Envisioned business opportunities

- Increasing demand for high-grade steel due to the shift to lighter cars and electric vehicles
- Increasing demand to upgrade infrastructure in Japan for strengthened national resilience, primarily through disaster prevention/mitigation and renewal of aging facilities
- New demand for steel materials in restructured supply chains once manufacturing in Japan recovers
- Increasing demand for steel materials due to medium- and long-term growth in emerging countries
- Demand for operational-support technologies from steelmakers in emerging countries

## Responding to the COVID-19 pandemic

In FY2020, the COVID-19 global pandemic brought a sudden slowdown in the global economy as well as a stagnation of economic activity in Japan, including a dramatic and substantial decline in demand. In response, JFE Steel has implemented emergency cost-reduction measures in an effort to maintain earnings and overall financial soundness. In addition to efforts to steadily lower repair costs and reduce labor, we have stabilized operations and production by leveraging our experience and advanced technologies, including AI and IoT. Renovation work on the No. 4 blast furnace in the Kurashiki district was accelerated, the No. 4 blast furnace in the Fukuyama district was banked (temporarily shut down) and our total number of blast furnaces in operation was reduced temporarily from eight to six. Thanks to such initiatives, we are establishing a more efficient production system, from upstream to downstream processes, in line with existing demand. As a result, we expect to achieve our goal of cost reductions amounting to 100 billion yen.

I believe that these initiatives to control variable costs in the context of a dramatic drop in production are steadily enhancing JFE Steel's manufacturing capabilities and will contribute to stronger future earnings.

Under our Sixth Medium-term Business Plan, we intend to reduce domestic capital investment, previously set at 1 trillion yen, by a further 30 billion yen on top of a planned reduction of 100 billion yen, for a total reduction of 130 billion yen. Nevertheless, we will still proceed with investment required to fulfill our corporate social responsibility commitments to safety, the environment and disaster prevention, as well as to further advance our strategic data-science capabilities.

While it is difficult to forecast the FY2021 business environment, in view of the potential risk of further downturns we will work to ensure that JFE Steel returns to profitability by fine-tuning our flexible manufacturing systems in line with demand, while also steadily implementing cost reductions, including those achieved through new capital investment.

### Commitment to restructuring

The steel industry has been facing an extremely harsh environment. In FY2019, JFE's steel business recorded a segment loss for the first time in the company's history, the result of unprecedented increases in raw-material prices and declines in finished-product prices due to factors including a slump in steel demand resulting from U.S.-China trade friction and increased crude steel production in China.

Both external and internal risks are envisioned in the future. The external risks include expanding production capacity in emerging countries, intensifying competition in overseas markets due to China shifting to exports amid declining domestic demand, and weakening demand in Japan. Internally, the biggest risk is large-scale investments required to upgrade facilities as they age over the long term, which we must continue to do under our Medium-term Business Plan to realize an ever stronger and more resilient manufacturing base in Japan.

In view of the structural changes in our external environment, we determined that JFE Steel must be restructured to focus on strategic production systems and product types that will help to ensure the company's long-term survival and growth.

#### Restructuring

JFE Steel manufactures high-grade steel, such as steel sheets for automobiles, middle-grade value-added products, and various general-purpose products. Our high-grade steel is very competitive in international markets but our general-purpose products are facing stiff competition. To reinforce our presence on the world stage under these conditions, we have begun to refocus our corporate resources on high-grade steel and high-value-added products, primarily in the three sectors of automobiles, infrastructure materials, and energy.

Based on this strategy, we assessed that production capacity in Japan comprising eight blast furnaces was excessive. Accordingly, we will shut down one furnace to help transform JFE Steel into a leaner, stronger and more resilient company by focusing on products that offer the greatest competitive advantages. Specifically, by around FY2023, we will suspend upstream

#### Evolving production in Japan based on restructuring and related measures

	-	-	-
		FY2019	FY2020
Keihin district	Pig iron making and steelmaking		
	Hot-rolling		
	Cold-rolling and surface treatment	<b>→</b> •	Shutdown of PLTCM and 3CG
Chiba district	Blast furnace		
	Steel sheets for cans	<b>──</b> ► •	Shutdown of No. 2 ETL and No. 2 CAL
Kurashiki district	Blast furnace		
	Continuous casting machine		*
	Electrical steel sheets		
Fukuyama district	Coke oven	★ Launch of	No. 3 coke oven (Battery A)
	Sintering facilities		h of new sintering facility Sintering Machine)

Shutdown completed/planned 📩 Launch/execution completed 📩 Launch/execution planned



• Implement COVID-19 countermeasures and then recover profitability in

• Pursue digital transformation for greater productivity, more stable production

· Establish steel-technology solutions business by combining existing

technologies and deepening expertise in both AI and the IoT

• Further develop low-carbon and decarbonization technologies

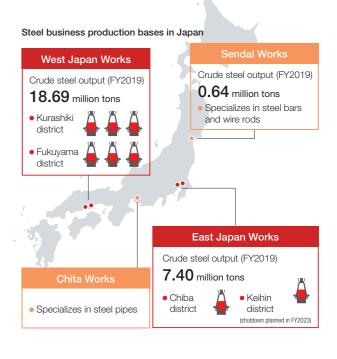
Optimize production systems in Japan through restructuring

Enhance capabilities for developing world-class technologies.

and enhanced technology-development capabilities

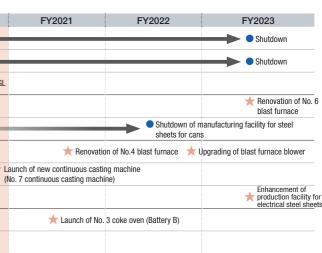
Urgent issues to address

FY2021



processes (pig iron making and steelmaking) and hot-rolling steel plants at our East Japan Works (Keihin) and consolidate thin steel sheet production at our East Japan Works in the Chiba district, except for certain product types (pickling and specialty steels). We expect the reduction in fixed costs attributable to these shutdowns will improve earnings by around 60 billion yen per year. In addition, these shutdowns will enable us to suppress around 200 billion yen in investments in aging facilities that otherwise would have had to be upgraded over the next decade or so.

Restructuring is a companywide issue for JFE Steel. On April 1, we established the Special Initiatives Headquarters, which I am heading as president, to ensure swift and efficient implementation of plans as we steadily forge ahead with our restructuring. Under the Special Initiatives Headquarters, we are working to further utilize sophisticated IT and data science to enhance





operational efficiency and productivity. We are also steadily streamlining our organization and systems across the company, including head office divisions, to transform JFE Steel into a lean, strong and resilient company. Going forward, we will carefully

explain the details of our restructuring to all stakeholders who may be affected, including customers, suppliers, employees, local communities, authorities, shareholders and investors, to gain their understanding.

#### Future growth strategy

Based on the restructuring plans described above, JFE Steel is pursuing a three-pillar growth strategy to achieve sustainable growth: strengthen the competitiveness of domestic manufacturing sites, carry out digital transformation (DX) and expand new revenue bases overseas.

For our production bases in Japan, we have systematically executed investment in targeted facilities, such as upgrading the No. 3 sintering machine and No. 3 coke oven in the Fukuyama district and constructing the No. 7 continuous casting machine and renovating the No. 4 blast furnace in the Kurashiki district. We will continue to execute carefully selected investment, primarily to strengthen the manufacturing base of the West Japan Works, our core steelworks, as well as renovate the No. 6 blast furnace in the Chiba district and enhance the electrical steel sheet manufacturing facility in the Kurashiki district. In addition to

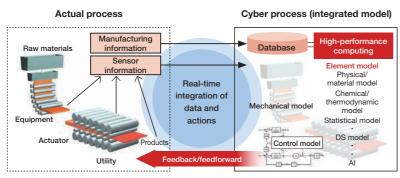
capturing the growing demand for high-grade steel, we will thoroughly enhance our competitive strength in middle-grade products.

Regarding DX, we will push ahead with technological innovation and our utilization of data resources by actively introducing technologies such as the latest IoT, AI and data science. Compared to steelmakers overseas, JFE Steel has an abundant accumulation of data that it can digitize to drive its competitive strength, including in fields such as manufacturing, quality control and detection of problems in equipment and operations.

We established the JFE Digital Transformation Center (JDXC<sup>™</sup>) at the head office to make full use of abundant data across the company. JDXC<sup>™</sup> will serve as a base for accelerating our development of advanced technologies, primarily cyber-physical systems (CPS), aimed at realizing innovatively enhanced productivity. improved quality and more stable operations.

Overseas, we are implementing initiatives to develop and grow new revenue bases. So far, we have captured demand in overseas markets mainly by supplying raw plates from Japan to, for example, our overseas manufacturing bases for the production of automotive steel sheets for markets in China. Thailand. Indonesia and Mexico. We are also raising the profitability of our overseas business by providing advice and assistance regarding value enhancement to alliance partners and operating companies in growth markets. Examples of these firms are our

#### Cyber-physical system (CPS)



#### Status of overseas business initiatives

	FY2018	FY2019	FY2020
Overall			Established Overseas Business Promotion Center
Automobiles	NJSM plant		enced sales and production eel bars and wire rods): BJSS concluded joint venture agreement fexico (steel sheets for automobiles): NJSM commenced production China (battery material): Anode material business commenced production
Infrastructure materials			nmar (thin steel sheets for construction material): I commenced sales and production of color steel sheets
Energy		UAE (large-diameter welded	steel pipes): AGPC commenced sales and production
Overseas steel sources Other	<ul> <li>Vietnam: FSH ignited No. 2 blast furnace</li> <li>Austion</li> </ul>	tralia (coking coal): Byerwen Coal commenced deliv	♦ India: Finishing expansion of JSW pries

Completed Planned (in progress)

• • BJCMX: Shanghai Baowu JFE Clean Iron Powder Co., Ltd. • BJSS: Baosteel Special Steel Shaoguan Co., Ltd. • FHS: Formosa Ha Tinh (Cavman) Limited • JMM: JFE MERANTI MYANMAR Co., Ltd. • NJSM: NUCOR-JFE STEEL MEXICO • AGPC: AL GHARBIA PIPE COMPANY

long-term strategic alliance with JSW Steel in India, our specialty bar steel joint venture business with China BaoWu Steel Group Corporation Limited in China, and our construction-use thin steel sheet joint venture in Myanmar. We also will provide steel technology solutions that combine JFE Steel's data and expertise with advanced AI and IoT technologies, turning these

#### Initiatives aimed at reducing CO<sub>2</sub> emissions

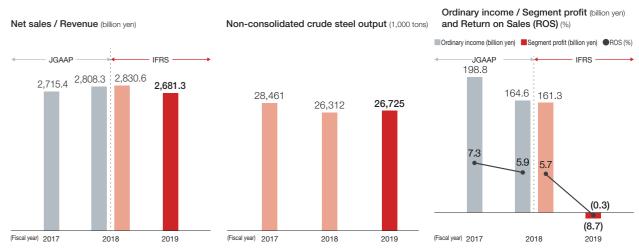
The Japanese steel industry, and JFE Steel in particular, have achieved world-class energy efficiency through ongoing efforts to continually expand energy savings. Furthermore, we have been transferring our energy-saving technologies to emerging countries. Moreover, our high-tensile steel sheets and other high-function products are helping to lower automobile body weights and enhance fuel efficiency. Combined, these achievements are contributing to measurable reductions in CO2 emissions. Looking ahead, however, further CO<sub>2</sub> reductions will be necessary on a global scale, so even more aggressive initiatives are envisioned. So far, we have participated in the Japan Iron and Steel Federation's "challenge towards zero-carbon steel" for the year 2100, and have engaged in the development of hydrogen-reduction ironmaking, carbon capture and storage (CCS), and carbon capture and utilization (CCU) technologies that enable zero emissions, based on the insight gained from the development of COURSE50 and ferro-coke. Additionally, we aim to

#### Through the power of steel

Steel is a material that has supported the development of civilization with its unparalleled advantages, including relatively low manufacturing costs, suitability for mass production, tremendous strength, easy processing and ready recycling. Going forward, we believe that expectations for steel will increase as the world undergoes further dramatic changes.

Today, JFE Steel is confronted with a business environment

#### FY2019 results



Note: From FY2018, JFE Group adopted the International Financial Reporting Standards (IFRS) in place of the Japanese generally accepted accounting principles (JGAAP).

solutions into key new sources of earnings overseas. Centered on our newly established Overseas Business Promotion Center, we are determined to pursue initiatives that accurately grasp opportunities for new overseas businesses while continuing to maximize revenue from existing overseas businesses.

reduce CO<sub>2</sub> emissions in FY2030 by 20% or more compared to FY2013 on a non-consolidated basis. We have launched a new project team, and will start examining various measures to achieve our targets. In addition to engaging in the development of aforementioned decarbonization technologies, we intend to further reduce CO<sub>2</sub> emissions by in existing manufacturing processes. We are promoting the development of a range of low-carbon technologies and measures, including technologies to further utilize scrap and reduce CO<sub>2</sub> emissions by expanding high-heat-efficiency hot metal pretreatment process through converter enhancements. Over the long term, we will promote the development of decarbonization technologies, in line with the social transformation to establish carbon-free infrastructure, soon after 2050, we will contribute to the JFE Group's achievement of carbon neutral status.



See the Climate Change Feature on page 53 for details.

more uncertain and challenging than any it has faced in its history. Nevertheless, we are pushing forward with our restructuring and growth strategies to transform JFE Steel into a lean, strong and resilient company that can grow its corporate value. Through the power of steel, we will provide new value and respond flexibly to ever-changing needs with products and technologies that leverage steel's infinite potential.



# **Engineering Business**

As an engineering company, our goal is to actively promote and further the Sustainable Development Goals (SDGs) through the Foundations of Life.

Expanding our operating businesses, and developing new products and services were key initiatives under our Sixth Medium-term Business Plan. In addition to pushing forward with these initiatives, we have sown the seeds of new businesses for the future.

#### Envisioned business opportunities

• The aging of infrastructure Privatization of public services Changes in the structure of society and industry Social demands to realize a sustainable society

#### Medium- to long-term strategies

We have expanded our operating businesses to support the Foundations of Life, through traditional Engineering, Procurement and Construction (EPC) as well as Public-Private Partnership (PPP), recycling business, and power generation and electric power businesses. These businesses provide the infrastructure and services essential for modern day society, and we have kept it up amid the COVID-19 crisis.

In our EPC businesses, we will continue to fine-tune the technologies that are our specialty, such as waste-to-energy plants, pipelines and bridges, and contribute to society through businesses that create the Foundations of Life. In our operating businesses, we have a long list of achievements in the environmental and agua fields, including in the biomass Private Finance Initiative (PFI) business and the aqua (water treatment) concession business. We have also established five regional power producers and suppliers in the electricity field to promote the local production and consumption of electric power. J&T Recycling Corporation, which is responsible for our recycling business, boasts one of the largest industrial waste processing capacities in Greater Tokyo, and is involved in the bottle-to-bottle recycling business that transforms used PET bottles into clear PET material. Our operating businesses now account for around 40% of the company's sales. We aim to increase this proportion to 50%, and firmly establish a robust portfolio to ensure that our



# Urgent issues to address

#### • Promote operating businesses

 Increase demand for infrastructure upgrades and service life extension • Develop new technologies and invest in new business models · Promote the SDGs through business activities

performance is not dependent on the success of receiving orders for individual projects.

We will also strive to develop new technologies, and explore new business models. We are gradually realizing the fully automated operation of waste-to-energy plants by utilizing our vast accumulation of operational data and AI technology. We are also actively engaged in exploring new technologies and business models. In addition to building a foothold to enter the petrochemical plant EPC business by launching JFE Project One through M&A in March this year, we are engaged in activities including acquiring an AI startup company that detects abnormalities in water quality, and enhancing our in-house venture business program. Moreover, we are building systems to facilitate swift investment in future businesses. Last year we established an investment vehicle together with Tokyo Century, to make long-term investments eyeing businesses five or 10 years in the future. We will continue to accelerate these initiatives to expand our portfolio and further improve our competitiveness on the market.

Many of the businesses developed by JFE Engineering, including our energy and environment businesses, are related to the 17 Sustainable Development Goals (SDGs). We aim to be a company that actively strives to promote the SDGs through these business activities.

#### **Business overview**

Our core business is the construction of essential infrastructure, including waste-to-energy plants, water treatment plants and bridges. By focusing on these business fields, we propose integrated services that include business planning, and operating business covering from EPC to the operation and maintenance (O&M) stage.

#### Environment

 Waste-to-energy plants Industrial waste processing

#### Recycling

 Food-waste recycling Home appliance recycling



## Energy Natural gas treatment plants

- LNG terminals
- Oil and gas pipelines
- Chemical plants

# Energy service provider

generation



## Orders received (billion yen) Net sales / Revenue (billion ven JGAAP IFRS IGAAP 495.5 482.8 482.8 485.6 485.8 413.0 391.3 (Fiscal year) 2017 2018 2019 (Fiscal year) 2017 2018

\*From FY2018, the JFE Group adopted the International Financial Reporting Standards (IFRS) in place of the generally accepted accounting principles (JGAAP) adopted previously.

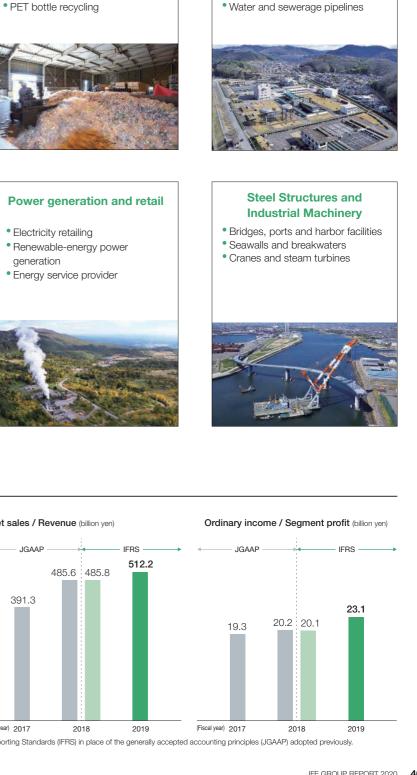


JFE Engineering

plants

Aqua

• Water and sewage treatment





# **Trading Business**

Increasing our abilities to offer proposals and convey information, aiming to be a trading company with presence

As the JFE Group's core trading company, we constantly consider the overall optimum, sharing strategies with other Group companies to work on strengthening functions. Furthermore, we seek to increase our abilities to offer proposals and convey information, growing sustainably with our customers to be a company with strong market presence.

#### Envisioned business opportunities

Medium- to long-term strategies

Global four-pillar network

- Revision of customers' supply chains and procurement strategies, in line with changes in the external environment, such as US-China trade friction and the impact of COVID-19
- Increasing awareness of environmental and social issues, primarily in response to ESG and the SDGs
- Accelerated growth in markets for eco-friendly products that can contribute to CO2 reductions and energy savings

JFE Shoji will build a stable management base across its four-pil-

lar system, further strengthening management through a system

of area business headquarters, deepening coordination between our overseas bases, and expanding trading income and business income. Through global supply chain management in

each region in strategic coordination with JFE Steel, we will pro-

vide JFE brand products, including steel products manufactured

by JFE Steel in Japan and overseas, and products manufac-

tured by JFE Group alliance partners, together with high-quality

services, to customers around the world. We will arrange sys-

tems to provide steel material products that have already under-

gone slitting and other cut processing, secondary or tertiary

processing, which are closer to the finished product, in line with

We maximize our contribution to customer value by anticipating customer needs in rapidly-changing global markets, through our trading and business operations in close coordination with JFE

As the JFE Group's core trading company



#### Urgent issues to address

• Firmly establish a stable revenue base through both trading and business • Maintain and expand the JFE Group's competitive strength through even stronger coordination with JFE Steel and JFE Engineering

• Strengthen initiatives in the renewable energy field

Steel and JFE Engineering. Through a trading business model that pursues unique, Group-wide optimization, we will maintain and expand the competitive advantages of the entire Group across global markets.

#### **ESG** initiatives

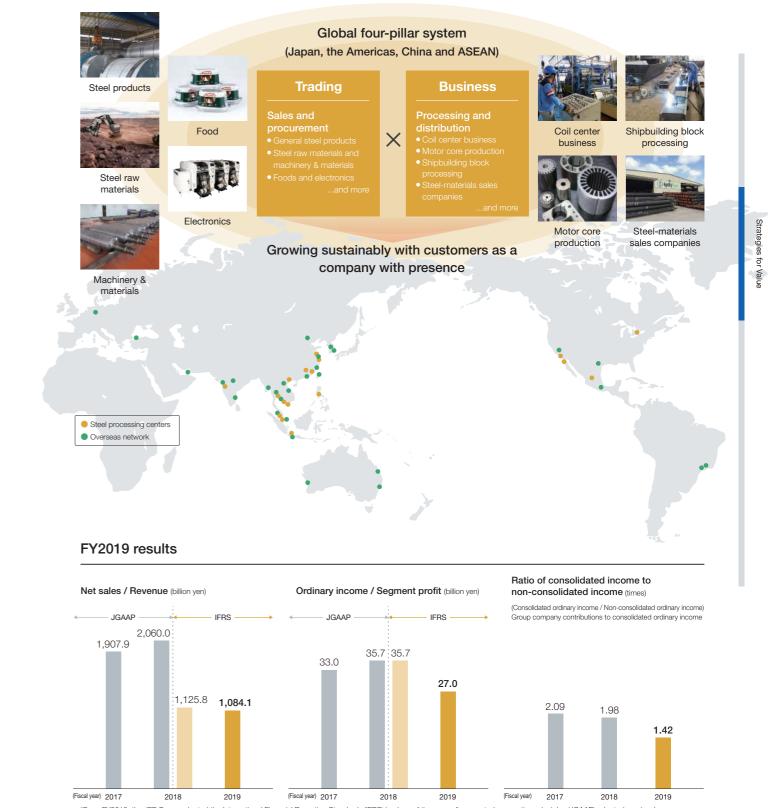
JFE Shoji provides eco-friendly products such as steel products capable of contributing to climate change solutions (ultra-highstrength steel sheets, electrical steel sheets) and scrap, to meet the needs of customers in Japan and overseas.

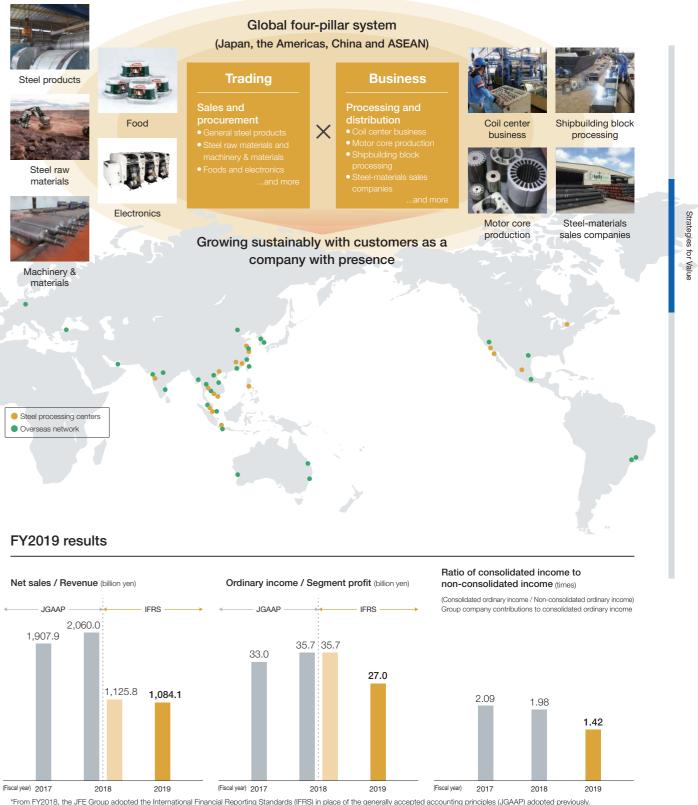
For renewable energy, a growth market, we are focusing our efforts on providing customers with optimal steel materials in the steel business field, while in the raw materials business field we provide palm kernel shells (PKS) and wooden pellets for use as fuel in biomass power generation.

We thus contribute to realizing a sustainable society through such a broad range of initiatives.

#### **Business overview**

The JFE Shoji Group is engaged in a broad range of businesses, from steel materials, machinery, non-ferrous metals, chemicals and ships to food and electronics, with our focus on steel products. The company provides services that add value to supply chain operations with a global network encompassing 97 companies.





customer needs.



V JFE Shoji





# Shipbuilding Business (equity-method affiliate)

## Contributing to the ship and offshore field with the finest products and services

As a leading company in Japan's shipbuilding industry, we leverage our world-class environmental and energy conservation technologies in the fields of merchant vessels, naval ships and other offshore undertakings, with the aim of being the most powerful shipyard capable of meeting every need.

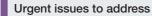
#### Envisioned business opportunities

• Expanding demand for ships that save energy and reduce environmental impact

• Expansion in renewable energy-related businesses

#### Medium- to long-term strategies

Through our capital and business alliance with IMABARI SHIP-BUILDING, we will leverage IMABARI SHIPBUILDING's strengths, including scale and construction capacity, together with JMU's abundant human resources that have technical expertise and advanced technology, and cooperate with each other to boost competitiveness in terms of both product performance and costs, enhancing the marketability of merchant vessels such as tankers, bulk carriers, and container ships. We will also take up the challenge of new fields in offshore construction business. such as offshore wind power.



Kotaro Chiba

Japan Marine United Corporation

President & CEO.

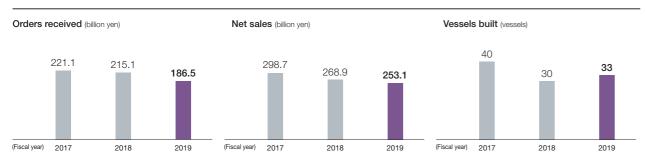
• Contribution to stable energy seaborne trade • Strengthen international competitiveness in terms of both product performance and costs

#### **Business overview**

Japan Marine United was created in 2013 by integration of two companies, Universal Shipbuilding and IHI Marine United, which leaded the shipbuilding industry in Japan. JMU is targeting business development in 4 core businesses, merchant ships, naval ships, offshore & engineering, and ship life cycle business.



#### FY2019 results



# JFE Group—Response to COVID-19

# JFE Group's Response to the COVID-19 Pandemic

We will engage in the measures necessary at present to prevent the spread of COVID-19 and ensure the continuation of business activities.

#### **Operational response**

#### Steel business

blast furnaces

- No. 4 Blast Furnace at the West Japan Works (Kurashiki district)-shut down at the end of April, and commenced blast furnace renovation works
- No. 4 Blast Furnace at the West Japan Works (Fukuyama district) banking from June (restart planned in the second half of FY2020) \*Banking: halt of operation in a state capable of restarting production by stopping the air blast flow

#### Ensure job security for employees by implementing the temporary suspension of work

• Continue the temporary stoppages implemented across the company since May 2020, for the time being

#### Engineering business

Continued operations at the Tsurumi Works through the implementation of staggered working hours, and measures to prevent infection, such as the sterilization of shared spaces, in response to the State of Emergency declared in April 2020

#### Revenue and cash flow measures

#### 1 Reduce costs in the steel business

- Achieve 100 billion yen (FY2020) in accumulated cost reductions, in response to the dramatic decline in demand for steel
- 2 Reduce domestic capital investment in the steel business A further 30 billion yen reduction on top of the 100 billion yen reduction announced in November 2019 (total reduction of 130 billion yen)
- 3 JFE Group's asset reductions (inventory reductions, reduction of strategic shareholdings, etc.) 170 billion yen)
- 4 JFE Group's fund procurement in FY2020

Procure a total of around 300 billion yen by September 30, 2020 (issuance of corporate bonds of 60 billion yen in July, plus borrowings from financial institutions)

#### Employee safety and health measures

Current response to COVID-19 (As of August 202					
	Main measures to prevent infection				
JFE Steel	Head office and branches  • Working from home and staggered working hours through introduction of a coreless flexi- time system installation of partitions between work desks  • Body temperature readings at building entrances using thermo-cameras	Steelworks and other works <ul> <li>Installation of partitions in workplaces, cafeterias, etc.</li> <li>Reduction of meeting participants through distributed meetings</li> <li>Maintenance of appropriate social distancing during break times</li> </ul>			
JFE Engineering	Head office and domestic branches • 50% or more employees working from home • Thorough body temperature records (daily) and strict compliance with mask wearing • Customers' body temperature measurements	Works, construction sites and operating offices <ul> <li>Installation of plastic sheets in rest areas</li> <li>Limitations on the use of shared facilities</li> <li>Staggered working hours at works: three shifts with one-hour intervals</li> </ul>			
JFE Shoji	Head office         Other bases           • Staggered working hours through introduction of flexi-time system         • Online internal meetings         • Installation of partitions between work desks           • Customers' body temperature measurement using thermo-cameras         • Checking body temperatures every day before going to work           • Working from home as much as possible (max. office capacity: 25%)         • Working from home (max. office capacity: 50%)				
JMU	Working from home as much as possible (max. once capacity. 23%) Head office     Working from home (target office capacity: 50% or less)     Installation of partitions between work desks     Thorough implementation of personal movement records	Working from home (max. once capacity. 50 a)     Shipyards     Campaign to ensure use of masks, ventilation and sterilization     Avoid the "three Cs" (closed spaces, crowded places and close-contact     settings) through staggered working hours, etc.     Thorough implementation of personal movement records			

#### Response in the event of a positive case

If an employee of the JFE Group tests positive for COVID-19, we work to prevent the spread of infection by swiftly sterilizing the employee's workplace and shared areas and also by implementing PCR tests to all who came in close contact with the employee, all in accordance with guidance from public health centers. We implement all possible measures to prevent infection and respond swiftly to suppress the spread of the disease, placing the safety of our employees and all other stakeholders as our highest priority.

#### Implement minimum-cost operation by optimizing production through the shutdown (renovation) and banking\* of

A further 20 billion yen reduction on top of the 150 billion yen reduction announced in November 2019 (total reduction of