







JFE Group History of Growth

History of Value Creation

Kawasaki

(Nippon Kokan)

Steel

History leading to the

establishment of JFE

Steel industry in a harsh environment

The Japanese steel industry reached its peak during the high economic growth period of the Izanagi boon (1965-1970), when NKK opened Fukuyama Works in 1965 and Kawasaki Steel lit the No.1 Blast Furnace at Mizushima Works in 1967. However, competitiveness in export dropped sharply due to the Nixon shock of 1971, two oil shocks (1973 and 1979), and the global appreciation of the yen caused by the Plaza Accord of 1985. After that, the situation became more serious after the collapse of the bubble economy in the 1990s. With the better selection and consolidation of suppliers in the steel user industry after 1999, competition among steel companies intensified, steel prices plumted, and there was rising fear that the steel industry will collapse unless the industry is restructured.

First Medium-term Business Plan 2003–2005

Realizing our merger's full potential



The primary aim behind the establishment of JFE was to secure stable profitability early on and to strengthen its business foundation through active investment and financing. We consolidated facilities, and reorganized and integrated Group companies to build a strong business structure by strengthening the competitiveness of our core businesses in steel and engineering



- May 2003 The Super-OLAC[™] accelerated cooling system, which had been installed in the Fukuyama district (formerly NKK), was installed in the steel plate plant in the Kurashiki district (formerly Kawasaki Steel). The horizontal deployment of proprietary technology realized a significant improvement in productivity.
- March 2004 Developed JAZ™, a hot-dip galvannealed (GA) steel sheet for automobiles excellent in formability during pressing.
- March 2004 Developed UHP 15CR-125 Steel Pipe, a seamless stainless steel pipe for oil well pipes, which has excellent strength and corrosion resistance that can be used in places with high seismic intensity in high temperature and high pressure environments. March 2005 Completed system integration across all operational areas by launching. the new integrated system .I-Smile



- working hours for childcare as Measures to Support Next-Generation Child-Rearing.
- June 2004 Introduced JFE COLLEGE, a curriculum for developing young employees.

Second Medium-term Business Plan 2006-2008

FRONTIER™ JM that does not contain any environmental pollutants.

(currently .IMLI)

• June 2007

to join the company.

steel's structure at a nano level

tion plant, to conserve resources and reduce CO2.

Support Next-Generation Child-Rearing.

resistance three times greater than that of general galvanized steel sheets.

Expanding high-value-added products

JFE shifted to establishing a highly profitable business structure based on the production and

sale of high-quality, high-value-added products and the provision of sophisticated services.

We also invested actively to establish systems for stable production and expanded sales of

March 2007 ■ Developed the eco-friendly chromate-free steel sheet ECO

January 2008
 Developed a new product JFF FCOGAL™ which has corrosion.

460MPa as a steel material for super-large container vessels in collaboration with IHIMU

September 2007 ■ Developed NANO HITEN™, a 1180MPa-grade ultra-high-strength

hot-rolled steel sheet, that achieves both strength and easy processing by controlling the

August 2007
 Acquired the next-generation authorization mark (Kurumin).

certifying that a company meets the standards set forth in the Act to Advance Measures to

• January 2009 Achieved reduction of CO₂ emissions by developing Super-

SINTER™, a hydrogen-based gaseous fuel injection technology for sintering machines.

■ Developed a high-strength steel sheet with a yield stress of

Strengthened the governance system by inviting outside directors

• April 2004
Started operation of Fukuyama Recycle Power Co., Ltd. and promoted environmentally friendly waste treatment recycling business.

Third Medium-term Business Plan 2009-2011

Targeting future-oriented technological development



Despite a harsh business environment brought on by events including the global financial crisis in 2008 and the Croot Ford for the Control of crisis in 2008 and the Great East Japan Earthquake in 2011, we pursued development of innovative technologies to accelerate our leap forward into the future, with a focus on envisioned developments in the following 10 years.

We also reinforced our corporate structure to increase profitability as the No.1 supplier of high-value-added products.



- May 2010 Awarded the 42nd Ichimura Prize in Industry for Distinguished Achievement for HBL™385, a steel material used in construction with a thickness 15% less than previous sheets, and excellent weldability
- January 2011 Contributed to lighter weight vehicles with UNIHITEN™, a 440MPagrade high-tensile steel sheet developed for automobiles. It was the first 440MPa-grade steel sheet in Japan to be used for door panels.
- December 2010 Developed and commercialized Mighty Seam[™], an electric resistance welded steel pipe that can be used as line pipes in harsh environments such as cold



- March 2010 ■JFE BallastAce[™], the highest-performance ballast water management system, received final approval from the IMO to contribute to maintaining the ecosystem.
- May 2011 Coral spawning observed on Marine Blocks[™] made by blowing carbon dioxide into iron-steel slag in a demonstration test at Port of Hirara in Mivako Island
- Continued CSR activities such as donating desks, chairs and canned food to the Ministries of Education in both Ghana and Nigeria.

Fifth Medium-term Business Plan 2015-2017

Capturing global demand to the fullest extent

We formulated a manufacturing and sales system to maximize opportunities for capturing demand in Japan stemming from government initiatives to upgrade disaster resilience and prepare for the Olympic and Paralympic Games in 2020.

Overseas, we focused on capturing demand related to infrastructure reinforcement in emerging countries and initiatives for energy savings and environmental protection. Also, we continued to invest in new business in fields and geographic regions showing strong potential for future growth



- December 2015 Developed a 980MPa-grade high-tensile strength cold-rolled steel sheet with both excellent elongation and hole expansion characteristics, that had been difficult to achieve with ultra-high strength steel.
- January 2017 Developed the world's thickest 100-mm thick YP460MPa-grade crack arrest steel plate that can be used in ultra-large container vessels
- December 2017 Developed JFE's topology optimization technology, a technology that optimizes the joining location, the first applied to vehicles



- October 2015

 Established the JFE Holdings, Inc. Basic Stance on Corporate Governance with the aim of pursuing and enhancing the best corporate governance.
- January 2016 Decided to establish an onsite childcare facility at the East Japan Works (Chiba district).
- March 2017 Decided to launch a food recycling business using bio-gasification from August 2018 to generate renewable energy for helping to build a low-carbon society.
- February 2018
 Selected for the Health & Productivity Stock Selection 2018 for the first time, as a company strategically implementing employee health management from an $\,$ overall management viewpoint.



Fourth Medium-term Business Plan 2012-2014

Expanding into growing markets overseas



We further strengthened our profit base for growth by investing overseas and developing innovative new products

Corporate resources were allocated intensively in emerging markets where significant growth was expected over the medium- to long-term. We also reinforced production abroad and strengthened overseas sales and technical functions for further growth



- mis. Achieved significant reductions in the local procurement of equipment and manpower, and halved the construction period.
- February 2014 Developed the world's first American Petroleum Institute (API) standard X80-grade 1-inch (25.4 mm) electric resistance welded steel pipe.
- May 2014 Developed JFE-SIP™-CC, the world's first high corrosion resistant steel plate that is revolutionary in preventing the corrosion of a coal carrier's cargo hold, used in coal carriers for the first time.
- August 2014 Developed and launched manufacturing for the first time in Japan of Kona-Bijin™, a premixed iron powder for iron coating direct seeded rice.



- called ferro-coke, and its trial use at a blast furnace. Ferro-coke has innovative properties for reducing CO₂ emissions.
- June 2012 Introduced a guick charger for electric vehicles at Cosmo Oil's affiliated gas stations, and implemented a demonstration project for gas stations in the EV era.
- March 2014 Selected as a Nadeshiko Brand for the first time in recognition of the creation of a work environment where women can play more active roles

JFE Sorairo Childcare Center Fukuvama

Global Remote Center

Boosting competitiveness with advanced technology

Sixth Medium-term Business Plan 2018-2020



Our current focus is strengthening competitiveness through the application of data science and other advanced technologies to meet sophisticated and diversifying needs throughout

Having made sustainable societies one our priorities, we are pursuing a number of environmental social and governance (ESG) initiatives including environmental protection, development of human resources and establishment of a governance system.



- July 2019 Enhanced and developed an automation system for the automatic combustion control (ACC) system at a waste treatment facility to achieve fully automated
- November 2019 Introduced the latest data science (CPS) to all blast furnaces in domestic steelworks to improve the operation of blast furnaces.
- December 2019 Systematized proprietary steel sheet application technology for automobiles as $\mathsf{JESOLVA}^\mathsf{TM}$ to provide a comprehensive solution.





- safety at steelworks, a first in the steel industry in Japan.
- sustainable raw material purchasing system that takes into account all risks related to raw material procurement.
- May 2019
 Agreed to the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)



counterparts for the integration in addition to the com mon historical background of having been private steel companies that were not government-owned.

One was that the product lineups of both companies were similar. With similar product lineups, we thought it possible to maximize the benefits of integration, such as purchasing raw materials in bulk and consolidating

of the steelworks. With Kawasaki Steel/Chiba Works and NKK/Keihin Works located in eastern Japan, and the proximity of Kawasaki Steel/Mizushima Works and NKK/Fukuyama Works in western Japan at only an hour's drive by car, it seemed natural to unify management. In addition, we felt that significant benefits could be obtained from integration due to the fact that the core steelworks of both companies, Mizushima and Fukuyama, were the most competitive large-scale

here were two other reasons for selecting them as

The other reason was the location and competitiveness

Since there are rich reserves of steel, which composes approximately 30% of Earth's mass, it can also be mass produced at low cost. Steel has an extremely low impact on the environment at the manufacturing stage when compared to other materials, and has an excellent recyclability. Steel with the low environmental impact is reborn as anything over and over again (closed-loop recycling), contributing to the sustainable development of our society.

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 lifecycle 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* 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.

1.55 0.56 a year 2015

* ISO 20915; Life Cycle Inventory Calculation Methodology for Steel Products (2018.11) JIS Q 20915: Life Cycle Inventory Calculation Methodology for Steel Products (2019.6)

> Steel contributes to social developments with its rich resources Natural resources

a year

Produce

2015 Pig iron production

Steel can be recycled over and over again

(Blast furnace)

1.22

a vear

2.68 1.62

High economic efficiency and low environmental impact

■ Global demand

(2017)

Earth is a steel planet (rich resources)

As much as 85% (190 billion tons) of the Farth's metal resources are iron ore Source: Mineral Commodity Summaries (2016)

iron ore on the Earth

Recoverable reserves of

Mass production at low cost

Produce

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.

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

The greenhouse gas (GHG) emission of steel at the manufacturing stage¹ is 1/5 to 1/9 of that of aluminum, and approximately 1/11 of that of carbon fiber.

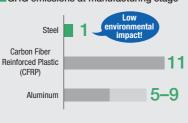
*1 From mining raw materials to factory shipment
*2 Comparisons with other materials' GHG emissions per unit weight, with steel as 1

20-50 1.7 billion tons 2-10 150.000 tons Steel Carbon Aluminum Carbon Aluminum documents from Mizuho Bank * Comparisons with other Industry Research Division

Crude steel

materials' prices per unit

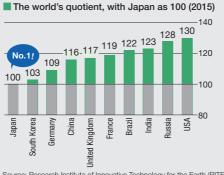
GHG emissions at manufacturing stage



Japan's steel industry keeps the top

energy efficiency in the world

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 towards environmental conservation, including developing and spreading the use of energy-saving technologies.



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

Recycle Efficient separation and retrieval of steel using its magnetic property Dismantle and collect

Steel can be reborn as anything over and over again

Use Contributing to sustainable development of our life and economy by the world's best energy-saving and environmental technologies Processing and different manufacturing

> Automobiles, construction materials, etc.

Recycle

Excellent recyclability

Steel is a material with an 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 (closedloop recycling)

Closed-loop recycling of steel

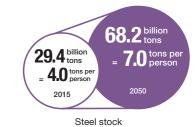
Steel can be recycled many times as the raw material of products made in the same steel material while maintaining the original properties of the iron material itself.

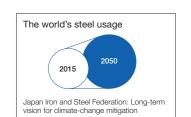
Closed-loop recycling is superior to open-loop recycling* that recycles other materials in terms of sustainability. This is due to the fact that it is designed to reduce the amount of natural resources being newly introduced, moreover reduce the discharge of environmentally hazardous substances, and 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 dete riorate or change in quality.









Foundation for life and society

Demand

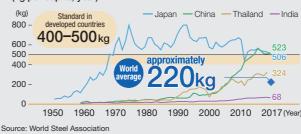
for steel

1.29

The potential to grow on a global level

The world average of the annual consumption of steel currently stands at around 220 kg per capita. Going forward, the long-term global demand for steel is expected to keep growing alongside the economic development of emerging countries.

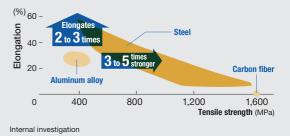
Trends in annual steel consumption per capita by country (kg per capita, year)



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. 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



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Putting Corporate Vision into Practice

lanagement resources

accumulate

over time

Contributing to Society

focus on rene

with the World's Most Innovative Technology

Input

Business growth drivers

Business model

CO

Output into market

Creating

Outcome

o Intellectual capital

 Domestic patent publications (FY2019)

 R&D expenses (FY2019)

Manufacturing capital

 Consolidated crude steel production (FY2019)

 Manufacturing bases (as of April 2020)

Natural capital

Energy consumption

intensity (FY2019)

 Recycling of water resources (FY2019)

Social and other related

capital Number of customers (delivery destinations)

Human capital

(FY2019)

 Number of employees (as of the end of March

 Annual training hours (FY2019)



 Ratio of equity attributable to owners of parent (IFRS) (as of the end of March

• Total equity (IFRS) (as of the end of March 2020)

World-class technologies that have been developed and accumulated in long-term relationships with our

1,051 patents (entire Group)

Total patents published in Japan and patents published

38.7 billion yen (Group consolidated)

Two major, consolidated and highly efficient steelworks and bases for production and process engineering across the globe

 $28 \text{_} 09_{\text{million tons}}$ (consolidated JFE Steel)

111 bases in 23 countries

and regions (entire Group)

Realizing a recycling-oriented society and reduction of negative environmental impact through leading-edge, energy-saving and resource conservation technologies

Comparison with FY1990

19% reduction (23.2 GJ/t)

93.4% (steelmaking process)

Relationships of trust established over many years with our customers and stakeholders

Approx. **24,000** customers
*Total of JFE Steel, JFE Engineering and JFE Shoji

Diverse human resources with abundant experience and a high level of knowledge and expertise that support our wide range of operations

64,009 persons (Group consolidated)

0.83 million hours a year (total of operating companies: 40 hours a

A sound financial base that enables further investment

35.0%

1,706.5 billion yen

Engineering Business Shipbuilding Business
(Equity-method affiliate)
Building a wide range of vessels, this

Steel Business

We possess two ma ed steelworks in with global manufac ed steelworks in Japan along with global manufacturing and pro-cessing bases, which allow us to into supply products with the hi ed value that meets our custo evolving requirements.

(P.35

Trading Business

Supplying steel products with added value globally, this business operates in a broad range of sectors, in-cluding food and electronics, as well as handling iron and steel raw materials.

P.41

⊒. by providing general, and solutions also of our T that meet the customers

needs

of society



Improving

medium-

o

long-term-corporate

value





Urban environmental plants





resolve social issues

Using our operations to make progress possible in diverse industries and lifestyles

- Realizing comfortable lifestyles through supply of automobiles, ships, and household appliances with advanced functions
- · Constructing a strong infrastructure through development in the civil engineering and construc-
- Ensuring a stable energy supply and spreading the use of renewable energy toward a sustainable society
- Developing and supplying environmentally friendly products and promoting resource
- Contributing to resolving climate change issues on a global scale through initiatives to reduce CO₂.
- Securing excellent human resources and enhancing job
- Creating a prosperous coexistence with local communities

Creating economic value

from sustainable growth

Returning the economic value created through business operations into investments and to shareholders

- Sustainable cash flow growth
- Continued business investment in growth sectors and regions and investment in the development of cutting-edge technology
- Return of profit to shareholders Dividend payout ratio of approximately 30%

Foundations supporting our businesses

Compliance P.93

Corporate Governance P.87

Building a foundation for sustainable growth

business possesses advanced tech-nologies and one of the strongest construction capabilities in Japan.

Human Resources P.59

P.71

Stakeholder Relationships P.83

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

The competitive advantages of our steel and trading businesses have three fundamental sources: (1) leading-edge technological development capabilities mobilized by customer needs, (2) production capabilities constantly developed and enhanced at production sites, and (3) sales capabilities underpinned by firm relationships of trust with customers established over years by JFE Steel and JFE Shoji. We have created new value tailored to customer needs and provided optimized solutions based on these three factors. Our competitive advantages are treasured assets created through many years of effort. They are also the driving force behind our sustainable growth and cannot easily be matched by other companies.

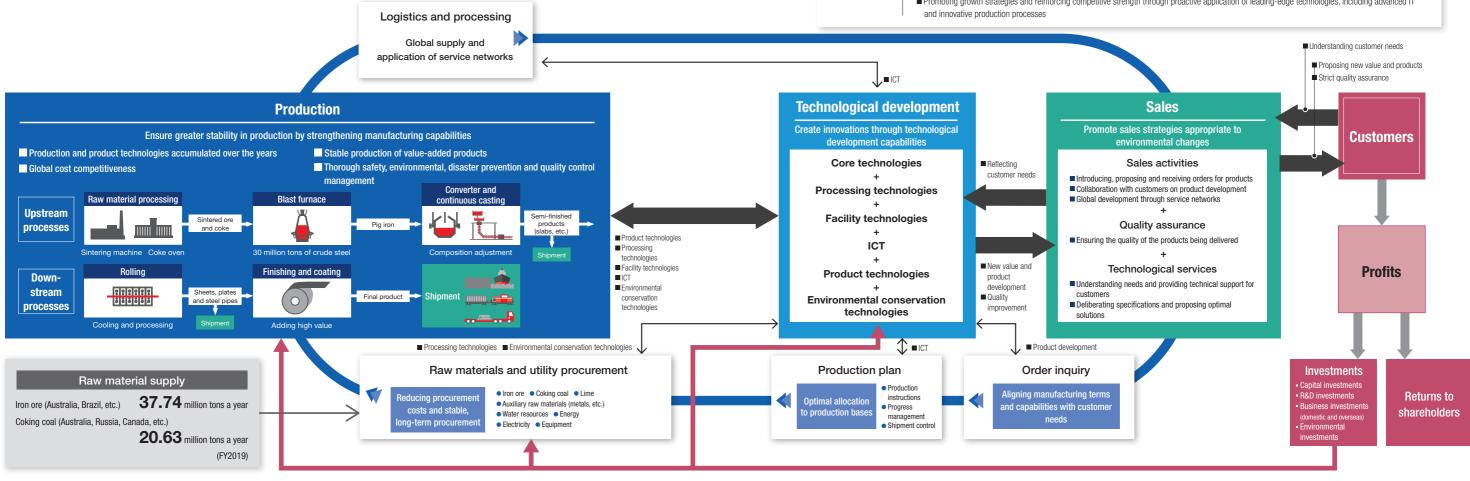
The source of competitive Technological development capabilities that make advantages that reinforce new value creation a reality our business model

Technological development

We have fine-tuned and accumulated world-class technological capabilities by responding to the requests of Japanese customers, who are the most demanding in the world in terms of quality standards. Creating new value through the development and supply of high function, quality products and services in a wide array of fields, we contribute to the development of industries and societies around the world and to evolving lifestyles. Our excellent environmental, resource, and energy conservation technologies allow us to manufacture steel with the lowest environmental impact in the world. These technologies are put to use for environmental measures all over the world and are utilized as opportunities for growth.

Initiatives and investments for reinforcement

- Promoting product development and provision of solutions, including for technological innovations for automobiles and according to changes in social
- Further global development and evolution of world-class technologies for conservation of energy, reduction of environmental impact and environmental environmental impact and evolution of environmental impact and evolution of environmental environmenta
- Promoting growth strategies and reinforcing competitive strength through proactive application of leading-edge technologies, including advanced IT



The source of competitive advantages that reinforce our business model

Two major, integrated steelworks with excellent competitive strength



Initiatives and

investments for

reinforcement

The primary source of our competitive strength in the steel business are two major steelworks located in east and west Japan, both with world-class production scale. West Japan Works boasts a production scale of 20 million tons of steel annually and, by international standards, is among the best in terms of cost, product strength and technological capabilities. In addition, we will carry out a review of the domestic production system in response to changes in the business environment, and develop a lean and resilient system. With leading production technologies, intellectual property, expertise and other strengths accumulated over many years, our production capability is our company's unique source of competitive strength.

See Steel Business Strategy on page 35 for details.

- Establish a robust manufacturing system through restructuring centered on selection and focus to respond to changes in the business environment ■ Innovative enhancements in productivity and product quality, and realization of stable production through the proactive introduction of advanced IT and
- ■Utilize solution technologies in the steel business gained through expertise, data and advanced IT accumulated at steelworks in Japan
- Stable procurement of raw materials and cost reduction utilizing technologies for low-cost raw materials and networks, including JFE Shoji

The source of competitive advantages that reinforce our business model

Ability to respond to customer needs and a stable customer base



We have established relationships of trust through two-way communications with many customers during our long years in business. We have created new value by closely communicating with customers to accurately meet their evolving requirements and through other activities, including cooperation from the initial development stage which helps us to contribute to the resolution of customer issues. As a result, we have created a solid customer base that cannot be easily or quickly built by other companies and, at the same time, gained global competitive strength (non-price competition).

Initiatives and investments for

- Consolidating product development and sales as well as understanding the needs of customers in an appropriate way and in a timely manner through
- Early Vendor Involvement (EVI): Fine-tuning technologies with customers from the initial stage of new product development, to create the finest products possible with the available technologies
- Accurately responding to customer expectations and creating a global network that can deliver products and services in a timely manner

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Business models that support society and create the future

The main focus of the engineering business is infrastructure construction that supports people's lives and society, providing products and services based on the Group's comprehensive strengths and advanced technologies.

As long as people in the world long for more comfortable and abundant lives, there will never be an end to our mission.

We will provide optimal solutions for society and strive to realize a sustainable society to create and support the foundations for life.

The source of competitive advantages that reinforce our business model

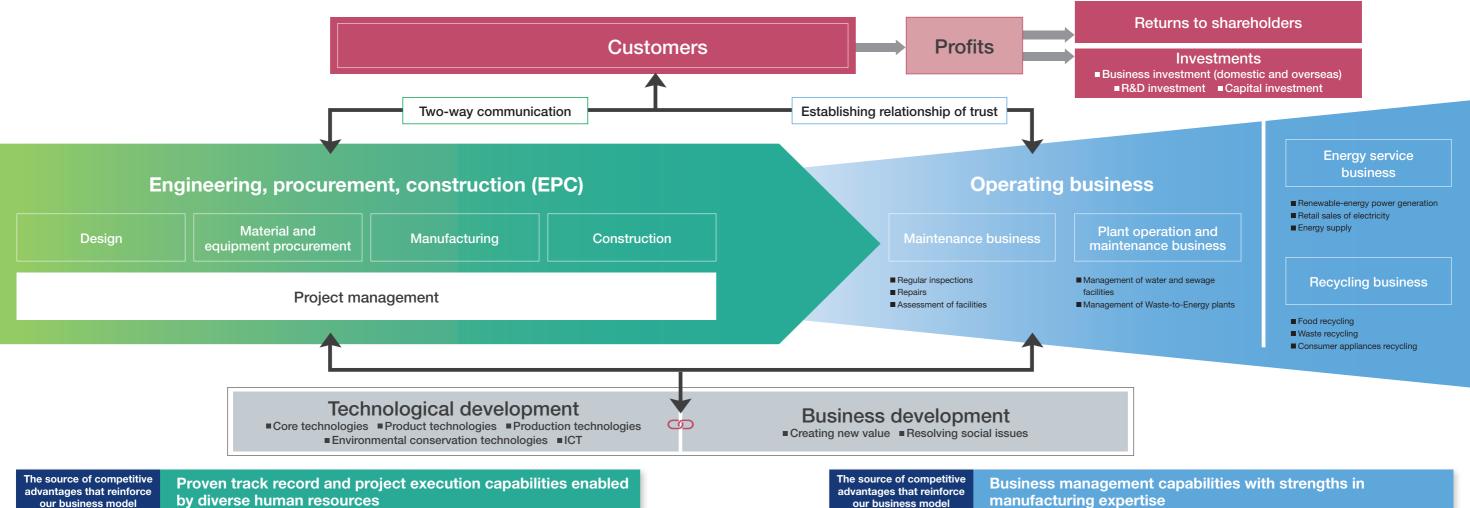
Advanced core technologies and diverse product technological capabilities

development

We have conducted business in diverse fields such as energy, environment and bridges, taking advantage of our advanced technological capabilities, which were developed by combining and advancing the following technologies; processing and assembly technologies based on our shipbuilding business and the material and combustion technologies based on our steel business. We especially possess many technologies that support society, including those for the creation of next-generation energy and solutions for environmental issues. We will make every possible effort to plan, design and promote new business models and develop new technologies based on these technologies.

Initiatives and investments for reinforcement

- Enhancing existing products with a focus on the energy and environment fields, along with developing new products that meet the needs
- Accelerating the creation and expansion of new businesses by consolidating existing businesses toward a recycling-oriented and sustainable society
- Continued investment and reinforcement of human resources to accelerate the enhancement of products and services, including through application of Al and IoT technologies





We have constructed many high-performance, high-quality facilities that meet customer needs in fields such as energy, environment and bridges, from design to completion. Furthermore, we possess Japan's largest steel structure manufacturing plant and other production bases, allowing us to provide high-quality products at low cost. We also have built global engineering structure in overseas bases, centered in Asia, to further reinforce our competitive strength.

Initiatives and investments for reinforcement

- Enhancing quality and productivity through active application of advanced IT at construction and manufacturing sites
- ■A global engineering structure that enables the supply of optimal products for each country
- Further enhancement of project management systems to ensure projects are thoroughly implemented and earnings is secured



We have nurtured our expertise in operation and maintenance over the years at environmental and water and sewage plants, and conduct various projects collaborating with public and private sectors in the civil service field. Our plants undertake recycling and renewable energy generation businesses for a recycle-oriented and sustainable society. We will strive to further expand our operating business, including public and private sector collaborations and energy service operations, applying our strengths in manufacturing and management expertise.

Initiatives and investments for reinforcement

- Active investment toward expanding operating business, such as public and private sector collaborations in the civil service field, energy services, and
- Establishing a system that provides management solutions with remote monitoring of various plants using Al and IoT technologies
- Active business investment, including collaborations with local overseas partners, to enhance our overseas business

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