

# JFE Group Value Chain

The JFE Group's value chain encompasses upstream and downstream activities across the globe. In conducting business, we seek to accurately identify and steadily respond to: (1)\*1 the social challenges that the Group needs to address and (2)\*2 the risks and opportunities that the Group must resolve through its business operations.

We will continue to implement further countermeasures throughout our value chain and strengthen the sustainability of the entire Group.

\*1: Corresponds to social challenges in the Overview of the Value Chain

\*2: Corresponds to risks and opportunities in the Overview of the Value Chain



## Overview of the Value Chain



Procurement

Suppliers

Local communities near suppliers



To ensure stable supply of iron ore and coal used as raw materials in the production of steel products, we purchase from various sources around the world such as Australia, North and South America, Russia, and Africa and transport materials to the steelworks on a special vessel. Equipment and materials used at steelworks plants are also purchased globally.

● Social ◆ Environment

## Social Challenges

- Exercise fair procurement
- Complete abolition of child labor and forced labor
- Prohibit the use of conflict materials
- Respect human rights
- Implement workstyle reform
- ◆ Transition to decarbonized society (climate change actions)
- ◆ Conservation of natural resources

## Risks

<Common>

- Occurrence of accidents, including industrial accidents
- Potential human rights risks
- Labor risks
- ◆ Disruptions to the supply chain caused by climate change-related disasters, natural disasters such as earthquakes, and COVID-19

<Raw material: iron ore>

- ◆ Increased environmental impact (raw material procurement)

<Raw material: coal>

- ◆ Increased environmental impact (raw material procurement)
- ◆ Introduction of a carbon tax

<Machinery>

- ◆ Increased environmental impact (machinery procurement)

## Opportunities

- ◆ Develop a system to ensure stable procurement by expanding CSR procurement

## Initiatives

- ◆ Publicly release information on the Purchasing and Procurement Policies to suppliers and request that they take action
- Confirm that suppliers are not using conflict materials
- ◆ Reduce CO<sub>2</sub> emission during transportation by improving logistics efficiency
- ◆ Secure an alternative source of supply and distribute

<For more information:>

▶ [Supply Chain Management](#) (P. 37)

▶ [JFE Group's Response to the TCFD](#) (P. 74)

## Manufacturing, Production, and Shipping

Employees

Local communities near manufacturing sites



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

● Social ◆ Environment

### Social Challenges

- Ensure occupational health and safety
- Provide stable supply of products
- Ensure quality
- Achieve co-existence and mutual prosperity with local communities
- Respect human rights
- Implement workstyle reform
- Ensure information security
- ◆ Transition to decarbonized society (climate change actions)
- ◆ Conservation of natural resources
- ◆ Reduction of waste
- ◆ Prevention of water resource exhaustion

### Risks

- Lose credibility with customers due to issues related to production and quality
- Culture of passing down technical skills is dying out
- Occurrence of accidents, including industrial accidents
- Potential human rights risks
- Labor risks
- Labor shortage
- Cyber security risks
- ◆ Physical and transitional impact of climate change (CO<sub>2</sub> emissions, water risk, etc.)
- ◆ Heightened decarbonization needs in iron and steelmaking process
- ◆ Risk of floods associated with rising sea levels
- ◆ Risk of drought in the water intake area, risk of pollution in the discharge area
- ◆ Shortage of disposal sites for waste generated by facilities and offices
- ◆ Tighter environmental regulations

### Opportunities

- Ensure competitiveness through stable production and stable quality
- Construct favorable relationships with local communities
- Secure excellent human resources through workstyle reform
- ◆ Expand electric furnace steelmaking and electric furnace engineering businesses
- ◆ Develop eco-friendly innovative technologies and ensure competitiveness

## Initiatives

- Testing, inspections and quality audits
- Strategic investment and renovation of facilities including R&D
- Production site tours for stakeholders
- ◆ Increase the efficiency of the iron and steelmaking process, develop and introduce super innovative technology
- ◆ Develop eco-friendly products
- ◆ Develop and install energy-saving equipment for environmental protection
- ◆ Recycle industrial water by water purification
- ◆ Conduct 3R (reducing, reusing, and recycling) activities
- ◆ Implement measures against flood and drought

For more information:

- [Environmental Management](#) (P. 39)
- [Development and Provision of Eco-friendly Processes and Products](#) (P. 46)
- [Climate Change](#) (P. 63)
- [JFE Group's Response to the TCFD](#) (P. 74)
- [Efficient Use of Resources](#) (P. 100)
- [Water Security](#) (P. 103)
- [Customer Responsibility](#) (P. 111)
- [Community](#) (P. 138)

Sales and Usage

Employees

Customers



The JFE Group is committed to developing eco-friendly products such as high tensile strength steel sheets that help reduce the weight of automobiles as well as electromagnetic steel plates used in electric vehicles. We support the frontier of production by responding to the diverse needs of different industries through research and development and by improving production technologies.

● Social ◆ Environment

## Social Challenges

- Compete fairly
- Respect human rights
- Implement workstyle reform
- Ensure information security
- ◆ Transition to decarbonized society (climate change actions)
- ◆ Conservation of natural resources

## Risks

- Legal risks such as violations of antitrust law or competition law
- Occurrence of accidents, including industrial accidents
- Potential human rights risks
- Labor risks
- Cyber security risks
- ◆ Increased environmental impact during product use

## Opportunities

- Secure excellent human resources through workstyle reform
- ◆ Renewed interest in recyclability of steel
- ◆ Contribute to reduced CO<sub>2</sub> emissions by providing high-performance steel such as high tensile strength steel sheets and electromagnetic steel plates

## Initiatives

- Conduct compliance training
- ◆ Reduce CO<sub>2</sub> emissions during product use
- ◆ Promote a shift in transportation modes
- ◆ Provide eco-friendly products

<For more information:>

- ▶ [Climate Change](#) (P. 63)
- ▶ [Development and Provision of Eco-friendly Processes and Products](#) (P. 46)
- ▶ [Compliance \(including Anti-corruption\)](#) (P. 158)

## Collecting Steel Scrap

Employees

Customers

Society



Steel products at the end of their product life cycle are collected as steel scrap and recycled as materials for the steel production cycle.

- Social
- ◆ Environment

## Social Challenges

- Respect human rights
- Implement workstyle reform
- Ensure information security
- ◆ Transition to decarbonized society (climate change actions)
- ◆ Conservation of natural resources
- ◆ Prevention of resource depletion
- ◆ Increase the volume of scrap generated

## Risks

- Occurrence of accidents, including industrial accidents
- Potential human rights risks
- Labor risks
- Cyber security risks
- ◆ Decline in the grade of obsolete scrap
- ◆ Rising price and difficulty of obtaining obsolete scrap

## Opportunities

- ◆ Increased use of scrap
- ◆ Expand the scrap distribution business

## Initiatives

- ◆ Efficient transportation for collecting steel scrap
- ◆ Efficient use of resources based on increased use of scrap

<For more information:>

- ▶ [Climate Change](#) (P. 63)
- ▶ [Efficient Use of Resources](#) (P. 100)

## Engineering Business



### Overview of the Value Chain



## Engineering (Creating the Foundations for Daily Life)

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



## Planning, Development, and Design

Employees

Customers

● Social ◆ Environment

### Social Challenges

- Maintenance of social infrastructures, aging of facilities
- Disaster prevention and mitigation, national resilience
- Respect human rights
- Implement workstyle reform
- Ensure information security
- ◆ Transition to decarbonized society (climate change actions)
- ◆ Resource restriction
- ◆ Conservation of natural resources
- ◆ Reduce waste plastic
- ◆ Reduce food waste

### Risks

- Lose credibility with customers due to issues related to production and quality
- Potential human rights risks
- Labor risks
- Labor shortage
- Cyber security risks
- ◆ Tighter environmental regulations

### Opportunities

- ◆ Implement requested functions
- ◆ Need for cost reduction and energy saving
- Expand ESG investment
- ◆ More sophisticated needs in the energy-environment area
- ◆ Increased need for renewable energy solutions
- ◆ Increased demand for CCU/CCS facilities
- ◆ Increased response to climate change related disasters (disaster prevention and mitigation, disaster waste processing)
- ◆ Increased demand for plastic recycling
- ◆ Increased demand for food waste power generation

### Initiatives

- ◆ Pursue research and development
- ◆ Design products that meet quality requirements, regulations, cost reduction, and energy-saving requirements
- Deliver solutions that meet customer needs
- Secure competitiveness by creating a new business model that contributes to addressing social problems (plastics and food products)
- Use big data and AI in design
- ◆ Plan for construction and operation of a power plant that utilizes renewable energy as well as the sales of electricity

<For more information:>

- ▶ [Development and Provision of Eco-friendly Processes and Products](#) (P. 46)
- ▶ [Climate Change](#) (P. 63)
- ▶ [Customer Responsibility](#) (P. 111)
- ▶ [Business Model \(JFE GROUP REPORT 2020 pp. 19–20\)](#) (<https://www.jfe-holdings.co.jp/en/investor/library/group-report/>)



Procurement

Suppliers

- Social
- ◆ Environment

Social Challenges

- Fair procurement
- Complete abolition of child labor and forced labor
- Respect human rights
- Implement workstyle reform
- Ensure information security
- ◆ Transition to decarbonized society (climate change actions)
- ◆ Conservation of natural resources

Risks

- Potential human rights risks
- Labor risks
- Labor shortage
- Cyber security risks
- ◆ Increased environmental impact (material procurement)
- ◆ Disruptions to the supply chain caused by climate change-related disasters, and natural disasters such as earthquakes
- ◆ Risk of drought in the water intake area, risk of pollution in the discharge area

Opportunities

- ◆ Development of stable procurement though expansion of CSR procurement.

Initiatives

- ◆ Making public the procurement policy and requesting the commitment of suppliers
- ◆ Promote green procurement
- ◆ Requesting suppliers to take action in CSR initiatives

<For more information:>

➤ [Supply Chain Management](#) (P. 37)

➤ [JFE Group's Response to the TCFD](#) (P. 74)



## Production and Construction

Employees

Business associates

- Social
- ◆ Environment

### Social Challenges

- Ensure quality
- Ensure occupational safety and health
- Respect human rights
- Implement workstyle reform
- Ensure information security
- ◆ Transition to decarbonized society (climate change actions)
- ◆ Conservation of natural resources
- ◆ Issues regarding waste reduction
- ◆ Preserve living environments

### Risks

- Culture of passing down technical skills is dying out
- Occurrence of accidents, including industrial accidents
- Potential human rights risks
- Labor risks
- Labor shortage
- Cyber security risks
- ◆ Effects of meteorological disasters
- ◆ Violation of environmental regulations and laws
- ◆ Environmental accidents
- ◆ Pollution of the environment

### Opportunities

- Saving labor through new technology

### Initiatives

- Introduce a labor-saving construction method
- ◆ Promote waste recycling

<For more information:>

- ▶ [Efficient Use of Resources](#) (P. 100)

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

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



Maintenance and Operations

Employees

Customers

● Social ◆ Environment

## Social Challenges

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>● Improve productivity</li> <li>● Disaster prevention and mitigation</li> <li>● Ensure occupational safety and health</li> <li>● Respect human rights</li> <li>● Implement workstyle reform</li> <li>● Ensure information security</li> </ul> | <ul style="list-style-type: none"> <li>◆ Transition to decarbonized society (climate change actions)</li> <li>◆ Reduce CO<sub>2</sub> emissions</li> <li>◆ Conservation of natural resources</li> <li>◆ Issues regarding waste reduction</li> </ul> |
|--|---|

## Risks

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>● Cyber security risks</li> <li>● Culture of passing down technical skills is dying out</li> <li>● Occurrence of accidents, including industrial accidents</li> <li>◆ Meteorological disasters affecting operations</li> </ul> | <ul style="list-style-type: none"> <li>◆ Risk of floods associated with rising sea levels</li> <li>◆ Risk of drought in the water intake area, risk of pollution in the discharge area</li> <li>◆ Violation of environmental regulations and laws</li> <li>◆ Environmental accidents</li> </ul> |
|---|---|

## Opportunities

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>● Expand the business scale through privatization of public services</li> <li>● Need for remote monitoring and automation due to a lack of human resources</li> </ul> | <ul style="list-style-type: none"> <li>◆ Need for improving operational efficiency and reducing environmental impact</li> </ul> |
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## Initiatives

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- Use AI and IoT to develop technologies for remote monitoring and automation as well as prediction of mechanical breakdowns

- ◆ Optimize operations by analyzing incinerator combustion conditions, reduce environmental impact

<For more information:>

- ▶ [Development and Provision of Eco-friendly Processes and Products](#)  
(P. 46)