



# Nippon Steel Sustainability Report 2023

Nippon Steel Corporation Sustainability Report 2023 (April 2022 to March 2023)



Printed in Japan



**NIPPON STEEL CORPORATION**

# Make Our Earth Green



## NIPPON STEEL Green Transformation initiative

Nippon Steel adopts our own new initiative “Nippon Steel Carbon Neutral Vision 2050,” as a part of our widespread efforts toward achieving a decarbonized society.

We will consider and implement various measures as a top priority management issue in order to continue to lead the world's steel industry.

### Corporate Philosophy

**Nippon Steel Corporation Group will pursue world-leading technologies and manufacturing capabilities, and contribute to society by providing excellent products and services.**

### Management Principles

- 1 We continue to emphasize the importance of integrity and reliability in our actions.
- 2 We provide products and services that benefit society, and grow in partnership with our customers.
- 3 We pursue world-leading technologies and manufacturing capabilities.
- 4 We continually anticipate and address future changes, innovate from within, and pursue unending progress.
- 5 We develop and bring out the best in our people to make our Group rich with energy and enthusiasm.

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**Editorial policy**  
This Sustainability Report is the 26th since the former Nippon Steel Corporation issued what is the first sustainability report by a Japanese steel manufacturer, in 1998. We believe it is extremely important to promote business activities that contribute to the realization of a sustainable society. We are therefore committed to diverse initiatives based on this idea.

In this report, in order to clearly express our approach toward helping realize a sustainable society, we present our sustainability initiatives in details with representative examples.

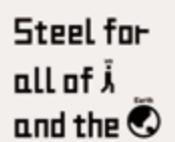
**Period covered**  
The period covered in the report is fiscal 2022 (from April 2022 to March 2023). For some activities, the period from April 2023 to June 2023 is included.

**Boundary of report**  
• Activities of Nippon Steel and its group companies in Japan and overseas  
• Economic aspects: The *Nippon Steel Integrated Report 2023* (issued in September 2023) also covers the contents of the economic report.

**Reference for guidelines**  
• GRI (Global Reporting Initiative) Standards  
• “Environmental Reporting Guidelines 2018” by the Ministry of the Environment  
• Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), established by the Financial Stability Board

## Attractiveness of Steel

Steel is one of the most familiar materials and is indispensable for our daily lives. Thanks to its diverse properties and infinite potential, steel will continually contribute to a sustainable society.

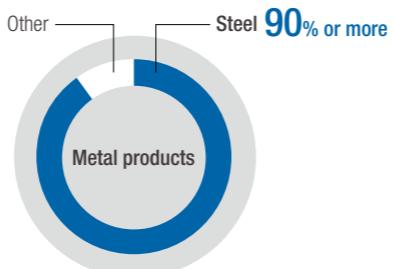
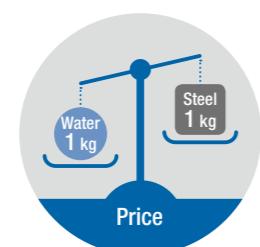
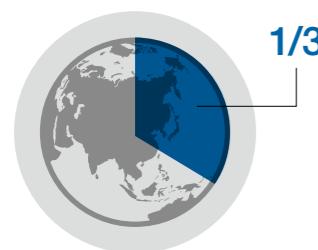


### Steel is an abundant, sustainable material that can be reborn endlessly

Iron is believed to constitute **one-third** of the Earth's weight.

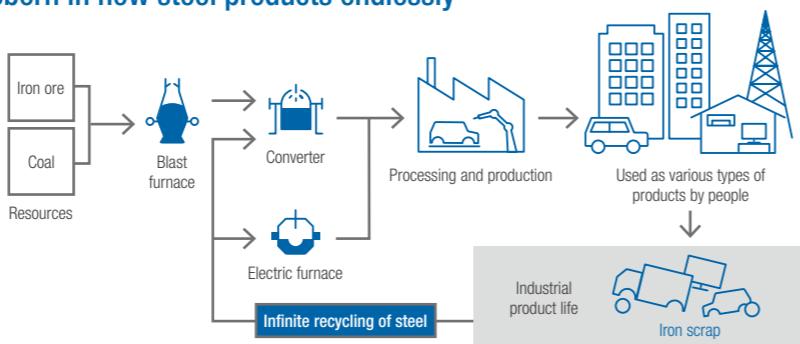
Steel is an **affordable material** and is cheaper than water in a plastic bottle (in comparing price per unit weight).

Steel represents **90% or more** of metal products, as steel being abundant, low-priced, and having good workability, and has a wide range of applications.



### Steel is a sustainable material to be reborn in new steel products endlessly

Steel is easily sorted from a mixture with other materials and can be endlessly recycled without causing deterioration in quality — quite a unique characteristic. Steel is a perfect material for recycling as it can be recycled endlessly into all kinds of steel products after the end of its product life.



### Diverse properties and a wide range of applications

Due to diverse advantages such as strength and easiness to work, steel has been used in a wide range of applications and deserves recognition as the most outstanding material for the infrastructure of society, a material that supports people's lives and overall economic development.

Steel is close to us and we cannot live without steel products. Steel is for here for all of us now and will be with us in the future.

#### Diverse properties that support a wide range of applications

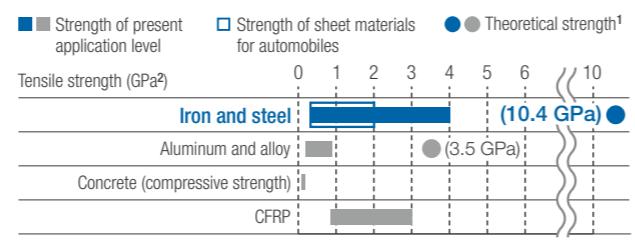
Strength	Weldability	Heat resistance
Toughness	Paintability	Cold resistance
Robustness	Magnetism	Weather resistance
Workability	Corrosion resistance	

### Infinite potential

Steel is a material with great potential due, in part, to its having a much higher theoretical strength than other materials.

In addition to adjusting carbon and other content to give a certain steel product specific desired characteristics, steel's properties can be finely controlled to meet function and performance requirements. We do this by controlling the combination of its temperature and rolling at the manufacturing stage or by adding alloys. Further development in steel and its usage will push the potential horizon further outward.

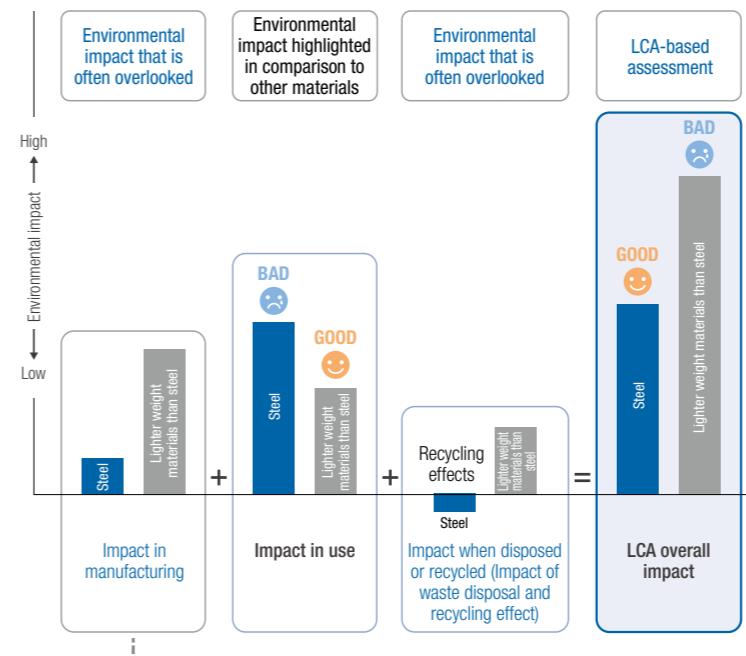
#### Potential capacity and present application level of material strength



### Steel is an outstanding material from the Life Cycle Assessment (LCA) perspective

#### The Life Cycle Assessment (LCA) is therefore important.

Some materials have low environmental impact in use but may have high environmental impact in the overall life cycle.



Comparison of GHG (Green House Gas) emission in producing an automotive part that has the same strength as conventional steel (kg-CO<sub>2</sub>e)

	Conventional steel materials	High-tensile steel	Aluminum	Carbon fiber reinforced plastics
Functional equivalent weight (kg)	100	75	67	45
GHG emissions per unit (kg-CO <sub>2</sub> e/kg)	2.3	2.3	11.3	22.0

Based on the public data of WorldAutoSteel

**Steel's environmental impact in production is extremely lower than other materials, some of which are lighter than steel.**

Note: Moreover, high-tensile steel is about 25% lighter than conventional steel and has a lower environmental impact.

**Going forward, with the aim to further reduce environmental impact on climate change, Nippon Steel will make development toward carbon neutrality in steelmaking process.**

#### Let's consider the overall life cycle

The Life Cycle Assessment method (LCA) is a way of thinking to evaluate environmental impact of a product over its entire life cycle. While many aspects of environmental impact cannot be seen, the LCA is an attempt to visualize the impact over the life cycle of a product, from production of its raw material to use, disposal and recycling of the end product.

From the LCA perspective, steel's environmental impact can be said to be very low relative to other materials. In order to continue to supply steel as a sustainable material, while taking advantage of its excellent LCA characteristics, we aim to realize carbon-neutral steel production process.

#### Environmental impacts of steel made via the BF and EAF routes, using an LCA approach

The blast furnace (BF) route to reduce iron ore to make steel may appear to generate a higher environmental impact than the method that melts steel scrap in an electric arc furnace (EAF) to make steel. However, the BF route creates steel products that generate scrap that, through recycling, has an effect of CO<sub>2</sub> emission reduction. As that scrap recycling effect offsets the CO<sub>2</sub> emissions in the BF process, environmental impacts of the BF and EAF routes in total terms are the same as steel is repeatedly recycled.

This approach is recognized in the ISO 20915 and the JIS Q 20915 and is becoming a global standard.

#### Acquisition of the EcoLeaf environmental label

Nippon Steel has obtained the EcoLeaf — an ecolabel certified by the Sustainable Management Promotion Organization (SuMPO), in compliance with the ISO 14025 international standards, for 47 products, representing more than 80% of its products.

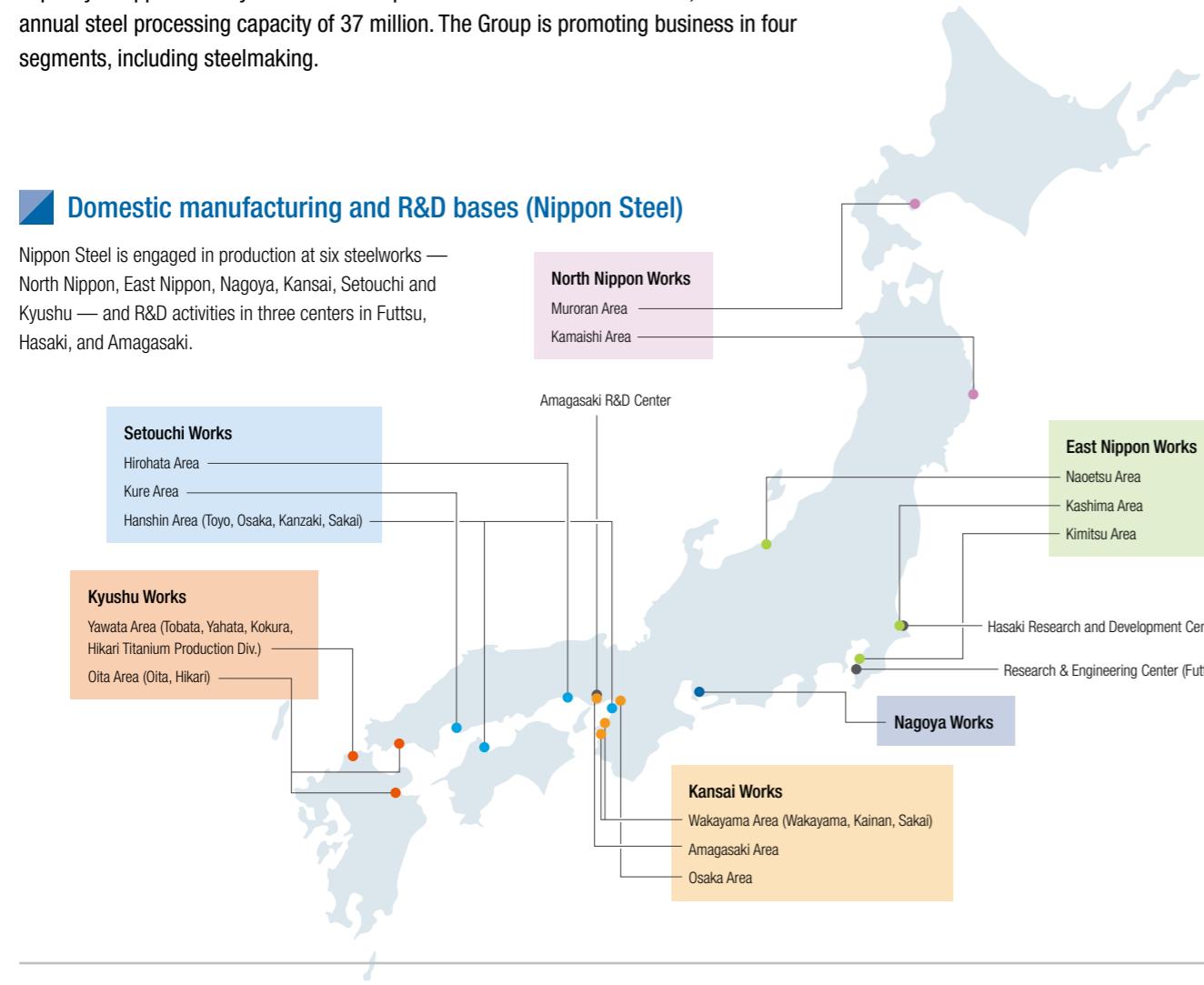
The EcoLeaf is an EPD<sup>3</sup> certification program in use in Japan to disclose quantitative environmental information about the entire life cycle of a product, from resource mining and manufacturing to disposal and recycling. This allows customers to assess the environmental impact of the products they use.



<sup>3</sup> EPD (Environment Product Declaration): The type III environmental label specified in the ISO 14025 international standard, which is designed to disclose quantitative environmental data certified by a third-party organization.

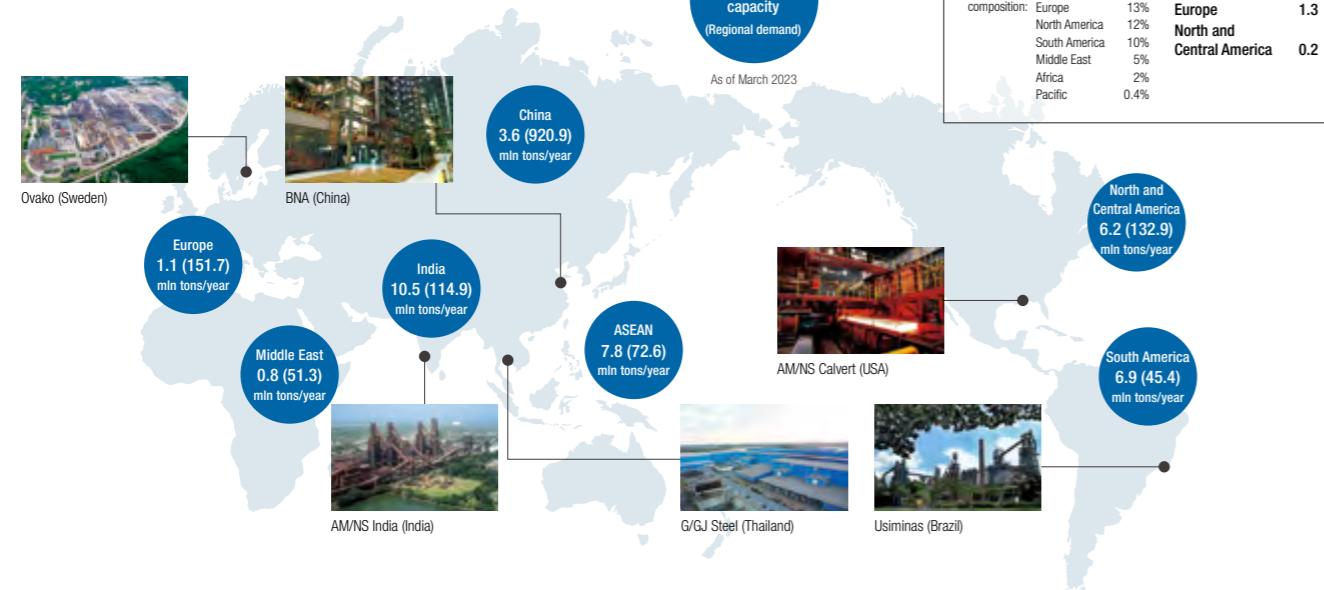
## Nippon Steel Group's Businesses

The Nippon Steel Group's main business is in steelmaking with annual crude steel production capacity of approximately 47 million in Japan and 19 million tons overseas, and overseas annual steel processing capacity of 37 million. The Group is promoting business in four segments, including steelmaking.



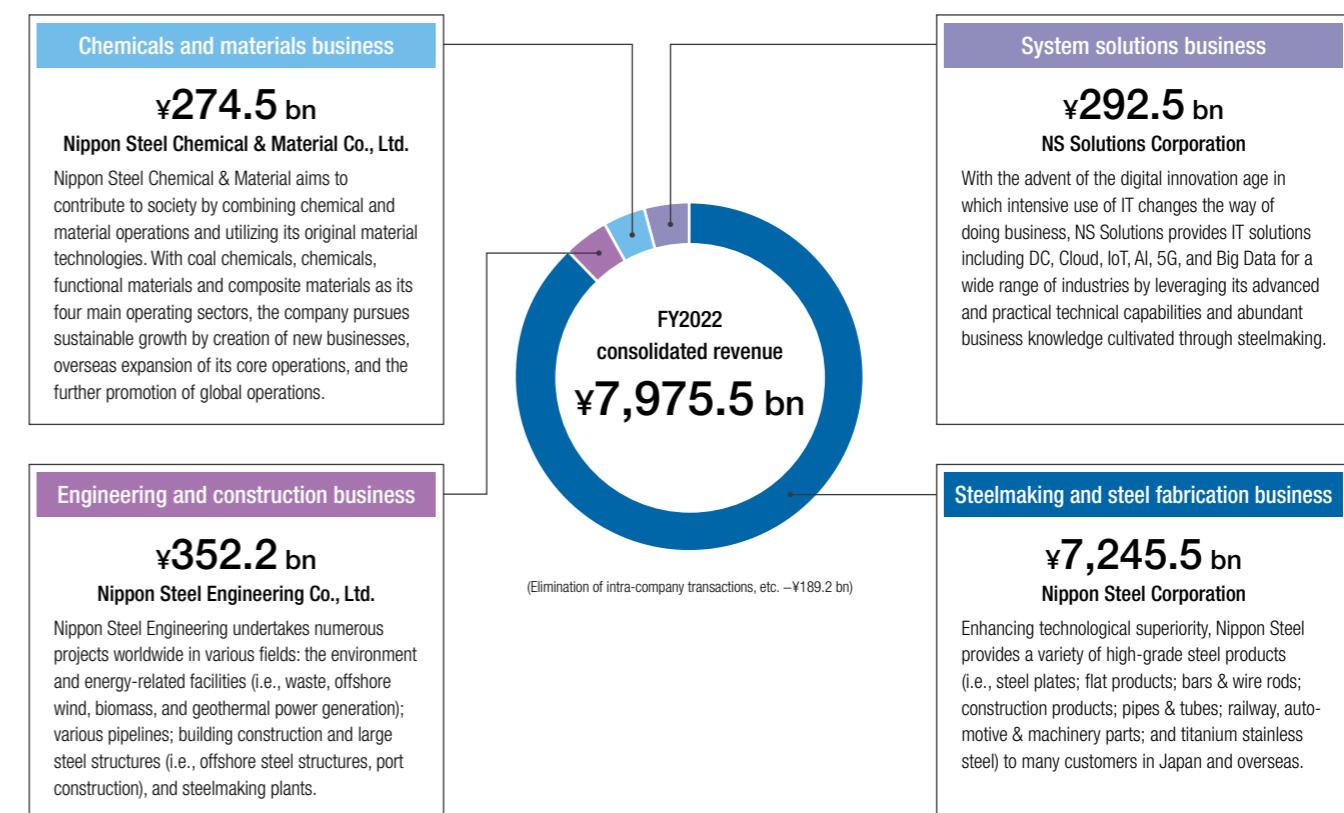
## Overseas manufacturing bases

The Nippon Steel Group has established a global supply network of 37 million tons in steel processing capacity, mainly for use of automobiles, infrastructure, electric appliances and containers, resources and energy, etc.

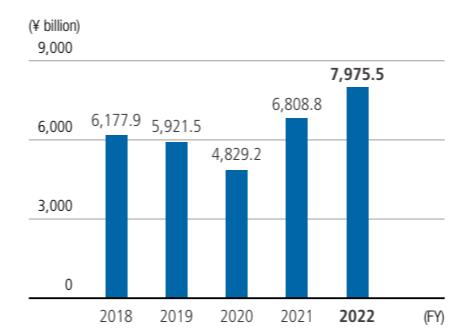


## Business segments

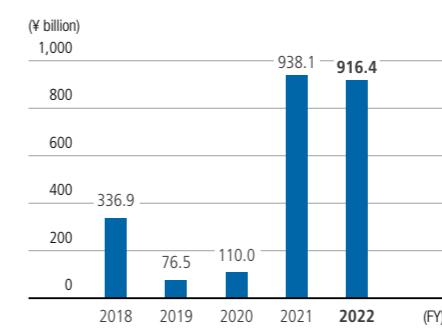
Based on the long accumulation of technology through steelmaking, the Nippon Steel Group operates businesses in four areas: steelmaking and fabrication, engineering and construction, chemicals and materials, and system solutions, with the core business being steelmaking.



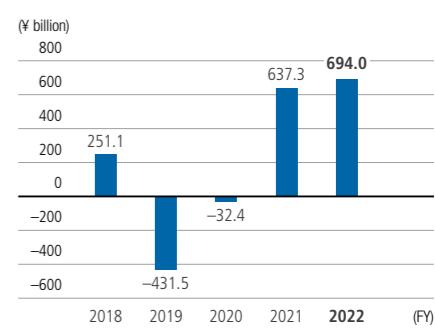
### Revenue (consolidated basis)



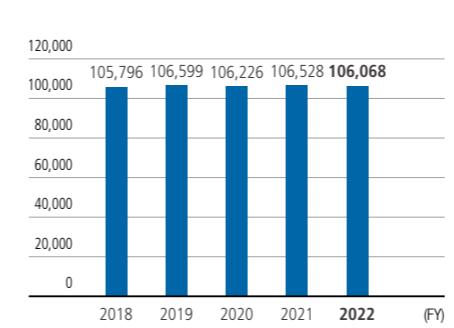
### Business profit (consolidated basis)



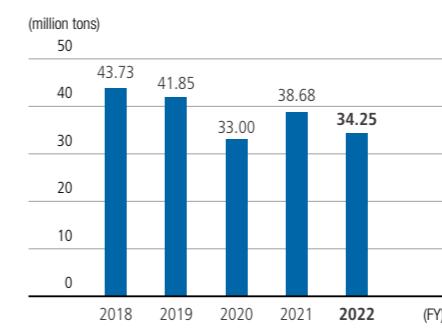
### Profit attributable to owners of the parent (consolidated basis)



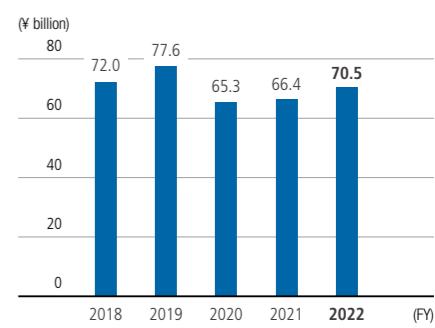
### Number of employees (consolidated basis)



### Crude steel production volume (non-consolidated basis)



### R&D expenditures (consolidated basis)



## Nippon Steel Group's Contribution to SDGs

The Nippon Steel Group is committed to SDGs through continually supplying steel, a basic element supporting society, in various parts of the world by using its world-leading manufacturing capability.

Steel contributes to make our life more convenient and pleasant, by being used everywhere in our life and society, and as an indispensable part of resilient infrastructure against natural disasters caused by earthquakes, abnormal weather driven by climate change, and other factors. Steel is also an indispensable material element for achieving SDGs, as it helps reduce environmental impact due to its weight reduction, extension of its product life, etc. on top of being abundantly available and able to be recycled. As a supplier

### Examples of specific initiatives

- 1 NO POVERTY**
  - Job creation through establishment of operating companies in emerging countries [pp. 5](#)
  - Reduction of vulnerability to disaster based on use of Nonframe method (construction method to stabilize slopes without damaging the natural environment)
  
- 2 ZERO HUNGER**
  - Use of converter slag fertilizer, a by-product of steelmaking, to improve farming productivity and salt damage in farmland [p. 38](#)
  - Provision of titanium and stainless steel, which have excellent seawater corrosion resistance, for seawater desalination plants, securing agriculture water
  
- 3 GOOD HEALTH AND WELL-BEING**
  - Promotion of air, water, soil risk management and chemical substance management [pp. 40-42](#)
  - Development and provision of steel products that contain no substances of concern, such as lead and hexavalent chromium
  
- 4 QUALITY EDUCATION**
  - Promotion of employee training to raise skills (i.e., OJT, Off-JT, sending trainees to Junior College for Industrial Technology), hosting technology triathlon [pp. 51-52](#)
  - Study sessions for teachers, internship for students [p. 61](#)
  
- 5 GENDER EQUALITY**
  - Improvement of working environment for women, support for career formation and work-life balance [pp. 45-46](#)
  - Increase in female employment and the number of female employees in management [p. 46](#)
  - Prevention of harassment [p. 50](#)
  
- 6 CLEAN WATER AND SANITATION**
  - Recycling and reuse of limited water resources [p. 35](#)
  - Promotion of water quality risk management [p. 40](#)
  - Provision of titanium and stainless steel for seawater desalination plants
  - Provision of lining steel pipes for delivery of clean water
  
- 7 AFFORDABLE AND CLEAN ENERGY**
  - Efficient use of energy, such as 100% use of by-product gas [p. 35](#)
  - Provision of materials for fuel cells that produce energy from hydrogen
  - Development and provision of steel materials for high-pressure hydrogen to support a hydrogen-oriented society [p. 26](#)
  
- 8 DECENT WORK AND ECONOMIC GROWTH**
  - Promotion of diversity & inclusion (i.e., female empowerment, how to work and how to take time off from work, health promotion, and employment of the elderly and the disabled) [pp. 45-50](#)
  - Promotion of DX to improve workstyle, productivity, worker safety management, etc. [pp. 8, 60](#)
  
- 9 INDUSTRY INNOVATION AND INFRASTRUCTURE**
  - Pursuit of Eco Processes to help raise resource/energy efficiency and reduce environmental impacts [pp. 35-36](#)
  - Introduction of advanced technologies through bilateral cooperation (India, ASEAN, etc.) [p. 29](#)
  - Use of steel slag in road materials and materials for civil engineering [p. 33](#)

of steel, we strive to implement our Three Ecos and innovative technologies and to advance the Carbon Neutral Vision as measures against climate change. We also promote sustainable measures so as to not waste resources. These measures include use of by-product gas generated in steelmaking, reuse of recycled water, and recycling of by-products and waste generated in and out of the Company.

- 10 REDUCED INEQUALITIES**
  - Thorough compliance training, such as for the Anti-Monopoly Act
  - Eliminating unfair discrimination, based on the respect on human rights [pp. 43-44](#)
  - Expanded hiring of women and non-Japanese [pp. 43, 46](#)

- 11 SUSTAINABLE CITIES AND COMMUNITIES**
  - Provision of various indispensable Eco Products for daily lives
  - Provision of earthquake-resistance steel products
  - Development of Nonframe method, which protects houses from disaster while maintaining views of nature

- 12 RESPONSIBLE CONSUMPTION AND PRODUCTION**
  - Promotion of air, water, soil risk management and chemical substance management [pp. 40-42](#)
  - Full recycling of by-products, including slag, dust, and sludge [pp. 33-34](#)
  - Promotion of recycling of waste plastics [p. 34](#)

- 13 CLIMATE ACTION**
  - Promotion of measures against climate change by implementing the Carbon Neutral Vision [pp. 21-27](#)
  - Development and provision of Eco Products, such as high-tensile, light-weighted, energy-efficient steel sheets and light-weight railway wheels and axles for high-speed railways [pp. 26, 32](#)

- 14 LIFE BELOW WATER**
  - Regeneration of seaweed beds with the use of steel slag [pp. 8, 28, 37](#)
  - Promotion of sea area environmental improvement with the use of steel slag [pp. 33, 37](#)
  - Voluntary clean-up activities at seashore nearby steelworks [p. 61](#)
  - Collaboration with an NPO, "Mori wa Umi no Koibito" (participation in tree-planting, etc.) [p. 61](#)

- 15 LIFE ON LAND**
  - Promotion of air, water, soil risk management and chemical substance management [pp. 40-42](#)
  - "Creation of Hometown Forests" to promote greenery within steelworks [p. 37](#)
  - Site cleaning activities around steelworks [p. 61](#)

- 16 PEACE, JUSTICE AND STRONG INSTITUTIONS**
  - Bribery prevention guidelines to be established and made well known [p. 62](#)
  - Elimination of antisocial forces
  - Thorough confirmation of no use of conflict material [p. 59](#)
  - Thorough management of security export control

- 17 PARTNERSHIPS FOR THE GOALS**
  - Eco solutions to transfer and spread environmental, energy-saving technologies to emerging markets [p. 29](#)
  - Japan-India and Japan-ASEAN regular exchanges among public and private steel-related parties [p. 29](#)
  - Support for human resources development to build an energy management system in emerging countries

## PICKUP 2022

1

Developed and launched "TranTixxi™-Eco", the environment-oriented designing material made of pure titanium for the first time in the world

June 2022



We developed TranTixxi-Eco, an environment-oriented designing material made of pure titanium for the first time in the world, starting to supply it to Snow Peak, Inc. This TranTixxi-Eco is a material that achieves CO<sub>2</sub> emission reduction and resource conservation without sacrificing its excellent design. This product is made from a titanium ingot containing more than 50% of titanium scrap that has undergone stringent quality control and pre-treatment with the help of a new electron beam melting furnace to ensure that no dissimilar or foreign materials get mixed into the feedstock of the titanium ingot.



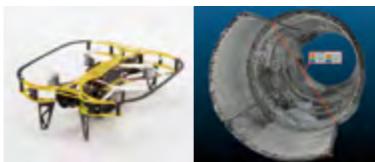
3

As part of the DX-based initiative for promoting "mechanization, remote control, and automation"—Nippon Steel started the field operation of a small drone in a large structural facility at steelworks

July 2022



We studied the field implementation of a small industrial drone, IBIS, jointly with Liberaware Co., Ltd., starting its operation in July 2022. Utilizing this industry's smallest-class airframe equipped with an advanced attitude control function enabled the drone's stable flight and high-precision imaging inside a narrow and complex facility. With the help of this inspection drone, we will pursue the stabilization and efficiency improvement of our production processes by reducing high-place work and the burden of maintenance work and by promoting advanced equipment maintenance using three-dimensional data.



Appearance of IBIS and its flight

5

Creation of Sea Forests, a seaweed bed creation project using steel slag — Joint acquisition of J-Blue Credit™ certification for the first time between a fishery cooperative association and a private company

November 2022



In the seaweed bed creation project using steel slag Vivary™ Unit, in which Nippon Steel and Mashike Fishery Cooperative Association (Mashike, Hokkaido) have been working together since 2004, the CO<sub>2</sub> absorbed in the blue carbon ecosystem received J-Blue Credit certification through the J-Blue Credit certification process operated by the Japan Blue Economy Association, a technical research association approved by the Ministry of Land, Infrastructure, Transport and Tourism. This accomplishment marks the first joint acquisition of J-Blue Credit certification between a fishery cooperative association and a private company.



Certificate of J-Blue Credit

2

Signed regarding decarbonization solutions between Nippon Steel and raw material supplier Anglo American PLC — A MOU

July 2022



Nippon Steel and raw material supplier Anglo American PLC signed a memorandum of understanding to jointly deliberate and discuss solutions for accelerating the transition toward carbon neutral steelmaking.

Based on this memorandum, the companies plan to reduce CO<sub>2</sub> emissions for the current blast furnace steelmaking process through the optimal use of high-grade iron ore, along with focusing on research related to the use of high-grade iron ore for the direct reduction steelmaking process, which has a lower environmental impact.



High-grade iron ore mining site

4

For its container steel sheets (tinplate, TFS, can light, and others) — Nippon Steel became Japan's first steel manufacturer to receive FSSC 22000, an international food safety standard certification

December 2022



With the heightening global concerns about "food safety," Nippon Steel Kyushu Works has been working to improve its manufacturing and product management levels, recognizing a growing demand for strict hygiene management throughout the food industry chain (food chain), including packaging and containers, and the need for objective assessment, successfully acquiring FSSC 22000, an international food safety standard certification, for its container steel sheets used to make beverage and food cans for the first time as a Japanese steel manufacturer. Going forward, we aim to have our other manufacturing sites that produce container steel sheets acquire the same standard certification as soon as possible. At the same time, we will strive to meet the strict hygiene management levels our global customers expect.



Food safety system certification

6

Nippon Steel's CORSPACE™, coating cycle extension steel, simultaneously received the 9th Monodzukuri Nippon Grand Award, Excellence Prize, and the 55th Ichimura Prize in Industry for Distinguished Achievement

January 2023



In response to the issue of reducing the life cycle cost of aging social infrastructure, such as steel bridges and port facilities, we developed a corrosion-resistant steel material, CORSPACE, which can reduce the environmental impact by almost doubling the painting cycle compared to ordinary steel structures under the same painting and installation conditions, thereby reducing VOC emissions through a fewer number of repainting operations.

This technology has received many awards, recognized for supporting the development of Japanese industry and culture and significantly contributing to the formation of a prosperous life for the citizen.



Example of application (Kesennuma Bay Crossing Bridge)



## Towards the Realization of a Sustainable Society, and the SDGs

**Eiji Hashimoto**  
Representative Director and President

I would like to thank our shareholders and all other stakeholders for your understanding and support to the Nippon Steel Group.

In March 2021, we announced a new medium- to long-term management plan, with the aim of continuing to grow to "become the best steelmaker with world-leading capabilities," that supports Japan's industrial competitiveness. We have since been undertaking our corporate management accordingly. By including "Nippon Steel Carbon Neutral Vision 2050" within the plan, we have identified our efforts concerning climate change issues as our greatest priority issue. Our basic approach toward realizing a decarbonized society is to win in the development competition with other countries and continue to lead the world's steel industry. Through these efforts, we are committed to establishing a virtuous cycle of environmental sustainability and corporate growth and improving corporate value.

In this Sustainability Report 2023 we are pleased to present to you the current status of promoting the Carbon Neutral Vision 2050 as well as wide-ranging sustainability-related initiatives as we advance toward realizing a sustainable society. Specific themes include the environment, human rights, diversity & inclusion, safety, disaster prevention, and quality.

Having positioned environmental matters as priority issues that underlie our corporate management as stated in our Basic Environmental Policy, we have pledged to contribute to the creation of a society oriented toward environmental preservation and with low environmental impact. With the progressing initiatives for achieving the Sustainable Development Goals (SDGs) adopted by the United Nations, we will conduct our operations to proactively contribute to creating sustainable communities by providing integrated solutions to the issues of climate change measures, the creation of a circular economy, and the conservation of biodiversity, including maintaining and improving a favorable living environment.

As for climate change measures, we set forth the Nippon Steel Carbon Neutral Vision 2050, which aims to reduce total CO<sub>2</sub> emissions by 30% by 2030 compared to 2013 levels and to become carbon neutral by 2050. Under the vision, we will support our customers in improving their competitiveness by offering two values: "providing high-performance steel products and solutions that contribute to reducing CO<sub>2</sub> emissions throughout society" and "providing carbon neutral steel through decarbonizing our steelmaking processes."

In addition, we launched a new comprehensive brand, NSCarbolex™, under which we offer through these efforts "high-performance products and solutions that contribute to reducing CO<sub>2</sub> emissions across society." Reducing carbon in the steel industry is not easy, so it is expected to take a long time to develop decarbonation technologies. Under such a circumstance, we will offer NSCarbolex Neutral products to supply customers with steel products with a reduced carbon footprint early on by allocating the total amount of CO<sub>2</sub> emissions that we have reduced through projects aimed at reforming and improving our manufacturing processes to any given steel product using the mass balance method. Furthermore, we will also offer NSCarbolex Solution high-performance products and solutions that contribute to not only reducing CO<sub>2</sub> emissions in our manufacturing processes but also reducing CO<sub>2</sub> emissions in society.

This is an enormous challenge. We find it crucial to solidify our development prospects ahead of others and start actual use of the new manufacturing processes at an early stage. We are taking this dramatic change in the business environment as a great opportunity to reestablish our overwhelming superiority in the world steel industry, and we are determined to actively address it as a top management issue.

Creating a circular economy is an essential issue from the viewpoint of further growing the economy while building a sustainable society. Steel is a material which can be easily sorted and endlessly recycled without causing deterioration in quality. Steel can be described as a perfect embodiment of a circular economy. We are also actively engaged in use of by-products generated in steelmaking for achieving zero emission. We also recycle 100% of used and collected plastic containers and packaging generated in society and collected by us, with Nippon Steel alone processing about 30% of the total volume collected across the country. Furthermore, Vivary™ Unit, a mixture of steel slag (a by-product of steelmaking) and fermented waste wood, contributes to restoring sea desertification, with a CO<sub>2</sub> fixation effect as blue carbon expected. Because Vivary Unit acquired a J-Blue Credit™, it is fair to say this product contributes to creating a circular economy and provides integrated solutions to promote the conservation of biodiversity and climate change measures. We are committed to contributing to the realization of a circular economy by means of tireless technological innovations.

Amid increasing movement toward the 30by30 biodiversity target as has been seen at the G7 Summit in the U.K. in 2021 and in the Kunming-Montreal Global Biodiversity Framework adopted at the Convention on Biological Diversity COP15 in 2022, we are moving toward biodiversity conservation. This past March, in support of these goals for biodiversity conservation, we also participated in the 30by30 Alliance established by the Japanese government. We have long been involved in the "Creation of Hometown Forests" at each steelworks, and "blue carbon" activities designed to create seaweed beds and absorb CO<sub>2</sub> in coastal waters.

We are thus developing initiatives that harmonize nature protection and production activities. We believe we can contribute significantly to Japan's national efforts by actively promoting various initiatives backed by our management resources.

As for creating sustainable communities, we believe environmental risk management, including accident and trouble prevention, must take precedence over anything else from the standpoint of business continuation, just like safety and disaster prevention. Concerning the recent drainage incident in the Kimitsu Area, we take it seriously, implementing finely tuned environmental impact reduction measures from both hardware and software perspectives by reaffirming the significance of the incidence, going back to basics, and understanding the realities at each operational base, including compliance with local ordinances and standards as well as conformity to laws and regulations.

As for our response to social issues, we consider it an essential element for our corporate management, including interactions with various stakeholders such as diversity and inclusion and coexistence with communities and society, as well as safety, disaster prevention, quality, and production as outlined in our "Manufacturing Values." In particular, while promoting business activities that respect varying values and consider human rights issues, we are aggressively working on activities related to diversity and inclusion from the perspective of becoming a company that encourages diverse employees to work with high productivity and demonstrate their full capabilities with pride and a sense of satisfaction. Based on the belief that the development of excellent personnel is a prerequisite for the production of excellent products, we are working on strengthening our manufacturing capability with emphasis on the development of our human assets. In order to live up to our Corporate Philosophy of contributing to the development of society and to be continually trusted by everyone, we are committed to fulfilling our social responsibility.

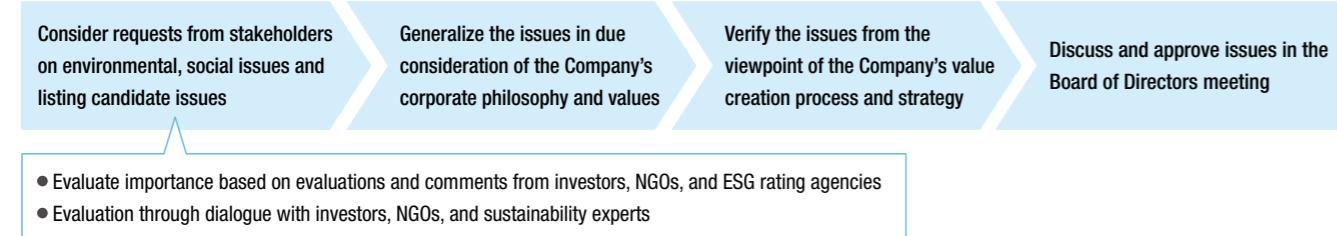
Sustainability issues are considered as one of our priority management issues, which form part of the base that supports sustainable corporate growth. We have thereby identified priority issues (materiality) of sustainability issues that should be addressed in a focused manner, with due consideration to our corporate principles, values, stakeholders' expectation, and our growth strategy. We intend to steadily promote its execution and follow-up by checking Key Performance Indicators to assess outcomes of our efforts.

We set forth a corporate philosophy, "Nippon Steel Corporation Group will pursue world-leading technologies and manufacturing capabilities, and contribute to society by providing excellent products and services." We hope to continue to be a company that contributes to realizing a sustainable society through core business activities.

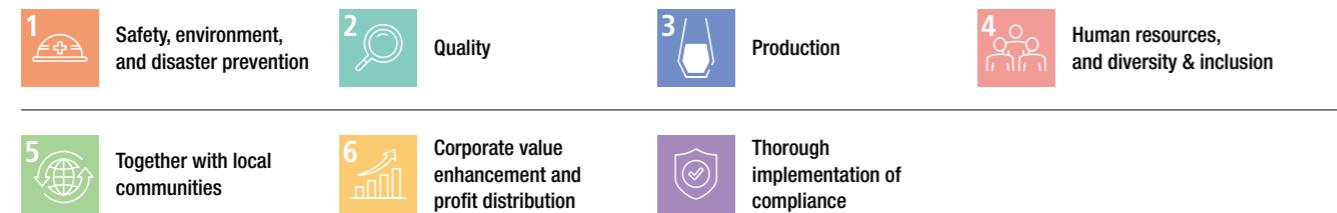
## Materiality of Sustainability Issues

Nippon Steel recognizes that sustainability initiatives are one of the important issues and form the base that supports the very existence and growth of the Company. Among the initiatives, the issues to be focused by taking into account our shareholders' expectations and our Corporate Philosophy, Values, and growth strategy have been identified as materiality (priority issues).

### Process to identify materiality



### Identified materiality (priority issues)



### Nippon Steel's Materiality

In consideration of our stakeholders' expectations, we have defined the materiality based on the following principles. We believe that tackling these materiality issues will contribute to the achievement of the United Nations' 2030 Agenda for Sustainable Development, featuring Sustainable Development Goals (SDGs).

#### 1 Materiality with due consideration of the corporate philosophy and priorities in manufacturing

Our Corporate Philosophy (Our Values) states: "The Nippon Steel Corporation Group will pursue world-leading technologies and manufacturing capabilities, and contribute to society by providing excellent products and services."

Concerning "provision of excellent products and services," our critical mission as a responsible manufacturing company is to reliably produce and deliver quality products that satisfy customers. Needless to say, the prerequisites to enable this mission include "safety, environment, and disaster prevention" as well as thorough compliance to rules and regulations.

The "world-leading technologies and manufacturing capabilities" are realized by our human capital. Securing and fostering of outstanding personnel is an important challenge to be overcome in order to strengthen overall manufacturing capabilities. We firmly believe that respect for human rights and diversity & inclusion, as well as promotion of physical and mental wellness strength are the basics for our employees to work vigorously.

With regard to the relationship with society, we must maintain good relationship with the community where our steelworks or other facilities are located. This is indispensable for us to continue operating business in the future. We are pledged to operate in an environmentally-friendly manner and maintain good communication with local communities, as a corporate citizen.

#### 2 Materiality with due consideration of the Company's value creating process and potential changes in business environment

A base of our value creation process is to use a diverse range of financial/non-financial assets and competitive advantages, and to provide products and

solutions to customers. In order to reproduce such processes, stable production and continual profit generation are indispensable.

In addition, having positioned environmental matters as priority issues that underlie our corporate management, we have pledged to contribute to the creation of a society oriented toward environmental conservation and with low environmental impact. We have also been engaged in building of a circular economy through reduction of CO<sub>2</sub> emissions by the three "Eco" initiatives and innovative technology development, and recycling of industrial waste (such as plastics).

Concerning the climate change problems that affect the survival of humanity, we are making efforts aimed at carbon neutrality by 2050 from two aspects: Provision of high-performance steel products and solutions to reduce CO<sub>2</sub> emission of the society as a whole, and breakthrough technology development to decarbonize steelmaking processes.

#### 3 Corporate value enhancement and profit distribution

We are committed to continuing operations as a sustainably growing company by generating profit and raising corporate value from business activities, including sustainability initiatives. We will also contribute to society by providing excellent products and services, and distributing profit to employees, government, shareholders, and other stakeholders.

#### 4 Thorough compliance

As a responsible leading company, we thoroughly adhere to laws and regulations, which is fundamental to all of our activities. It should be achieved by our independent efforts, based on our corporate philosophy, value, code of conduct and alike.

## Materiality, KPIs and major initiatives in FY2022 (including some results in FY2021)

### 1 Safety, environment, and disaster prevention

#### 1 Safety and health p. 55

Target and KPI	Main Initiatives and Achievements in FY2022
<ul style="list-style-type: none"> <li>● Accident frequency rate of <b>0.10</b> or less</li> <li>● <b>Zero</b> fatal accident</li> </ul>	<ul style="list-style-type: none"> <li>● Promotion of thorough adherence to the six company-wide compliance requirements and promotion of greater machine safety, in order to eliminate serious accidents and similar accidents</li> <li>● Prevention and risk reduction of accidents, based on safety risk evaluation</li> <li>● Acquisition of occupational safety and health management system (ISO45001) and establishment of internal audit system</li> </ul>

#### 2 Environment

##### ① Promotion of climate change measures

Target and KPI	Main Initiatives and Achievements in FY2022
<p>[Promotion of the Carbon Neutral Vision 2050]  p. 21</p> <ul style="list-style-type: none"> <li>● Target in 2030: <b>30%</b> reduction in CO<sub>2</sub> emissions (compared to 2013)</li> <li>● Vision for 2050: <b>Carbon neutral</b></li> </ul>	<ul style="list-style-type: none"> <li>● Launched a new comprehensive brand, NSCarbolex™, to offer "high-performance products and solutions that contribute to reducing CO<sub>2</sub> emissions across society" in the global market.</li> <li>● [Reduction with hydrogen in blast furnaces (BFs)] Decided to introduce facilities to demonstrate hydrogen-rich gas injection technology at the No. 2 blast furnace in the East Nippon Works Kitakyushu Area, in preparation for the demonstration tests scheduled to start in January 2026.</li> <li>● [High-grade steel production in large size electric arc furnace (EAFFs)] Started the commercial operation of a new electric arc furnace in the Setouchi Works Hiroshima Area. Started full-scale studies on the shift from the blast furnace steelmaking process to the electric arc furnace steelmaking process, with the Kyushu Works Yawata Area and the Setouchi Works Hiroshima Area as candidate sites.</li> <li>● [CCUS] Participated in three advanced CCS projects led by the Japan Organization for Metals and Energy Security (JOGMEC).</li> </ul>
<p>[Implementation of "Eco Process"]  p. 35</p> <ul style="list-style-type: none"> <li>● Maintaining high-level effective use of energy</li> </ul>	<ul style="list-style-type: none"> <li>● Effective use of by-product gas (coke oven gas, blast furnace gas etc.) and waste heat</li> </ul>
<p>[Enhancement of "Eco Products"]  pp. 4, 26</p> <ul style="list-style-type: none"> <li>● Supply of high-performance steel products to help reduce CO<sub>2</sub> emissions through use of their end products</li> </ul>	<ul style="list-style-type: none"> <li>● Decided to make an additional investment to increase the production capacity of high-grade non-oriented electrical steel sheets at the Setouchi Works Hanshin Area (Sakai) and the Kyushu Works Yawata Area (90 billion yen, a cumulative total of 213 billion yen).</li> <li>● Expansion of products that acquire the EcoLeaf environmental labels (Increased by 12 from the previous year to a total of 47)</li> </ul>
<p>[Contribute with "Eco Solutions"]  p. 29</p> <ul style="list-style-type: none"> <li>● Transfer and dissemination of the world-leading energy-saving technology to help CO<sub>2</sub> emission reduction globally</li> </ul>	<ul style="list-style-type: none"> <li>● Growing cumulative CDQ delivery record by Nippon Steel Engineering in the Group</li> </ul>

##### ② Contribution to creation of a circular economy

Target and KPI	Main Initiatives and Achievements in FY2022
<p>[Realization of zero emissions within the Company]  p. 33</p> <ul style="list-style-type: none"> <li>● Reduction in final disposal amount: <b>263</b> thousand tons or less (FY2025 target)</li> </ul>	<ul style="list-style-type: none"> <li>● Promotion of recycling of by-products (slag, dust, sludge, etc.) in and out of the Company</li> <li>● Final waste disposal: <b>271</b> thousand tons</li> </ul>
<p>[Realization of recycling of waste generated in society]  pp. 34, 35</p> <ul style="list-style-type: none"> <li>● Establishment of a waste plastics recycling system to expand its collection volume</li> </ul>	<ul style="list-style-type: none"> <li>● Aggressive promotion of recycling treatment, according to the Chemical Recycling Act</li> <li>● Packaging/container plastic waste treatment: <b>200</b> thousand tons (equivalent to 30% of Japan's total plastic waste)</li> </ul>

##### ③ Conservation of biodiversity and nature positive pp. 37-39

Target and KPI	Main Initiatives and Achievements in FY2022
<p>[Contribution to the conservation of biodiversity and nature positive]</p> <ul style="list-style-type: none"> <li>● Promoted activities aimed at achieving the 30by30 biodiversity target</li> </ul>	<ul style="list-style-type: none"> <li>● Participated in the "30by30 Alliance" for biodiversity</li> <li>● Promoted the Creation of Hometown Forests at steelworks</li> <li>● Conducted activities of the Creation of Sea Forests</li> </ul>

##### ④ Promotion of environmental risk management pp. 40-42

Target and KPI	Main Initiatives and Achievements in FY2022
<p>[Air environment preservation]</p> <ul style="list-style-type: none"> <li>● Maintaining low-level emissions of NOx and SOx</li> <li>● Maintaining of lower discharge levels than voluntary targets in chemical substances</li> <li>● Emission of VOC (Volatile Organic Compounds): <b>1,106</b> tons/year (down 30% vs. FY2000)</li> <li>● Emission of benzene: <b>172</b> tons/year (voluntary target, along with the government target)</li> </ul>	<ul style="list-style-type: none"> <li>● Installment of equipment that reduces SOx and NOx emissions; shifting to low-sulfur fuel; adoption of low NOx regenerating burners</li> <li>● Continual efforts based on the voluntary reduction plan</li> </ul>
<p>[Water environment preservation]</p> <ul style="list-style-type: none"> <li>● Recycling of water; high-level stable use of recycled water</li> </ul>	<ul style="list-style-type: none"> <li>● Water treatment, recycling and reuse of freshwater used by the Company</li> <li>● Use of recycled water: app. <b>90%</b></li> </ul>

### 3 Disaster prevention p. 56

Target and KPI

[Elimination of disaster risks and group-wide sharing of effective measures]

- Zero serious disaster-related accident

Main Initiatives and Achievements in 2022	
<ul style="list-style-type: none"> <li>● Promoted activities to prevent recurrence and prevention of disaster-related accidents based on risk assessment</li> <li>● Promoted initial response training aimed at minimizing damage when a risk occurs</li> <li>● Implemented various monitoring (audits) as a survey of disaster prevention activities</li> <li>● Evaluation of disaster prevention activities through third-party monitoring, hearings from head office management, and self-monitoring by steelworks disaster prevention managers</li> </ul>	<ul style="list-style-type: none"> <li>● Serious disaster-related accidents: 0</li> </ul>

## 2 Quality

### 1 Quality control and guarantee p. 57

Target and KPI

- Systematization and automation aimed at more credibility in testing and inspection

Main Initiatives and Achievements in FY2022	
<ul style="list-style-type: none"> <li>● Promoting a shift from manual data input to automatic data input as a measure to prevent input errors and falsification of pre-shipment judgment data</li> </ul>	

### 2 Research and development and intellectual property investment/utilization p. 58

Target and KPI

- Promotion of strategic research and development aimed at sustainable business growth
- Respect for intellectual property and enhancement of its strategic protection and utilization

Main Initiatives and Achievements in FY2022	
<ul style="list-style-type: none"> <li>● Actively promoted research and development related to priority issues such as product sophistication, process efficiency improvement, and the development of carbon-neutral-oriented innovative processes</li> <li>● Promoted utilizing intellectual property aimed at strengthening patent applications related to priority issues, response to infringement of patent rights, and technical tie-ups</li> </ul>	<ul style="list-style-type: none"> <li>● R&amp;D expenses: ¥70.5 billion (consolidated)</li> <li>● The number of patents held: approximately 30,000 (14,000 in Japan and 16,000 overseas)</li> </ul>

### 3 Solution that result in customer satisfaction p. 66

Target and KPI

- Number of awards from customers, government, and institutions

Main Initiatives and Achievements in FY2022	
<ul style="list-style-type: none"> <li>● Received the awards and prizes including the 69th Okochi Prize, the 55th Ichimura Industrial Prize in Industry for Distinguished Achievement, the FY2023 Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology, and the 9th Monodzukuri Nippon Grand Award</li> </ul>	<ul style="list-style-type: none"> <li>● Number of awards from customers, government, and institutions: 10</li> </ul>

## 3 Production

### 1 Stable production and supply p. 60

Target and KPI

- Initiatives for more stable production and supply (hardware and software)

Main Initiatives and Achievements in FY2022	
<ul style="list-style-type: none"> <li>● Relined the No. 3 blast furnace at the Nagoya Works and innovated the steel scrap and pig iron melting process at the Setouchi Works Hirohata Area (the start of commercial operation of the electric arc furnace)</li> <li>● Standardization of veterans' operational skills and extended use of experts</li> <li>● Use of IoT and AI for operational support, improved efficiency of facility inspection and operation monitoring, and reinforcement of predictive monitoring</li> </ul>	

## 4 Human resources, and diversity & inclusion

### 1 Respect for human rights

Target and KPI

Main Initiatives and Achievements in FY2022	
<ul style="list-style-type: none"> <li>● "Respect for Human Rights"  p. 43</li> </ul>	

### 2 Diversity & inclusion

Target and KPI

- The number of female employees in management positions: at least 2 times, (vs. 36 in FY2020), and 3 times as target in 2025; at least 4 times, and 7 times as target by 2030
- The ratio of paid holidays taken: 75% or higher
- Wellness management aimed at maximizing people's ability up to the age of 65, and support to enhance mental and physical health

Main Initiatives and Achievements in FY2022	
<ul style="list-style-type: none"> <li>● "Diversity &amp; Inclusion"  p. 45</li> </ul>	<ul style="list-style-type: none"> <li>● Number of women in managerial positions: 65 (as of April 2023)</li> <li>● The ratio of paid holidays taken: 82.9% (FY2022)</li> </ul>

### 3 Human resource development

Target and KPI

- Promotion of measures to develop human resources

Main Initiatives and Achievements in FY2022	
<ul style="list-style-type: none"> <li>● "Human Resources Development"  p. 51</li> </ul>	<ul style="list-style-type: none"> <li>● Hours of training and education: 800 thousand hours/year (28 hours/person, year)</li> </ul>



## Together with local communities

### 1 Environmental preservation/creation activities in communities p. 37

Target and KPI

- Green space development to contribute to the local environment

Main Initiatives and Achievements in FY2022

- Funding for green space development and maintenance

- Expenses for green space development and maintenance: ¥1.3 bn

### 2 Activities mainly in the support of education, sports, and arts p. 62

Target and KPI

- Ongoing promotion of hosting plant visits

Main Initiatives and Achievements in FY2022

- Proactively accepting plant visits by shareholders, investors, and junior high/elementary school students

- Number of plant visitors: app. 130,000 (FY2019 results; almost no implementation in FY2020, FY2021 and FY2022 due to the COVID-19 pandemic)

- Continual execution of corporate philanthropy in the support of music via Nippon Steel Arts Foundation
- Support of music activities via presentation of Nippon Steel Music Awards and operation of the Kioi Hall



## Corporate value enhancement and profit distribution

### 1 Securing of profit and enhancement of corporate value

Target and KPI

- ROS of 10% (FY2025 plan target)
- ROE of 10% (FY2025 plan target)

Main Initiatives and Achievements in FY2022

- ROS of 11.5%
- ROE of 18.1%

### 2 Profit distribution

Target and KPI

#### ① Salary and wages payment to employees

- Bonus payment amount

- Revised amount of salary

Main Initiatives and Achievements in FY2022

- Base bonus amount: ¥2.35 mn

- Revised amount of salary: ¥2,000

#### ② Appropriate tax payment

- Tax payment (consol.)

Please see the following:

Fact Book: Wages and Bonuses

Integrated Report

p. 44: Financial Strategy

pp. 103–104: 11-Year Financial Performance

- Tax payment (consol.): ¥214.4 bn

#### ③ Dividend payment to shareholders

- Dividend payment

Note: Target consolidated payout ratio: around 30% (FY2025 management plan)

- Dividend per share: ¥180/year



## Thorough implementation of compliance

### Adhering to laws and regulations as a base of all activities

 Please see the Corporate Governance section of Nippon Steel's Integrated Report pp. 81–90.

## Environmental Management

Nippon Steel has set the Basic Environmental Policy based on its belief that the environmental management is an integral part of corporate mission. We are dedicated to managing the Company so as to reduce and minimize impact on the environment at all stages, from technological development work to the purchase of raw materials and equipment, manufacturing processes, transportation of products, and onward to their use, recycling and disposal.

### Basic Environmental Policy

Under the principle of "Environmental Management," Nippon Steel is committed to contributing to the creation of a sustainable society through its operations. To this end, we will conduct our operations to actively contribute to creating sustainable communities through integrated solutions to the issues related to climate change measures, the creation of a circular economy, and the conservation of biodiversity, including maintaining and improving a favorable living environment.

#### 1 Reducing environmental impacts at every stage of operations (Eco Process)

At every stage of business activities including production processes and transportation of products, Nippon Steel will, besides complying with environmental laws and regulations, promote activities to reduce environmental impacts primarily through voluntary efforts, in cooperation with customers and other industries, with the aim of further improving environmental preservation and the efficiency of resources and energy, and of promoting reduction and recycling of waste inside and outside the company.

#### 2 Offering of environment-oriented products (Eco Products)

With the aim of reducing environmental impacts at every stage of the life cycle of our products offered to domestic and overseas markets, Nippon Steel will make efforts, making good use of its innovative technologies, to develop and offer products that contribute to environmental preservation, resource conservation and energy conservation.

#### 3 Proposing environmental preservation solutions from a global perspective (Eco Solution)

Nippon Steel will further improve its long-accumulated technologies and environmental management system that are related to environmental preservation, resource conservation, and energy conservation technologies. We offer them in Japan and abroad to contribute to, in addition to the reduction of environmental impacts, the development of infrastructure for disaster prevention with due consideration given to nature and scenery as well as to solving environmental issues outside Japan through technology transfer.

#### 4 Development of innovative technologies

Nippon Steel will address on a medium and long-term basis the development of innovative technologies focused on the future issues of resources and the environment with the aim of providing society with technologies and products that contribute to environmental preservation, resource conservation and energy conservation.

#### 5 Development of a rich natural environment

As a member of each community where we operate in Japan, Nippon Steel will contribute to the conservation of biodiversity and nature positive by promoting greenery environment in land areas, environmental improvement in sea areas, and many other activities. In addition, when conducting business activities overseas, we will ensure the preservation of the natural environment of partner countries.

#### 6 Promotion of environmental relations activities

To gain social trust consistently, Nippon Steel will proactively promote relationship-building activities that contribute to environmental management, including environmental education for our employees, disclosure of environmental information on an adequate and timely basis, and close exchange with stakeholders.

### Initiatives for priority areas

In order to achieve the SDGs, we identified three priority issues and two bases that help solve these issues based on the Basic Environmental Policy, implementing various initiatives defined as five priority areas.



### Specific initiatives in five priority areas

Recognizing that efforts in the five priority areas are important for the realization of a sustainable society, we are steadily implementing measures in each of these areas. In particular, since we announced the Carbon Neutral Vision 2050 in March 2021, we have been actively working on climate change measures as the most important management issue.

### Five priority areas

#### Three priority issues



#### Climate Change Measures

- Ensure progress toward the Carbon Neutral Vision 2050
- Efforts for climate change measures in the resource recycling and biodiversity fields
- Make efforts to adapt to climate change
- Transfer and diffuse decarbonization technologies overseas
- Disclose information according to recommendations of the TCFD



NEDO "Hydrogen utilization in iron and steelmaking processes" project



#### Creation of a Circular Economy

- Expand efficient use of resources and energy
- Promote internal zero emission
- Accelerate recycling of waste generated in society



Construction using a soil modifier made from steelmaking slag



Waste plastic processing equipment

#### Conservation of Biodiversity and Nature Positive

- Promotion of efforts to conservation of biodiversity and nature positive
- Contribution to activities aimed at achieving the target of 30by30 alliance for biodiversity



Creation of Hometown Forests (Reproducing "Chiriku-no-Mori" (sacred shrine forests) inside steelworks)



Creation of Sea Forests (Improving environment of sea areas using slag products)

### Two bases



#### Environmental Risk Management

- Conserve air environment
- Conserve water environment
- Respond to other environmental risks (soil, chemical substances and wastes)



#### Environmental Management System

- Establish an environmental management organization
- Work at managing and improving the level of environmental management
- Groupwide environmental management

## Environmental Management System



Nippon Steel has built an environmental governance and management system that includes not only its own steelworks and factories, but also its group companies in Japan and abroad. Activities to reduce environmental risks are promoted by combining internal and external environmental audits and following the plan-do-check-act (PDCA) cycle.

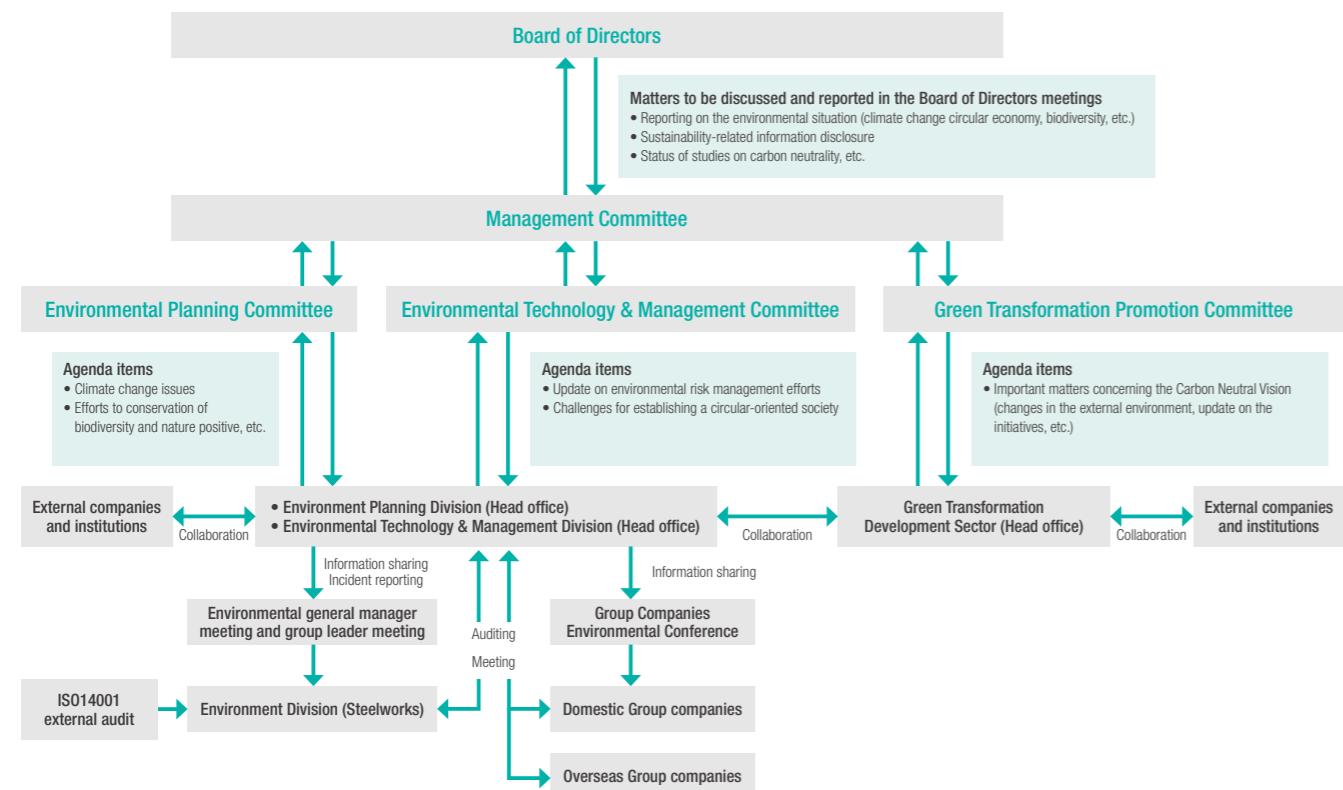
### Establishment of environmental management system

Nippon Steel has three committees to respond to environmental issues, including climate change: the Environmental Planning Committee, the Environmental Technology & Management Committee, and the Green Transformation Development Committee.

The Environmental Planning Committee is chaired by the Executive Vice President in charge of Environment. The Environmental Technology & Management Committee is chaired by the Executive Vice President in charge of Technology. Other Executive Vice Presidents, Directors and Executive Officers are members of these committees. Meetings of each committee are held every six months. The Environmental Planning Committee and the Environmental Technology & Management Committee manage environmental issues such as response to climate change, biodiversity, and nature positive, and response to environmental risks and to create circular economy associated with the atmosphere, water, and waste, respectively.

As a part of the enhancement of governance, we regularly hold Environmental Managers' Meetings and Environmental Group Leaders' Meetings across all steelworks. In particular, Nippon Steel works to reduce risks related to settled dust, wastewater, and waste including activities, based on the work of expert's conferences held for each of these areas.

#### Environmental management system



### Efforts to maintain and improve environmental management levels

In accordance with the international standard ISO 14001, Nippon Steel has built an environmental management system, with each steelworks general manager serving as the responsible person. Each year, in addition to an internal auditing of each steelworks and a management review by its general manager, each steelworks is audited by the Environmental Technology & Management Division of the Head Office. Environment officers of other steelworks and facilities also participate in these audits to cross-check. In addition, periodical reviews are conducted by the ISO certification agency.

For the Group companies (73 companies subject to environmental review) including those overseas, a direct interview is conducted by a member of the Environmental Technology & Management Division of the Head Office

to improve management levels. This is part of the corporate governance conducted by the Internal Control/Audit Department of the Head Office.



Internal audit (hearings)



Internal audit (on-site patrol)

### Environmental risk management concerning Group companies

From the Group companies in Japan, Nippon Steel has identified 51 companies (as of April 2023) as having certain environmental impact and holds meetings for those companies twice a year. In the meetings, we share information including the latest trends of environmental laws and regulations,

cases of environmental initiatives with the goal of reducing environmental risks. In addition, we have established a venue to share information within the portal site to disseminate information on environmental regulatory trends and the troubles.

### Costs associated with environmental conservation (Environmental accounting)

Nippon Steel has adopted environmental accounting to be used as guidelines for corporate activities, and to accurately track the environmental costs and effects. Environmental conservation costs, which combine the costs of capital investment associated with environmental measures, energy-saving measures,

and recycling measures, and expenses incurred to conserve the environment, totaled ¥185.0 billion in fiscal 2022: ¥17.4 billion for capital investment and ¥167.6 billion for environmental conservation. Details for environmental conservation costs are listed below.

#### Environmental conservation costs

Item	FY2022	
	Capital expenditures	Total expenses
Pollution Prevention Costs	Air pollution control (including measures against dust), etc.	8.2 35.1
	Water and soil pollution prevention, noise and vibration prevention	6.8 10.6
Global Warming Prevention Costs	Energy saving measures	2.4 7.4
	Recycling of resources and generated materials	— 50.3
Costs of Recycling Resources	Industrial waste treatment (including PCB, coal ash, etc.)	— 12.5
	Business-related general waste treatment, etc.	— 0.5
Environmental Management Activities Cost	Construction of EMS and acquisition of ISO14001 certification	— 0
	Monitoring and measurement of environmental loads	— 1.2
	Personnel expenditures related to environmental measures, etc.	— 3.1
Research and Development Costs	Development of Eco Products	— 6.8
	Development of products which have low environmental impact during manufacture, etc.	— 34.1
Social Activity Costs	Beautification and greening of offices	— 1.3
	Supporting environmental organizations, etc.	— 0.7
Other Environmental Costs	Environmental fines, etc.	— 4.1
Total		17.4 167.6

It is difficult to quantify environmental preservation effects in monetary terms since such calculation would require many assumptions. Therefore, effects taking environmental measures are kept track of as environmental preservation performance, which are reported in this report and on our website.

For example, energy consumption is shown on page 19; water consumption volume, on page 40; and various resources spent, on page 35. For waste

products, final disposal volume is stated on page 33; atmospheric substances, SOx and NOx emissions, on page 40; and water quality, soil, and hazardous chemical substances, on page 42.

## Climate Change Measures



Nippon Steel recognizes climate change as a priority problem that threatens survival of the human race. Climate change would also severely affect our business environment and earnings. In order to ensure sustainable operations, we are striving to reduce the impact of climate change by working at energy conservation and CO<sub>2</sub> emissions reduction throughout our supply chain.

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### Nippon Steel Group's efforts for energy conservation and CO<sub>2</sub> emissions reduction

In March 2021, we announced the Nippon Steel Carbon Neutral Vision 2050, in support of the Japanese government's ambitious policy to realize a carbon-neutral society in 2050. Through carbon neutralization, we will offer two types of value: "Provision of high-performance steel products and solutions that contribute to reducing CO<sub>2</sub> emissions in society" and "provision of carbon neutral steel through decarbonizing steelmaking processes." We aim to reduce CO<sub>2</sub> emissions at the time of production and processing by our customers, at the time of use of our products by end consumers; and in the supply chain of our customers.

In addition, Nippon Steel by itself as well as the Nippon Steel Group including consolidated crude steelmaking companies that have blast furnaces and electric furnaces with high CO<sub>2</sub> emissions have set a target for 30% reduction in CO<sub>2</sub> emissions in 2030 compared to 2013. Also, our major domestic consolidated subsidiaries aim to be carbon neutral in 2050. Our overall Group will work together to tackle climate change issues.

### Nippon Steel Group's energy consumption and energy-derived CO<sub>2</sub> emissions

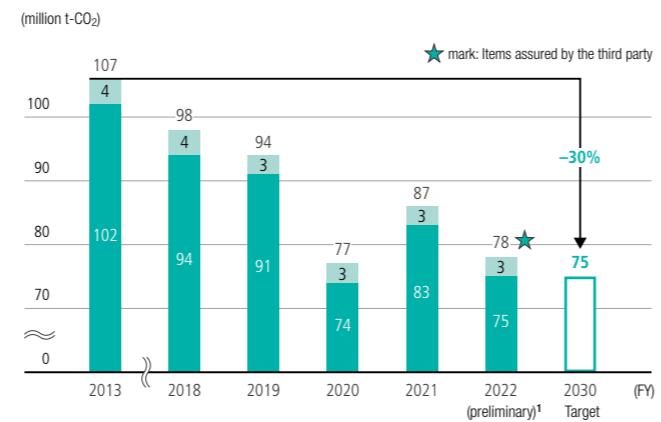
Nippon Steel has been working on energy conservation from diverse starting points: improving efficient use of energy generated in the steelmaking process (i.e., power generation from recovered by-product gas and waste heat); making operational improvements in each process; renovation of older coke ovens and other equipment; introduction of high-efficiency power generation facilities and oxygen plants; and conversion to regenerative burners in the reheating furnaces.

#### Energy consumption



[Calculation method]  
Calculation for the Company and its domestic subsidiaries is based on the metrology of the Carbon Neutrality Action Plan. Overseas subsidiaries follow local regulations or guidelines for calculation.  
[Conversion factor]  
The Company and its domestic subsidiaries use the "Table of heat generation and carbon emission coefficient by energy source" (revised January 31, 2020) of the Agency for Natural Resources and Energy, METI. Overseas subsidiaries use relevant emission factors according to local regulations or guidelines.  
[Boundary of data collection]  
Nippon Steel<sup>②,3</sup>, associated EAF mills (Osaka Steel, Sanyo Special Steel, Nippon Steel Stainless Steel, Oji Steel, Tokai Special Steel, Nippon Steel Structural Shapes Corporation, Tokyo Kohetsu, Ovako, Sanyo Special Steel Manufacturing India, and Standard Steel), and three Sanso Center companies<sup>4</sup>. The data collection period used is each company's accounting period. As Ovako has changed its fiscal year end, Ovako's fiscal 2021 results cover a period from January 1, 2021 to March 31, 2022 (15 months).

#### Energy-derived CO<sub>2</sub> emissions



1 Preliminary figure: The amount of CO<sub>2</sub> per unit of purchased electricity from each of general power companies in Japan in fiscal 2022 is assumed to be the same amount as in fiscal 2021.  
2 Excluding energy consumption and CO<sub>2</sub> emission associated with the IPP operation by the steelworks  
3 The amounts of energy consumption required for production of coke purchased by Nippon Steel and CO<sub>2</sub> emissions are included in the aggregate.  
4 Concerning the three Sanso Center companies, the amount of energy consumption required for production of oxygen purchased by Nippon Steel Group and CO<sub>2</sub> emissions are included in the aggregate.

## CO<sub>2</sub> emissions in the value chain

CO<sub>2</sub> emissions originated from energy source and generated in Nippon Steel's manufacturing process (Scope 1 and Scope 2) as well as CO<sub>2</sub> emissions in the value chain (Scope 3), which are calculated by using the Green Value Chain Platform of the Ministry of the Environment and other methods are as follows.

### Scope 1 and 2

(FY)	2013	2018	CO <sub>2</sub> emissions (thousand t-CO <sub>2</sub> )			Calculation method
			2019	2020	2021	
Scope 1 Direct emissions from owned sources associated with use of fuel	89,578	81,337	78,575 <sup>7</sup>	63,010 <sup>7</sup>	71,315 <sup>7</sup>	63,397 ★ Based on the Carbon Neutrality Action Plan. See the boundary of data collection stated below.
Scope 2 Indirect emissions from the generation of purchased energy	13,825	12,850	12,100 <sup>7</sup>	11,035	12,462 <sup>7</sup>	11,912 <sup>5</sup> ★
Scope 1 + 2 (Energy consumption per ton of crude steel: t-CO <sub>2</sub> /t)	103,403	94,187	90,675 <sup>7</sup>	74,045 <sup>7</sup>	83,778 <sup>7</sup>	75,309 <sup>5</sup> ★
Crude steel production <sup>8</sup> (consolidated-base, 10,000 tons)	5,474	4,990	4,709	3,766	4,445	3,913

[Conversion factor]

The Company and its domestic subsidiaries use the "Table of heat generation and carbon emission coefficient by energy source" (revised January 31, 2020) of the Agency for Natural Resources and Energy, METI. Overseas subsidiaries use relevant emission factors according to local rules or guidelines.

[Boundary of data collection]

Nippon Steel<sup>②</sup> and associated EAF mills (Osaka Steel, Sanyo Special Steel, Nippon Steel Stainless Steel, Oji Steel, Tokai Special Steel, Tokyo Kohetsu, Nippon Steel Structural Shapes Corporation, Ovako, Sanyo Special Steel Manufacturing India, and Standard Steel). The data collection period used is each company's accounting period. As Ovako has changed its fiscal year end, Ovako's fiscal 2021 results cover a period from January 1, 2021 to March 31, 2022 (15 months).

<sup>5</sup> Preliminary figure: The amount of CO<sub>2</sub> per unit of purchased electricity from each of general power companies in Japan in fiscal 2022 is assumed to be the same amount as in fiscal 2021.

<sup>6</sup> Excluding CO<sub>2</sub> emission associated with the IPP operation by the steelworks.

<sup>7</sup> Due to a review of the summary values and changes in coefficients and other factors, the figure for this past year was revised retroactively.

<sup>8</sup> This does not include G/GJsteel.

★ marks: Items assured by the third party

### Scope 3

(FY)	CO <sub>2</sub> emissions (thousand t-CO <sub>2</sub> )			Calculation method
	2020	2021	2022	
<b>Scope 3 All indirect emissions (not included in Scope 2) that occur in the value chain of the reporting company</b>				
① Purchased goods and services	14,379	15,994	12,939 ★	Calculated using method <sup>9</sup> below for purchased iron ore, coking coal, coke, and oxygen
② Capital goods	1,632	1,400	1,503	[Amount of capital expenditures] X [Emission factor]
③ Fuel and energy related activities not included in Scope 1 or 2	291	338	293	[Amount of electric power procured and fuel used] X [Emission factor]
④ Upstream Transportation and Distribution	629	710	638	[Transportation distance reported in the Energy Saving Law document] X [Emission factor]
⑤ Waste generated in operations	4	5	5	[Amount of waste] X [Emission factor]
⑥ Business travel	4	4	4	[Number of employees] X [Emission factor]
⑦ Employee commuting	14	14	13	[Number of employees] X [Emission factor]
⑯ Investments	1,125	1,053	1,193	[Emissions by subsidiaries and affiliates that emit GHG of over 10,000 tons] X [Equity stake of each company]

[Source of emission factor]

"Emissions unit value database for accounting of greenhouse gas emissions throughout the supply chain (ver. 3.3)" (March 2023, Ministry of the Environment)

"Table of heat generation and carbon emission coefficient by energy source" (Revised January 31, 2020; METI, Agency for Natural Resources and Energy)

[Boundary of data collection] Nippon Steel

<sup>9</sup> Iron ore and coal: [Amount purchased of procured iron ore and coal] X [Emission factor]

Coke: [Amount purchased of procured coal at source] X [Emission factor] + [Amount of energy used in production of coke] X [Emission factor by energy source]

Oxygen: [Amount of energy used in production of oxygen] X [Emission factor by energy source]

In FY2022, due to partial changes in the source of emission intensity, CO<sub>2</sub> emissions decreased compared to FY2021.

If we use the same emissions factor as in FY2021, CO<sub>2</sub> emissions in FY2022 would be 14,619 thousand t-CO<sub>2</sub>.

### Example of Scope 3 efforts: CO<sub>2</sub> emission reduction by raising efficiency in logistics

Nippon Steel maintains a high modal shift rate<sup>10</sup> of 98% and works at reducing CO<sub>2</sub> emission by raising efficiency in logistics, such as by use of large vessels. As part of the efforts, we have begun to use "Utashima" — a hybrid-type cargo vessel, equipped with lithium-ion batteries. This vessel was awarded the Small Cargo Vessel Award of the Ship of the Year 2019<sup>11</sup>. In the past, our seven cargo vessels have been rated the highest in the Coastal Ship Energy Conservation Rating of the Ministry of Land, Infrastructure, Transport and Tourism.

We have also decided to introduce cargo vessels equipped with a hybrid propulsion system consisting of a natural gas-fueled engine and battery, for marine transportation of domestic raw materials.



Hybrid Cargo Ship "Utashima" equipped with lithium-ion batteries

We will continue to cooperate with relevant ministries, agencies, and organizations to promote use of ships utilizing alternative fuels, in order to reduce greenhouse gas emissions in marine transportation.

### Logistics sector's ton-kilometer<sup>12</sup> achievements for FY2022

	Transportation quantity: 10,000 tons/year	Million ton-kilometers/year	g-CO <sub>2</sub> /ton-kilometers	(Reference)
Ship	1,827 (57%)	12,195 (91%)	39	
Railway	6 (0%)	35 (0%)	25	
Truck and trailer	1,424 (43%)	1,244 (9%)	211	
Total	3,257 (100%)	13,474 (100%)		

<sup>10</sup> Modal shift rate: Modal shift means replacing a means of transport from trucks to trains and ships. The modal shift rate, according to the definition by the Ministry of Land, Infrastructure, Transport and Tourism, is a ratio of volume transported by trains and marine transportation (including ferries) in long distance transport of over 500 km.

<sup>11</sup> Award by the Japan Society of Naval Architects and Ocean Engineers

<sup>12</sup> Ton-kilometer: Total sum of the weight of load (ton) transported multiplied by transport distance (km). The reference amounts (in grams) of CO<sub>2</sub> emissions per ton-kilometer travelled are the average for all industries (Ministry of Land, Infrastructure, Transport and Tourism).

## Promotion of Carbon Neutral Vision 2050

We aim to achieve CO<sub>2</sub> reduction in our supply chain by offering two values: "providing high-performance steel products and solutions that contribute to reducing CO<sub>2</sub> emissions throughout society" and "providing carbon neutral

steel by decarbonizing the steelmaking process" through the realization of the "Nippon Steel Carbon Neutral Vision 2050".

## Providing two type of values targeted by the Carbon Neutral Vision 2050



In support of the ambitious government policy to realize a carbon neutral society in 2050, we announced the Carbon Neutral Vision 2050 as a part of the Medium- to Long-Term Management Plan in March 2021.

### Providing two types of values by achieving carbon neutrality

**Provision of high-performance steel products and solutions that contribute to reducing CO<sub>2</sub> emissions in society**

Reduce CO<sub>2</sub> emissions at the time of production and processing by customers  
Reduce CO<sub>2</sub> emissions at the time of use of our products by end customers

**Providing carbon neutral steel through decarbonization of the steelmaking process**

Reduce CO<sub>2</sub> emissions in customers' supply chains

**We are determined to satisfy the decarbonization needs of our customers (approximately 6,000 companies in Japan) and bolster their international competitiveness by providing high-performance steel products and solutions, promoting the decarbonization of the existing steelmaking process ahead of other countries, and supplying carbon neutral steel to the market as soon as possible.**

## Decarbonization scenario of "Carbon Neutral Vision 2050"

We have formulated a target of reducing total CO<sub>2</sub> emissions by 30% by 2030, compared to the 2013 baseline and of achieving carbon neutrality in 2050. We are working to develop and actually implement breakthrough technologies in steelmaking process ahead of steel companies in other countries.

Our plan is ambitious compared to those of our global peers, and is intended to significantly contribute to the Japanese government's plan.

### Our CO<sub>2</sub> emissions reduction scenario

**2030 Target**      **30% or more reduction in total CO<sub>2</sub> emissions vs. 2013**

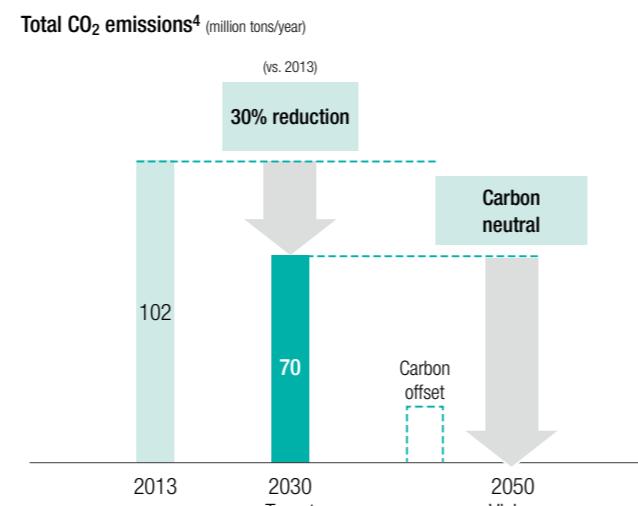
30% reduction in total CO<sub>2</sub> emissions vs. 2013 by implementing the COURSE50<sup>2</sup> in the existing BF and BOF process, reducing CO<sub>2</sub> emissions in existing processes, and establishing an efficient production framework.

<sup>2</sup> COURSE50: Abbreviation for CO<sub>2</sub> Ultimate Reduction System for cool Earth 50

### Vision 2050      Ambition to become carbon neutral

Ambition to become carbon neutral by taking up the challenge to mass produce high-grade steel in large size EAFs and to realize hydrogen steelmaking (i.e., Super COURSE50 use of BF; hydrogen direct reduction of iron), and with multi-aspect approach, including CCUS<sup>3</sup> and other carbon offset measures.

<sup>3</sup> Carbon Capture, Utilization and Storage



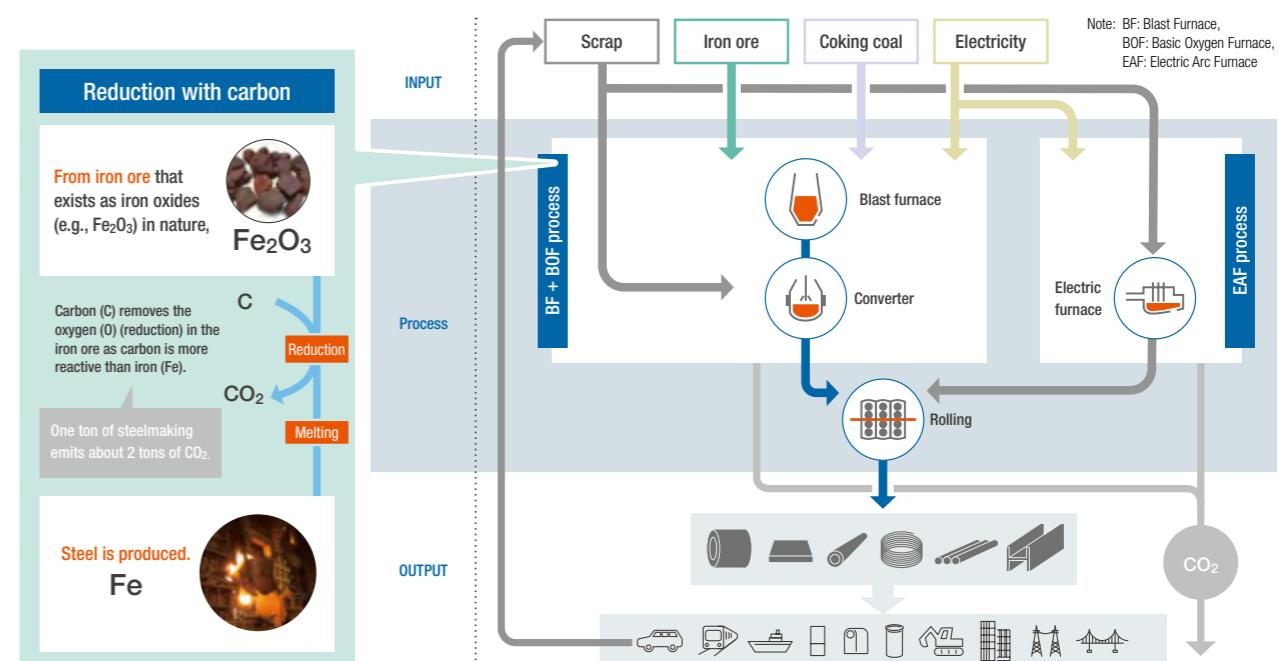
[Scope of scenario]  
Domestic  
Scope 1+2 (direct emissions in our production sites + indirect emissions from purchased electricity)  
<sup>4</sup> Including Nippon Coke & Engineering Co., Ltd. and Sanso Center Co., Ltd.

## Decarbonization of steelmaking process

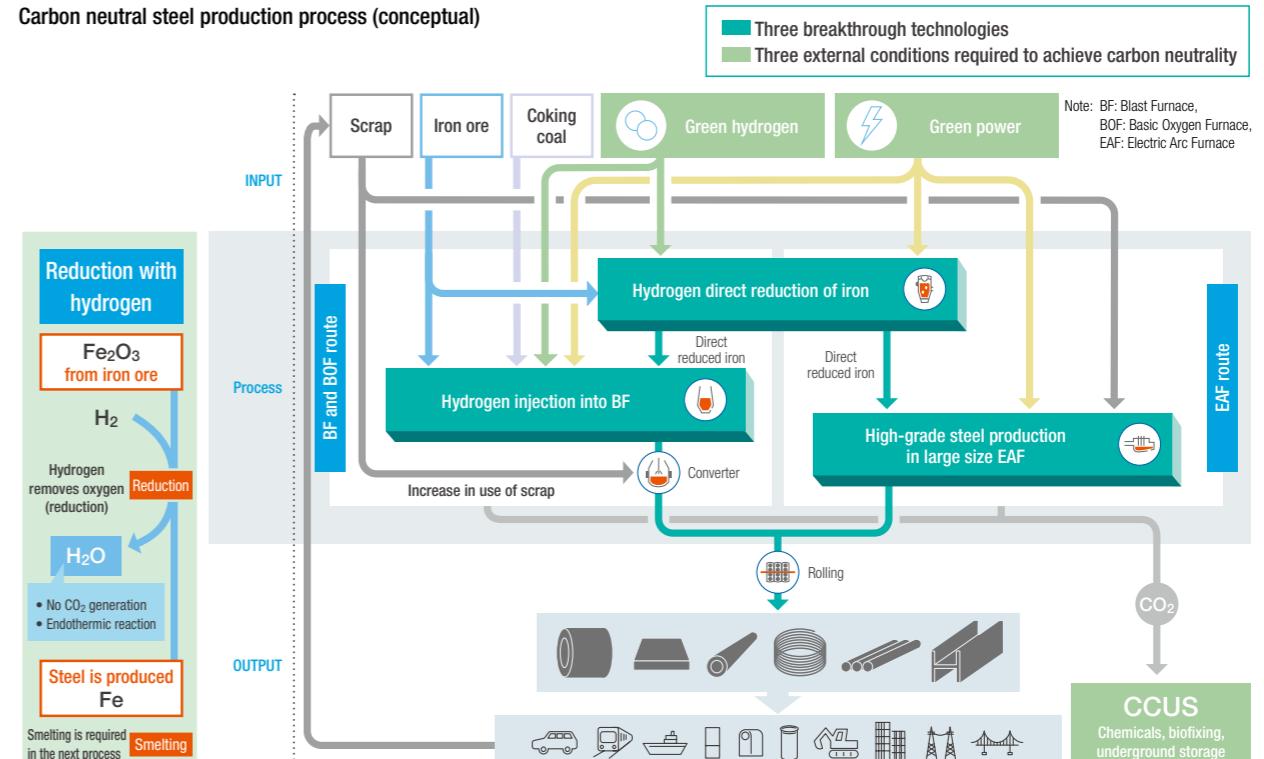
Producing iron from iron ore (such as Fe<sub>2</sub>O<sub>3</sub>) requires reducing the oxygen contained in the iron ore. Using carbon has been the only technology that enables such reduction in a large-scale and stable manner, although it generates CO<sub>2</sub>. However, decarbonizing the existing steel production process would require the development of breakthrough technologies to reduce iron ore using hydrogen instead of carbon.

Therefore, as our top management issue, we are developing and implementing the following three breakthrough technologies ahead of other countries: 1) Reduction with hydrogen in BF (injecting hydrogen into existing BF for partial replacement of carbon use), 2) Hydrogen direct reduction of iron (producing solid reduced iron by hydrogen reduction in direct reduction

furnaces (DRFs) instead of BF), and 3) High-grade steel production in large size EAFs (improving the productivity of EAFs to manufacture high-grade steel not producible today using direct reduced iron and iron scrap). We aim to achieve carbon neutrality by 2050 by converting the existing BF into the EAF steelmaking process or introducing an applicable CO<sub>2</sub> reduction technology, such as reduction with hydrogen in BF, over the next few decades. In addition, we will continue to actively urge the government and related organizations to establish the development of social infrastructures required to achieve this carbon neutrality, including the "low cost and stable supply of green hydrogen and green electricity" and the introduction of "CCUS."



### Carbon neutral steel production process (conceptual)



## Progress of Carbon Neutral Vision 2050

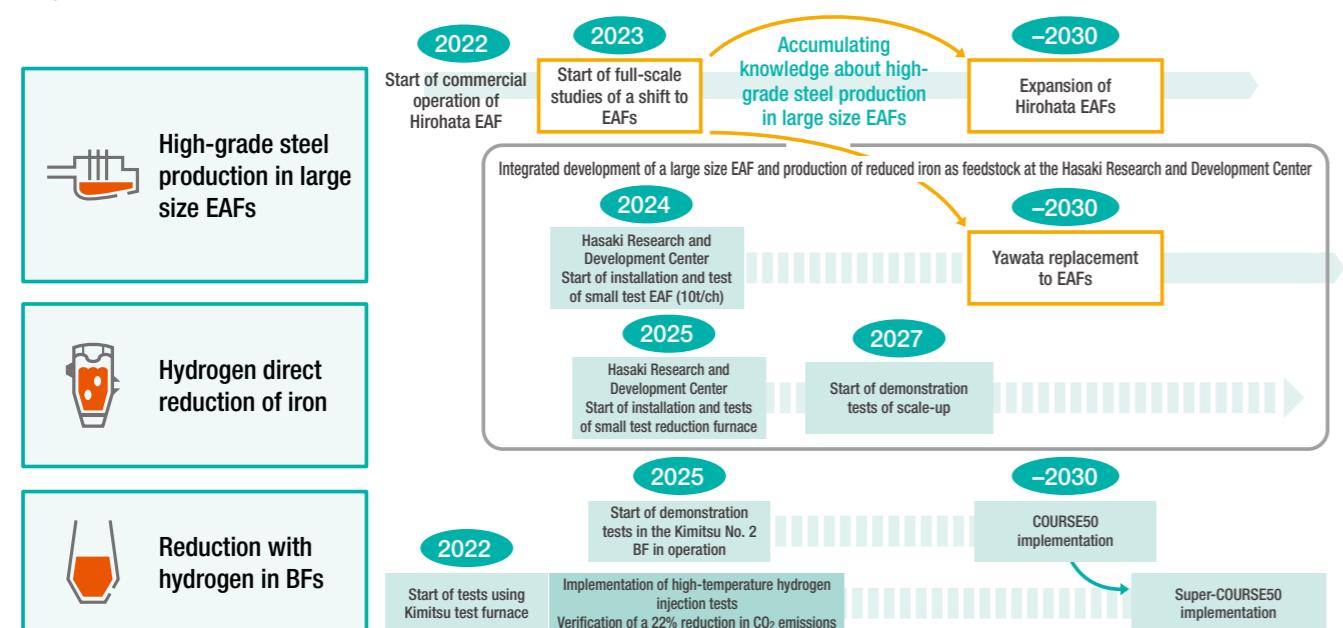
The Carbon Neutral Vision 2050 aims to achieve carbon neutrality using three breakthrough technologies: "Reduction with hydrogen in BF," "Hydrogen direct reduction of iron," and "high-grade steel production in large size EAFs."

Concerning "high-grade steel production in large size EAFs" a new EAF installed in the Setouchi Works Hirohata Area started its commercial operation in October 2022, making it the world's first integrated EAF steelmaking process that enables the production and supply of high-grade electrical steel sheets. Regarding the shift from the BF steelmaking process to the EAF steelmaking process, we are starting its full-scale studies at two candidate sites, the Kyushu Works Yawata Area and the Setouchi Works Hirohata Area. In addition, we are setting up a small EAF (with a capacity of 10 tons) in the Hasaki Research and Development Center of R&D Laboratories (located in Kamisu, Ibaraki), with its experimental operation expected to start in fiscal 2024.

Concerning "Reduction with hydrogen in BF," Japan's three blast furnace steelmakers, including Nippon Steel, are jointly developing the COURSE50 blast furnace, designed to replace carbon used in the BF as a reducing agent with hydrogen-rich gases generated in steelworks. This project has already established the technologies that can reduce CO<sub>2</sub> emission in a COURSE50 test furnace (12m<sup>3</sup>).

In February 2023, we decided to conduct demonstration tests using No. 2 BF at the East Nippon Works Kimitsu Area, a large size BF in operation

### Progress of Carbon Neutral Vision



### TOPICS

#### COURSE50 Project<sup>1</sup>, Super COURSE50 Project<sup>2</sup>

The COURSE50 project focuses on the technology for reducing the amount of carbon to be injected into blast furnaces. This is done by using by-product gas generated in integrated steel mills, which is currently used in furnaces. The project aims at realizing the hydrogen steelmaking in some degree, given the current circumstances, under which there is no social infrastructure for supplying large volumes of hydrogen.

From 2008 to 2021, we have developed technologies to lower CO<sub>2</sub> emissions by 30%: a 10% lowering emissions from a blast furnace by adopting technologies to reduce iron ore by use of hydrogen gases and a 20% offset by CO<sub>2</sub> capture from BF gases. As for the reduction technology that utilizes hydrogen in part, a 10% reduction of CO<sub>2</sub> emissions has been verified at a 12 m<sup>3</sup> experimental blast furnace at the Kimitsu Area of the East Nippon Works. As for the latter CO<sub>2</sub> emission reduction technology, the project developed a high-performance CO<sub>2</sub> separation and recovery technology based on chemical absorption techniques, which has already been put into practical use in the CO<sub>2</sub> industry.

and approximately 400 times larger in scale than the test furnace. We are installing the equipment for the demonstration tests scheduled to start in January 2026.

In parallel with the tests described above, we have been working since May 2022 on the technology development aimed at developing the Super COURSE50 technology for further reductions in CO<sub>2</sub> emissions with the help of heated hydrogen by retrofitting the existing COURSE50 test furnace.

In the past tests, we confirmed a 22% reduction in CO<sub>2</sub> emissions from the BF, with additional tests scheduled within 2023 aimed at reducing CO<sub>2</sub> emissions by 30% or more. Going forward, we will implement additional demonstration tests with the aim of further reductions in CO<sub>2</sub> emissions and developing various enabling technologies, striving for the early establishment of the Super COURSE50 technology in large size BFs (50% or more reductions in CO<sub>2</sub> emissions).

Regarding "hydrogen direct reduction of iron," we will set up a small test furnace at our Hasaki Research and Development Center and start demonstration tests in fiscal 2025. Then, by 2050, we aim to solve issues such as utilization of low-grade iron ore and conversion of reduction material from natural gas to hydrogen, and to commercialize a direct hydrogen reduction reactor using low-grade iron ore from Australia and other countries as feedstock.

## CCUS technology development

CCUS (Carbon Capture, Utilization and Storage) is a technology that separates, captures, and stores CO<sub>2</sub> in the ground, or directly uses CO<sub>2</sub> or converts it into other materials and utilizes it. In the carbon neutral steel production process, CCUS technology is used to process CO<sub>2</sub> still generated from the steelmaking process even after it has been minimized. Realization of this technology requires the related technology development as well as preparation of external conditions. The required technologies include development and installment of CO<sub>2</sub> separation and recovery technology (high-performance chemical

absorption liquid) and development of CO<sub>2</sub>-based manufacturing technologies for chemicals and fuels. The necessary external conditions include the securing of the storage space, the establishment of the storage infrastructure for CCS, legislation, and tax incentives, the ensuring of business profitability of chemicals and fuels manufactured by CCU (Carbon Capture and Utilization), and preferential treatment of carbon recycled products. The Nippon Steel Group is aggressively engaged in developing these technologies to help realize social implementation of CCUS.

### Nippon Steel Group's CCUS technology development efforts

#### Capture

##### CO<sub>2</sub> Separation and Recovery Technology (NEDO COURSE50 Project)

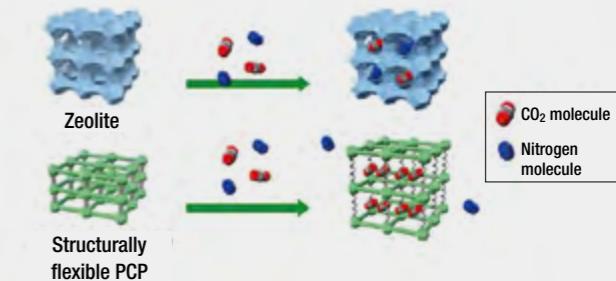
Nippon Steel Engineering Co., Ltd. in the Nippon Steel Group has commercialized an energy-saving CO<sub>2</sub> chemical absorption process called ESCAP™ (Energy Saving CO<sub>2</sub> Absorption Process), which uses chemical absorption, one of the methods for CO<sub>2</sub> separation and recovery. Two units are already in operation in Japan, including the one installed in the North Nippon Works Muroran Area.

The ESCAP™ is characterized by high energy efficiency with a more than 40% reduction in heat consumption compared to general-purpose technology. In addition, its proprietary impurity removal facility enables recovery of more than 99.9% of high-purity CO<sub>2</sub> from raw material gas with high impurities.

#### Development of low-concentration CO<sub>2</sub> separation and capture technology (subsidized by the Green Innovation Fund)

We ramped up the development of separation/capture technology for low-concentration CO<sub>2</sub> contained in industrial emission gases in corporation with Oita University, Osaka University, Kyoto University, Chiba University, Nagoya University, Hokkaido University, and Resonac Holdings Corporation.

To separate and capture CO<sub>2</sub> efficiently from low-pressure, low-concentration emission gases (with a CO<sub>2</sub> concentration not exceeding 10% at the atmospheric pressure), we will take on the development and social implementation of a new CO<sub>2</sub> separating agent (structurally flexible PCP), which has higher CO<sub>2</sub> selectivity than the conventional CO<sub>2</sub> separating agent (zeolite) and enables CO<sub>2</sub> adsorption and desorption with minimal levels of pressure operation.

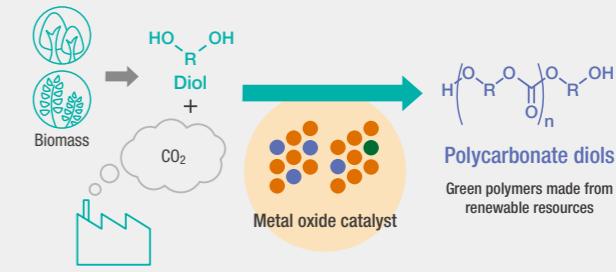


#### Utilization

##### Technology to produce chemical products from CO<sub>2</sub>

###### (Commissioned project by NEDO)

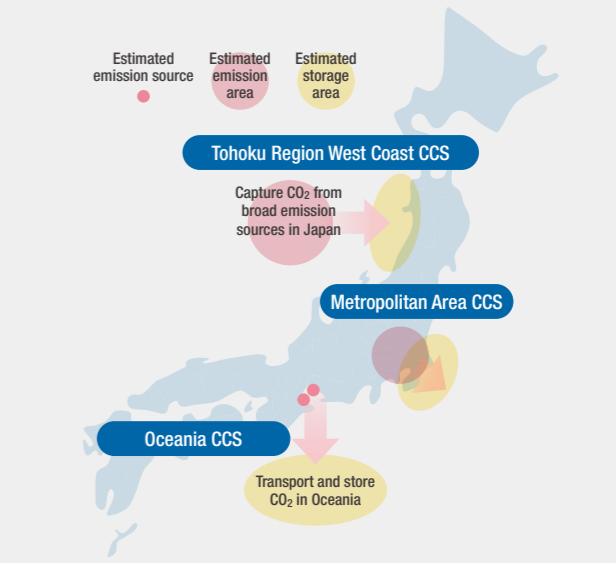
In April 2023, Nippon Steel, Osaka Metropolitan University, and UBE Corporation started research and development related to the "development of one-step synthesis process for polycarbonate diol from CO<sub>2</sub>." Polycarbonate diol is a representative material for producing high-value-added carbon compounds that do not require hydrogen. It is also a raw material for high-performance polyurethanes, widely used worldwide and whose demand is expected to grow further. However, the high environmental impact of its synthesis process has been a major issue. On the other hand, this research and development aims to develop an innovative green process that effectively utilizes CO<sub>2</sub> instead of highly toxic gases such as CO and achieves high yields in one-step synthesis.



#### Storage

##### CO<sub>2</sub> storage technology

As part of the Survey on the Implementation of Japan Advanced CCS Projects that the Japan Organization for Metals and Energy Security (JOGMEC) adopted for its publicly solicited projects in fiscal 2023, Nippon Steel participates in three joint projects: the Tohoku Region West Coast CCS Project, the Metropolitan Area CCS Project, and the Oceania CCS Project. In this project, we will work jointly with each participating company to secure storage sites, develop storage infrastructure, and establish external conditions such as developing regulatory requirements. At the same time, we will take the initiative in studies related to CO<sub>2</sub> separation/capture, liquefaction, and shipping terminals, actively promoting the early social implementation of CCS infrastructure.



#### Transportation

##### Integrated CO<sub>2</sub> ship transportation (NEDO-commissioned project)

Jointly with Japan CCS Co., Ltd. Engineering Advancement Association of Japan, and ITOCHU Corporation, we have commenced the R&D and demonstration project related to the integrated CO<sub>2</sub> ship transportation.

## Efforts to reduce carbon emission in power generation

We generate 89% of the electricity we use at steelworks, 75% of which is from internally generated energy sources such as waste heat and by-product gases. We also use LNG, petroleum, and coal as external-source auxiliary fuels. Therefore, in order to reduce the carbon content of our electric power structure, we will eliminate all use of inefficient coal-fired power, increase efficiency of thermal power fired by by-products, and utilize CCUS. We will also consider use of non-fossil fuels for external auxiliary fuels (expanded use of zero-emission fuels such as biomass, ammonia, and hydrogen) and purchase of green power.

### Issues to consider and promote reducing carbon in the electric power structure

- Total elimination of inefficient coal-fired power
- Increase efficiency in thermal power fired by by-products, utilization of CCUS, and use of non-fossil fuels for external auxiliary fuels (expanded use of zero-emission fuels such as biomass, ammonia, and hydrogen)
- Purchase of green power

## Products and technical solutions that contribute to reducing CO<sub>2</sub> emissions in various areas of society NSCarbolex™

NSCarbolex is a brand that integrates NSCarbolex Neutral, steel products allocated the amount of CO<sub>2</sub> emissions reductions in the steel making process, and NSCarbolex Solution. Under the Nippon Steel Carbon Neutral Vision 2050 set forth toward the realization of a carbon neutral society in 2050, we are

### Brand system of NSCarbolex



**Steel products allocated the amount of CO<sub>2</sub> emissions reduction in the steelmaking process**



### NSCarbolex Neutral

Reducing CO<sub>2</sub> emissions in the steel industry is not easy, so it is expected to take a long time to develop decarbonization technologies.

Under such a circumstance, NSCarbolex Neutral enables us to supply customers early on with steel products with a reduced carbon footprint by tracking the total amount of CO<sub>2</sub> emissions by project that we have reduced by reforming and improving our manufacturing processes and allocating it to any given steel product using the mass balance method.

We believe that tackling decarbonization earlier than anybody else would enhance our customers' competitiveness amid society's rapidly increasing

### Features and mechanism of NSCarbolex Neutral

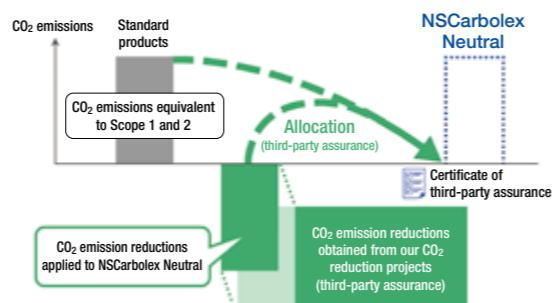
- Products under this brand utilize the CO<sub>2</sub> emissions Nippon Steel has reduced by reforming and improving its manufacturing processes.
- These products have received assurance from a third-party certification body that the total reduction in CO<sub>2</sub> emissions and the amount allocated to each product are appropriate.
- These products help customers reduce their CO<sub>2</sub> emissions (Scope 3).
- This brand is applicable to all steel products Nippon Steel manufactures.

committed to reducing CO<sub>2</sub> emissions in society by providing high-performance products and solutions, in addition to CO<sub>2</sub> emission reductions in our manufacturing processes.

**Advanced products and technical solutions that contribute to reducing CO<sub>2</sub> emissions in society**



decarbonization needs. We will contribute to our customers' decarbonization efforts by establishing a stable supply system of NSCarbolex Neutral as soon as possible.



## NSCarbolex™ Solution

NSCarbolex™ Solution offers high-performance products and solutions that contribute to reducing CO<sub>2</sub> emissions in society, including NSafe™ -AutoConcept, which contributes to reducing CO<sub>2</sub> emissions during automobile manufacturing and driving, High-Efficiency Electrical Steel Sheets that contribute to improving the efficiency of motors and reducing energy loss in power transmission/distribution networks, building material solution brand ProStruct™ that contributes to enhancing productivity at construction sites, and HYDREXEL™ stainless steel

for high-pressure hydrogen environments, which contributes to realizing a hydrogen society. Through these products and solutions, we will contribute to reducing CO<sub>2</sub> emissions in various sectors of society.



### NSCarbolex Solution: Product and Solution Lineups

Automobiles and home appliances	Energy	Infrastructure
<ul style="list-style-type: none"> <li>• CO<sub>2</sub> reduction in manufacturing processes</li> <li>• CO<sub>2</sub> reduction in product use, etc.</li> </ul> <p><b>NSafe-AutoConcept</b></p> <p>Contribute to making lightweight vehicles by providing high-strength steel and our original processing techniques</p> <p>▶ Contribute to CO<sub>2</sub> reduction in manufacturing process and vehicle rides</p>	<ul style="list-style-type: none"> <li>• Contribution to energy transition in society</li> <li>• Energy saving in electricity transmission, etc.</li> </ul> <p><b>Steel for LNG tank</b></p> <p>Its high resistance to extreme low temperature contributes to construction of highly safe LNG tank</p> <p>▶ Contribute to expansion of LNG use</p>	<ul style="list-style-type: none"> <li>• CO<sub>2</sub> reduction in construction processes</li> <li>• Improvement in energy efficiency in railway, etc.</li> </ul> <p><b>Mega-sized fixed external dimension H-section steel MEGA NSHYPER BEAM™</b></p> <p>Simplify Hyper beam design and extend labor-saving benefits during processing to ultra-large sizes</p> <p>▶ This product enables construction with fewer materials in a shorter period, which contributes to reducing CO<sub>2</sub> emissions.</p>
<p><b>Steel for high-strength gear</b></p> <p>Eliminate the need for annealing treatment in secondary processes at customers. Enable vehicle body weight reductions using high-strength materials</p> <p>▶ Contribute to CO<sub>2</sub> reduction in manufacturing process and vehicle rides</p>	<p><b>Stainless steel pipe for high-pressure hydrogen HYDREXEL</b></p> <p>Photo by Iwatani Corporation</p> <p>Its high strength and easy welding features contribute to construction of hydrogen stations</p> <p>▶ Contribute to the realization of a hydrogen society</p>	<p><b>High-speed railway wheels and axles</b></p> <p>Enable high-strength and lightweight high-speed railway wheels and axles</p> <p>▶ The weight reduction contributes to reducing CO<sub>2</sub> emissions during railcar operation</p>
<p><b>Hairline finished electrolytic zinc-nickel alloy plated steel sheet FeLuce™</b></p> <p>Exquisitely designed surface allows omitting additional surface treatment</p> <p>▶ Contribute to customers in reducing CO<sub>2</sub> by cutting processes</p>	<p><b>High-alloy OCTG seamless pipes</b></p> <p>Its world-class resistance to corrosion contributes to welling in high-concentrate CO<sub>2</sub> environment</p> <p>▶ Contribute to CCS development</p>	<p><b>Designing titanium TranTixii™</b></p> <p>Aesthetic colors and design are added to the surface of corrosion resistant, strong, and lightweight titanium</p> <p>▶ Contribute to reducing CO<sub>2</sub> emissions during construction and maintenance</p>
<p><b>High-efficiency electrical steel sheets</b></p> <p>Reduces energy loss in electric devices</p> <p>▶ Reduces CO<sub>2</sub> emissions from use of automobiles and home appliances</p> <p>▶ Improves power transmission efficiency</p>	<p><b>Corrosion resistant coated steel ZEXEED™</b></p> <p>Prevents corrosion even in severely corrosive situation</p> <p>▶ Enables omitting of coating</p> <p>▶ Enhances durability of solar power generation mount</p> <p>▶ Reduces CO<sub>2</sub> emissions from customers' manufacturing maintenance processes</p>	

### TOPICS

## Further expansion of high grade non-oriented electrical steel sheets and green bond issuance

In May 2023, we decided to implement further actions toward increasing the manufacturing capacity of non-oriented electrical steel sheets in the Setouchi Works Hanshin Area (Sakai) and the Kyushu Works Yawata Area, along with the previously announced measures for electrical steel sheet manufacturing capacity and quality improvement. The new capacity expansion measures will take full effect in the first half of fiscal 2027, with the manufacturing capacity of non-oriented electrical steel sheets for eco-friendly cars expected to become about five times the current capacity (approximately 1.6 times the previously announced measures). The total accumulated investment amount, including the previously announced measures, will be approximately 213 billion yen.

In March 2023, we issued a green bond (unsecured straight corporate bond) totaling 50 billion yen. The bond was issued to procure part of the funds needed to finance "production facilities, research and development expenses, and other

related expenditures for non-directional electrical steel sheets used in eco-friendly car-driving motors." These funds have been fully appropriated, and details of these funds we disclosed in the Reporting.

We position the issuance of green bonds as financing required to ensure the steady progress of our commitment to the Carbon Neutral Vision 2050. We also believe that issuing green bonds allows us to reiterate messages about our commitment to our stakeholders.

As for other funds needed to finance production facilities, research and development expenses, and other related expenditures required to offer products and solutions under the NSCarbolex Solution and NSCarbolex Neutral brands, we will look for the most appropriate financing methods based on our future investment plans and other conditions.

## Collaboration with society, policy proposals, and industry activities to achieve carbon neutrality

Decarbonization of steelmaking is an extremely ambitious challenge. In addition to development of carbon neutral technology options, carbon-free hydrogen and electricity, the CCUS, and other factors of social infrastructure are indispensable.

The realization of carbon neutrality in the steel industry is not just a challenge for steelmakers, given that steel as the basic material underpins international competitiveness in Japan's overall manufacturing. It is a national challenge that the whole nation should take it up, based on the policy of aiming at achieving the industry's international competitiveness and carbon neutrality, as well as the national strategy that provides strong, continuous fiscal and other support.

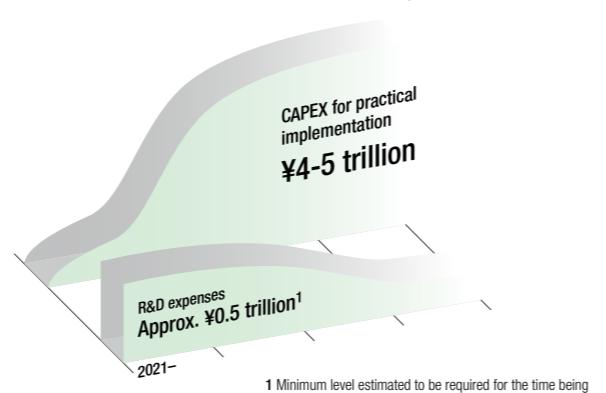
The realization of carbon neutrality in the steel industry requires huge R&D expenditures and capital expenditures for practical use. Nippon Steel alone is expected to roughly require ¥0.5 trillion in R&D expenses and ¥4–5 trillion in capital expenditures. The decarbonizing technology development for the steelmaking process is presenting an appearance of a state-to-state competition. In order to continue to lead the world and maintain and strengthen Japan's overall industrial competitiveness, long-term, continuous government support is indispensable for "discontinuous" innovation and other R&D efforts and equipment implementation.

Europe, the United States, and China have adopted a variety of policies aimed at achieving carbon neutrality on the premise of securing international competitiveness in the steel and other basic materials

industries. Japan also needs to introduce a drastic policy system based on national strategy under strong government leadership in order to achieve carbon neutrality ahead of those countries and to maintain and strengthen the international industrial competitiveness.

For realizing these policies, Nippon Steel is determined to take every opportunity to make various proposals on Japan's climate change measures and energy policies based on the Paris Agreement, and to spearhead activities through industry organizations.

### Investments needed for the carbon neutral steel project



### Policy recommendations for realizing a carbon neutral society

President Hashimoto of Nippon Steel is a member of the Strategic Policy Committee, under the Advisory Committee for Natural Resources and Energy of the Ministry of Economy, Trade and Industry (METI), Vice Chairman of Nippon Keidanren (Japan Business Federation), and a member of the Green Transformation (GX) Implementation Council. The Executive Vice President in charge of Environment is also a member of the Central Environment Council of the Ministry of the Environment, representing Keidanren.

In meetings of these government councils and committees and Keidanren, we express our commitment and determination of the steel industry for achieving carbon neutrality. We have also recommended to promptly create Japan's policy package that combines climate change measures and measures to maintain and enhance international competitiveness of industries, led by the government.

In addition, we have been arguing for the need for a policy to change the energy supply structure including active promotion of nuclear power

utilization, for promotion of policies to achieve carbon neutrality in the materials industry, for robust and continuous measures to promote public and private investment across all stages for the decarbonization transition from research and development to equipment implementation, for measures to ensure equal footing to deal with hydrogen, electricity, and raw material operation cost increases, and for the need to develop a roadmap to realize CCUS implementation. We contribute to policy formulation, as exemplified by the recently passed GX Promotion Act and GX Decarbonization Electricity Act, which reflected these recommendations.

Moreover, we are actively developing policy proposals to achieve carbon neutrality by making use of all opportunities with the government, relevant ministries and local governments, etc. other than the above-stated councils and committees.

### Efforts to address climate change through industry organizations

To promote Japan's efforts to achieve the mid-term goal of the Paris Agreement, the Japan Iron and Steel Federation (JISF) declared that Japan's steel industry would take up the bold challenge of achieving carbon neutrality. In March 2022, the JISF set the goal of "reducing energy-derived CO<sub>2</sub> emissions in fiscal 2030 by 30% compared to fiscal 2013 levels," an ambitious goal even from an international perspective.

In May 2022, Keidanren announced its initiative, Towards Green Transformation (GX), recommending measures needed to achieve carbon

neutrality in 2050 (GX policy package) and other agendas. We are also taking a leading role in the JISF and Keidanren formulating their climate change measures.

Meanwhile, we participate in climate action of the global steel industry, led by the worldsteel association, serving as the worldsteel Climate Action data provider to calculate and report CO<sub>2</sub> emissions from steelworks using universal methods.

## Efforts for climate change measures in the resource recycling and biodiversity fields

### 1 Recycling of waste plastics

Using coke ovens at seven areas of Nippon Steel's five steelworks, about 200,000 tons of used plastic containers and packaging collected from general households nationwide are recycled 100%, in compliance with the Act for Promotion of Use of Recycled Resources. This contributes to reduction of about 600,000 tons of CO<sub>2</sub> a year.

In order to contribute to Japan's strategy to recycle plastic resources, we are developing technologies to expand waste plastic processing capacity of coke ovens, to densify waste plastic pellets as raw material, and to dechlorinate.

### 2 Maximum use of steel scrap

Recycling of steel scrap is one of the key measures for achieving carbon neutrality. We will significantly reduce CO<sub>2</sub> emissions in steelmaking process by maximizing the use of domestic steel scrap.

### 3 Blast furnace cement

Blast furnace cement is made up of 45% blast furnace slag mixed with conventional cement, which reduces CO<sub>2</sub> emission by 40% (320 kg per ton of cement) compared to ordinary cement production.

### 4 Blue carbon

Nippon Steel has promoted scientific analysis on usefulness and safety of use of steel slag — a by-product from the steelmaking process. To improve this technology, we began a basic study on blue carbon (CO<sub>2</sub> absorption and fixation in the marine ecosystem), which is getting more attention as a measure against climate change.

In fiscal 2022, we calculated the CO<sub>2</sub> fixation effect in a seaweed bed creation project, on which we have been working over the past nearly 20 years, applying for J-Blue Credit™ certification jointly with the Mashike Fishery Cooperative Association (Mashike, Hokkaido). As a result, we acquired J-Blue Credit certification for 49.5 t-CO<sub>2</sub> as the amount of CO<sub>2</sub> absorbed and fixed (blue carbon) over the five years between 2018 and 2022.

This accomplishment marked the first blue credit certification for a seaweed bed in Hokkaido, and it was the first joint application between a fishery cooperative association and a private company.

Encouraged by this accomplishment in calculating the amount of CO<sub>2</sub> absorbed, we will spread this approach to other ocean areas in Japan where the creation of sea forests is underway and publicize the total amount of CO<sub>2</sub> absorbed.



Certificate of J-Blue Credit

## Efforts to adapt to climate change

In addition to taking mitigation actions against climate change, we take into account the diverse impact of climate change and appropriately prepare for risks, as adaptive initiatives, and at the same time seek to capture business opportunities.

### Preparation for risks

There is a risk that operations and shipments may be interrupted due to the flooding of steelworks and other events, including some caused by abnormal weather as a consequence of climate change. To prevent such risks, we are implementing measures against typhoons and heavy rains, measures to prevent crane overturn, installation of levees, reinforcement of embankments and gradients, and measures to prevent wind and flood damage at each steelworks.

Moreover, our steelworks have enhanced facilities to prevent water pollution. These facilities were provided to increase waste water treatment capacity and involved installation of a large storage tank so that water tainted with iron ore powder would not directly be released into the sea even if our steelworks were subjected to localized heavy rain.

In addition, some administration offices are built on a piloti structure, which means there is open space with no walls on the ground level. This makes the buildings less vulnerable to tsunami. This is a part of our efforts to be well prepared for emergencies such as flooding and high waves.

### Capturing business opportunities

We have many products that are used for a long time as construction material for embankments and other public infrastructure. They contribute to providing solutions for "national resilience," such as protecting towns from flooding or high tides caused by heavy rains or typhoons. Adaptation to climate changes also leads to business opportunities for Nippon Steel.

For example, we have developed and provided for actual use various types of products and product utilization technologies in the civil engineering field. They include hat-type sheet piles (contributing to national resilience in a wide range of ways, including measures against liquefaction of river levees, water leakage, and tsunami reaching coastal levee), linear-type steel piles (having a high-tensile strength at the joints, being suitable to cell-type quays, erosion-control dams and water shut-off work, and contributing to measures for sand embankments and against landslide at the time of heavy rain or a typhoon), and a method of preventing subsidence by use of sheet piles.

## Activities to transfer and diffuse decarbonization technologies overseas ECO SOLUTION

With the understanding that the transfer of Japan's advanced energy-saving technologies overseas can be effective ways to globally reduce CO<sub>2</sub> emissions, Nippon Steel is participating in many energy-saving and environmental initiatives in Japan and overseas. For example, we work with the World Steel Association and directly with countries such as China and India.

### Japan's steel industry's international cooperation in energy conservation

As a core member of the Japan Iron and Steel Federation (JISF), Nippon Steel is involved in multinational projects such as those for the Environment Committee of the World Steel Association.

In addition, the JISF is promoting ① joint meetings of public and private steel-related parties, ② preparation of customized list of technologies, and

#### ① Joint meetings of public and private steel-related parties

In public-private steel-related joint meetings, we share the technologies customized list, the results of assessment of steel mills, and introduce detailed technical information and financing schemes, in order to realize the early transfer of energy-saving technologies to emerging countries. By fiscal 2022, joint meetings have been held: 11 times in India and 15 times in six ASEAN countries. In 2022, we held the "2022 Public and Private Collaborative Meeting between Indian and Japanese Iron and Steel Industry" with India and the online "ASEAN-JAPAN Steel Initiative Webinar 2023 - Pathways to Carbon Neutrality" conference with ASEAN countries and shared examples of energy saving and environmental conservation measures.

#### ③ Assessment of steelworks

Experts from the Japanese steel industry visit the steel mills overseas to propose energy-saving technologies, provide operational improvement advice based on the operational conditions of the facilities, and conduct the energy-saving assessment of steel mills using the international standard ISO14404. Up to fiscal 2022, we had carried out the assessment of 14 steel mills in India and 16 mills in six ASEAN countries.



Assessment of steelworks

### Contribute to reduction of CO<sub>2</sub> emission on a worldwide scale

Japan's steel industry can contribute to reduction of CO<sub>2</sub> emission on a worldwide scale by transferring its advanced energy-saving technologies to emerging countries. The reduction effects of CO<sub>2</sub> emission by transfer of Japanese steelmakers' energy-saving technologies have amounted to 75.55 million ton reduction in CO<sub>2</sub> emissions per year in total.

③ assessment of steelworks as to energy-saving status. These are the three pillars of collaboration for bilateral energy-saving and environmental cooperation with India, Southeast Asia, and other countries and regions.

#### ② The technologies customized list

We identify the appropriate technologies for each country and region, and in addition to detailed technical information, we conduct the assessment of steel mills, and provide the technologies customized list, which complies with information such as suppliers, for reference. The technologies customized list was updated into the fifth version on blast furnace (BF) steelmaking and the 4.2 version on electric arc furnace (EAF) steelmaking for India. And for the ASEAN countries, into the fourth version on BF steelmaking and 3.2 version on EAF steelmaking in fiscal 2021.



Technologies customized list

#### Activities as a Climate Action member

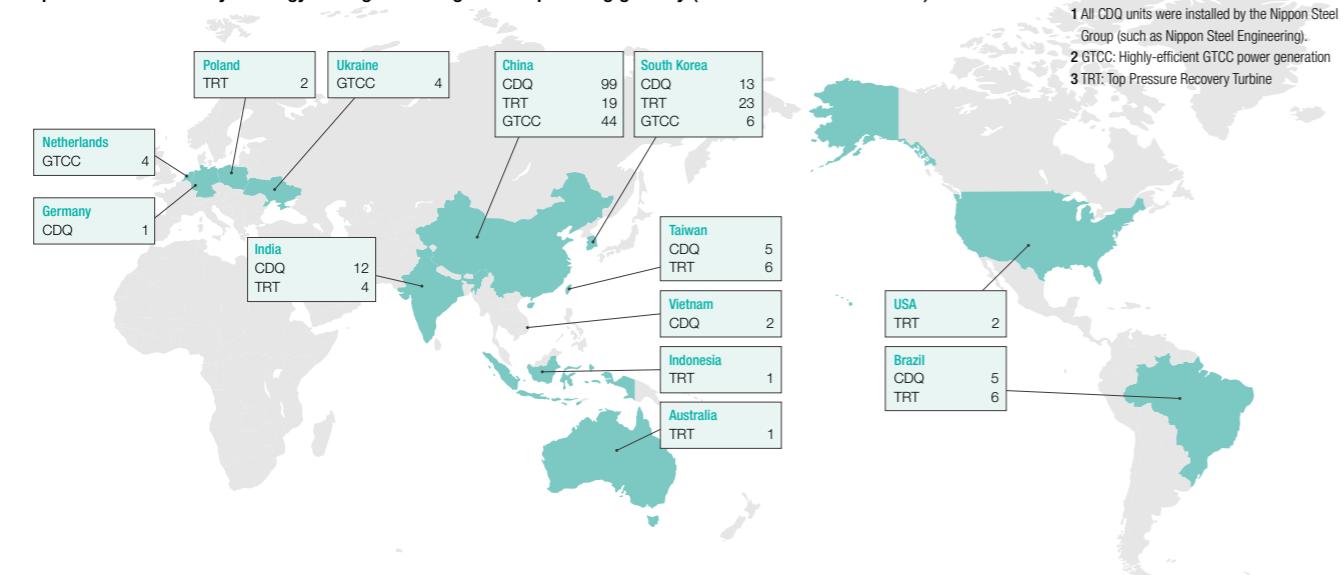
Nippon Steel participates in the Climate Action Program of the World Steel Association, which uses universal methods to calculate and report on the CO<sub>2</sub> emitted by steelworks. As a Climate Action member (data provider), our 16 years of contribution has been highly recognized.



Climate Action DATA PROVIDER certificate

	Number of units	(10,000 t-CO <sub>2</sub> /year)	CO <sub>2</sub> emission reduction
CDQ <sup>1</sup>	137	2,873	
GTCC <sup>2</sup>	58	2,545	
TRT <sup>3</sup>	64	1,129	
Oxygen Converter Gas collection	22	821	
Heat recovery	7	98	
Oxygen Converter Gas waste heat collection	8	90	
<b>Total</b>	<b>296</b>	<b>7,555</b>	(FY2021)

#### Japanese steel industry's energy-saving technologies are spreading globally (units installed in numbers)



## Information disclosure according to recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)

Given the international community's commitment to achieving long-term goals of the Paris Agreement, Nippon Steel signed the statement of support for the TCFD in May 2019, considering the climate change as one of

priorities that the planet is facing today. Based on the recommendations, we are committed to information disclosure on the climate change impact to our business activities.

### [Mapping table of TCFD recommendations and their location page]

TCFD's recommendations and supporting recommended disclosures	Reference page
<b>[Governance] Disclose the organization's governance related to climate-related risks and opportunities.</b>	
<ul style="list-style-type: none"> <li>• a) Describe the board's oversight of climate-related risks and opportunities.</li> <li>• b) Describe management's role in assessing and managing climate-related risks and opportunities.</li> </ul>	
<b>[Strategy] Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.</b>	
<ul style="list-style-type: none"> <li>• a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.</li> <li>• b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.</li> <li>• c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.</li> </ul>	
<b>[Risk Management] Disclose how the organization identifies, assesses, and manages climate-related risks.</b>	
<ul style="list-style-type: none"> <li>• a) Describe the organization's processes for identifying and assessing climate-related risks</li> <li>• b) Describe the organization's processes for managing climate-related risks.</li> <li>• c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.</li> </ul>	
<b>[Metrics and Targets] Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.</b>	
<ul style="list-style-type: none"> <li>• a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.</li> <li>• b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.</li> <li>• c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.</li> </ul>	

### Scenario analysis

For each transition factor and physical factor, we have identified risks and opportunities that may have a significant impact on our business in the areas of upstream procurement, direct operations, and downstream demand for products and services. We have then considered strategies for each scenario.

In conducting the scenario analysis, we referred to the two scenarios (the below 2°C and 4°C warming scenarios<sup>4</sup>) of the International Energy Agency (IEA) and evaluated them over a medium- to long-term time period, up to 2050. In addition, the 1.5°C scenario (IEA NZE2050), which assumes progress in reducing and eliminating carbon emissions, was also adopted as a reference scenario in the analysis. At the same time, we have formulated a

new climate change countermeasure vision with the aim of achieving "carbon neutral in 2050" consistent with the 1.5°C warming scenario, and have decided to tackle development of breakthrough technologies aimed at carbon neutral, as a challenge for the management.

<sup>4</sup> The below 2°C warming scenario is a case wherein much-needed measures will be implemented to keep global average temperature increase below 2°C (1.75°C) compared to pre-industrial revolution times. The 4°C warming scenario is a case that global average temperature will increase by 4 degrees, without taking any economic or additional measures against climate change.

## TCFD scenario analysis

Scenario	Factors (risks and opportunities)	Events (expectations and concerns of stakeholders)	Impact to Nippon Steel (opportunities in ■, risks in □)	Nippon Steel's strategy (including future responses)
Below 2°C	Transition factor 1 Advance in electric vehicles (EVs)	World EV sales: 65 million units, 60% market share in 2030 (vs. 6.6 million units, 8.6% market share in 2021) <sup>1</sup>	Opportunities in demand growth for our steel products ■ Increase in the global total number of cars and resultant increase in steel demand despite a decline in the share of steel demand for cars equipped with internal combustion engines due to the growth of EVs' share of the new car market ■ Increase in demand for high-performance steel products — our area of strengths, such as electrical steel sheets for EVs	● Capture growing demand by strengthening the global supply of electrical steel sheets (see PICK UP on p. 32)
	Transition factor 2 Shift to other lightweight materials, prompted by tighter fuel efficiency regulations, etc. (multi materials)	Shift to other lightweight materials, prompted by tighter fuel efficiency regulations, etc.	Opportunities in demand growth for high-strength steel and capturing of demand for other materials ■ Some possibility of switching to other lightweight materials but little prospect for significant progress since steel excels in environmental evaluation from the LCA perspective, including the production stage and material recycling, and automakers increasingly emphasize the evaluation from the LCA perspective ● Strive to further popularize the LCA concept through activities to raise customers' understanding and lobby the government for regulatory change ● Further increase the high-tensile strength of steel and provide the lightweight steel structure technology by proposing a comprehensive automotive solution (NSafe™-AutoConcept) (see PICK UP on p. 32) ■ Increase in demand for CFRP and other products in cooperation with Nippon Steel Chemical & Material Co.	● Capture demand for CFRP and other products in cooperation with Nippon Steel Chemical & Material Co.
	Transition factor 3 Shift to low-carbon steel (steel that generates low CO <sub>2</sub> emissions in production)	Accelerating shift to low-carbon steel due to change in customers' demand	Opportunities in demand growth for low-carbon steel ■ Some shift to EAF steel with low CO <sub>2</sub> emissions in production ■ Continued increase in demand for BF steel due to insufficient increase in EAF steel to satisfy growing worldwide demand, caused by the limited supply of scrap	● Acquire the "EcoLeaf" environmental label for more products (see p. 12) ● Accelerate the Carbon Neutral Vision (breakthrough technology development, including high-grade steel production in large-sized EAFs and hydrogen steelmaking) (see pp. 21–23) ● Promote the use of direct reduced iron and other measures to reduce CO <sub>2</sub> emissions in existing processes ● Supply of NSCarbolex™ Neutral
	Transition factor 4 Higher needs for energy-efficient products and technology	Higher needs for decarbonization in steelmaking process	Needs for a fundamental review of the steelmaking process aimed for decarbonization ■ Potential to gain a great competitive advantage if our technological development and investments advance ahead of global peers ■ Increase in investment burden and operating cost for the introduction of new technologies	● Facilitate the development and implementation of innovative technologies by utilizing government support such as the Green Innovation Fund (see pp. 23–24) ● Consider sharing of cost by society (see p. 27)
	Transition factor 5 Higher needs for products and solutions associated with a society based on renewable energy and hydrogen	Eco-friendly technology solution to boost demand	Opportunities in demand growth for eco-friendly technology ■ Increased demand for products that realize energy savings in the processing by customers ■ Increased demand for products that contribute to energy savings in use of end products ■ Increase in profits through the provision of the Group's technology solutions that enable energy saving in steelmaking process	● Expansion of NSCarbolex Solution, a brand that offers products that realize energy conservation in customers' manufacturing processes, products that contribute to energy conservation in using their end products, and products that contribute to energy transformation in society. (see PICK UP on p. 32)
	Transition factor 6 Increase in cost caused by adoption of carbon pricing (CP)	Ratio of renewable energy in world power generation: 88% in 2050 (vs. 28% in 2020) World production of hydrogen: 490 mn tons in 2050 (vs. 90 mn tons in 2020) <sup>2</sup>	Opportunities in demand growth for products of our Group ■ Profit growth by provision of the Group's products and solutions that support a renewable-energy-oriented society ■ Profit growth by provision of the Group's products and solutions that support a hydrogen-oriented society	● Enhance the Group's product menu for the renewable-energy society and expand sales in Japan and overseas, e.g. high corrosion-resistant steel sheets for solar power generation mount, steel plates and steel anchor chains for offshore wind power generation, and steel pipes for geothermal and biomass power generation ● Enhance the Group's product menu for the hydrogen society and expand sales in Japan and overseas, e.g. HYDREXEL™ stainless steel for high-pressure hydrogen environments
4°C	Physical factor 1 Abnormal weather to suspend raw material suppliers' operation	Difficulty in procuring raw materials, caused by abnormal weather	Increasing burdens on our cost due to CP introduction ■ The GX Promotion Act states that the introduction of CP will help companies secure the funds and time required to work on technology development and capital investment aimed at decarbonization. While the impact of CP is not so significant for the time being, the burden on our costs will increase due to the CP system design cost and the movement of passing the burden of CP on to electricity charges, etc. we pay.	● Reduce CO <sub>2</sub> emissions through the expanded use of direct reduced iron, reduction in CO <sub>2</sub> emissions in existing processes, and advance in breakthrough technologies such as hydrogen steelmaking and production of high-grade steel using large EAFs (see pp. 21–24) ● We will request the government to take measures to support heavy emission-producing industries, which have few options for decarbonization, and measures to support narrowing product price increases due to the rise in energy costs
	Physical factor 2 Abnormal weather to suspend operation and shipment	Difficulty in operation, caused by a natural disaster	Limited impact by taking measures for risks ■ Limited assumed risk in securing stable procurement of raw materials by taking the following measures: ● Material sourcing from multiple regions in the world ● Keeping raw material inventories in steelworks and ships	● Continue multiple sourcing ● Appropriately manage days of inventory and risks
	Physical factor 3 Heightened needs for solutions for "national resilience" against natural disasters	Natural disaster caused by abnormal weather	Limited impact by taking appropriate measures ■ Adoption of BCP measures. Limited risks in production disruption caused by natural disaster. Excessively abnormal weather may result in suspension of operation, etc.	● Continually adapt measures in consideration of long-term trends. Measures against typhoons and heavy rain, measures to prevent crane overturns, measures against earthquakes and tsunami (securing emergency evacuation places, embankment reinforcement, etc.)
Demand growth of steel for national land resilience ■ Profit growth by providing products and solutions for national resilience against earthquakes, tsunamis, heavy rain, typhoons, etc.			■ Enhance the Group's product menu and expand sales in Japan and overseas, e.g. steel-slit dams and NS ECO-PILE™ method	

<sup>1</sup> Source for EV-related data: the NZE 2050 Scenario of the IEA Global Electric Vehicle Outlook 2022.

<sup>2</sup> EVs include battery electric vehicles (BEVs) and plug-in hybrid vehicles (PHVs).

<sup>2</sup> Source for data on renewable energy and hydrogen: the NZE 2050 Scenario of the IEA World Energy Outlook 2021.

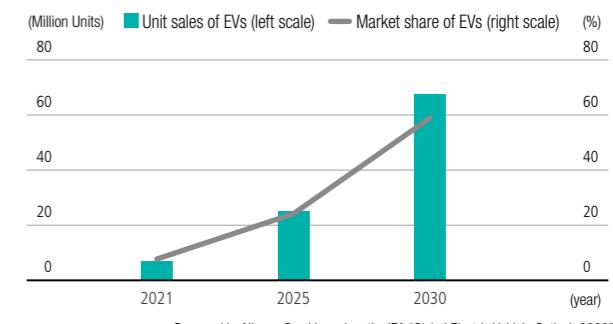
# PICKUP Scenario Analysis

## Transition factor 1 Response to advance in electric vehicles (EVs)

The social needs behind the drive for attaining carbon neutrality include increasing demand and the requirement for high performance (higher efficiency, smaller size, and lighter weight) for EV motors and the reduction of energy loss in motors and transformers to meet the tighter global regulations for high-efficiency transformers. The most rational means to meet such needs is the provision of high-grade electrical steel sheets, such as non-oriented (NO) electrical steel sheets used in motors and grain-oriented (GO) electrical steel sheets used in transformers.

In response to the increasing demand for these electrical steel sheets and the request for high-grade types, we decided to implement further actions toward increasing the manufacturing capacity of non-oriented (NO) electrical steel sheets in the Setouchi Works Hanshin Area (Sakai) and the Kyushu Works Yawata Area, along with the previously announced measures for electrical steel sheet manufacturing capacity and quality improvement in the Kyushu Works Yawata Area and the Setouchi Works Hirohata Area. The total accumulated investment amount, including the previously announced measures, will be approximately 213 billion yen. The capacity expansion measures announced this time will take full effect in the first half of fiscal 2027, with the manufacturing capacity of non-oriented (NO) electrical steel sheets for eco-friendly cars expected to become about five times the current capacity (approximately 1.6 times the previously announced measures).

### World annual sales of EVs (Net Zero Emissions by 2050 Scenario)



## Transition factor 2 Response to meet the needs for lightweight materials (NSafe™-AutoConcept)

In response to the increasing demand for reduction of vehicle body weight and enhanced collision safety, we accelerated research and development, and started to make proposals not just on materials but also on the NSafe-AutoConcept (NSAC), a comprehensive solution for the development of next-generation steel vehicles, in 2019. An extended version NSafe™-AutoConcept xEV has also been added to the lineup. We are working with our customers to develop advanced vehicles.

Reduction in vehicle body weight has long been desired by automakers but that need has been increasing in recent years, as it can contribute to reducing CO<sub>2</sub> emissions during vehicle production as well as driving. Concerning collision safety, the evaluation method has become diversified, and the advance in material strength and structural design are required more than ever before. Ultra-high-tensile steel sheets such as 1470 MPa high-tensile sheets and 2.0 GPa hot-rolled high-tensile materials for vehicle bodies, and 980 MPa high-strength steel plates for chassis can satisfy such needs. The application of the high-tensile steel products and the proposed structure and processing method have reduced the body weight of steel cars by 30%. This has made the steel car

to have the similar weight to that of an all-aluminum car and to provide higher collision safety performance.

Material makers, including ourselves, used to focus on material development but the NSAC is contributing to the car making process in the areas of material development, structural and functional design, process development, and performance evaluation in addition to material development.



## Transition factor 3 Expanded menus for products and solutions under the NSCarbolex™ Solution brand

In November 2022, we launched a new comprehensive brand, NSCarbolex Solution, which offers high-performance products and solutions that contribute to reducing CO<sub>2</sub> emissions in society.

Since then, we have been presenting value propositions through NSCarbolex Solution from the following three perspectives: reducing CO<sub>2</sub> emissions in customers' manufacturing processes, reducing CO<sub>2</sub> emissions during the use of customers' products in society, and contributing to energy transformation in society to realize a carbon neutral society. As a result, the number of NSCarbolex Solution brand menus has increased to 110.

To facilitate customers selecting the most suitable NSCarbolex Solution menu, we also opened a dedicated website that lists explicitly the fields and types of all NSCarbolex Solution lineups, target menu search functions based on perspectives of contributing to CO<sub>2</sub> emission reductions, and viewpoints of contributing to CO<sub>2</sub> emission reductions for each menu.

In the future, we will help our customers easily understand the benefits NSCarbolex Solution can provide by quantifying the effect of CO<sub>2</sub> emission reductions with the help of each menu of NSCarbolex Solution and opening it on our website. At the same time, we will expand NSCarbolex Solution lineups through further product and technical development, contributing to customers progressing in their decarbonization efforts, enhancing their competitiveness, and eventually realizing a carbon neutral society.

**NSCarbolex™ Solution**

NSCarbolex Solution website



NSCarbolex Solution  
[https://www.nipponsteel.com/product/nscarbolex/solution/product\\_list/](https://www.nipponsteel.com/product/nscarbolex/solution/product_list/)

## Creation of a Circular Economy



Steel is a flexible material that can be repeatedly recycled: it is a perfect example of a circular economy. Nippon Steel strives for the greatest efficiency possible, including minimization or elimination of waste, in use of our energy and limited resources, in every process of steelmaking. By utilizing this steelmaking process, we also work to recycle internally-generated by-products so that we can realize zero emission. We are also actively engaged in recycling of waste generated in society or by other industries.



## Recycling of dust and sludge

To recycle the dust<sup>1</sup> and sludge<sup>2</sup> generated in the iron and steelmaking processes, for them to be used as raw materials, Nippon Steel operates a dust reduction kiln (RC: Resource circulating oven) at East Nippon Works Kashima Area and a rotary hearth reduction furnace (RHF) at East Nippon Works Kimitsu Area and NIPPON STEEL Stainless Steel Corporation (Hikari). This enables us to recycle all internally-generated dust.

<sup>1</sup> Fine dust collected with a dust collector

<sup>2</sup> Semi-solid slurry recovered from industrial wastewater or sewage treatment

## By-products and recycling (FY2022)

By-product	Amount generated (wet weight – million tons)	Recycling application	Recycling rate
Blast furnace slag	10.58	Blast furnace cement, fine aggregate, road base, etc.	100%
Steelmaking slag	4.57	Road base, civil engineering materials, fertilizer, etc.	98%
Dust	2.89	Raw materials for use in-house and also zinc refining	100%
Sludge	0.41	Raw materials for in-house use	90%
Coal ash	0.46	Cement raw materials, construction materials	100%
Waste furnace materials	0.27	Reuse, etc.	64%
Others	1.39	In-house use, others	99%
Total	20.57	Total recycling rate	99%

## Efficient use of resources and energy

We use industrial water and energy resources such as electricity and fuel in producing steel products, which are mainly made of iron ore mined overseas, coal used as a raw material for reducing iron ore, and iron scrap recycled by society.

Nippon Steel's steelworks use 100% of by-product gas generated in the steelmaking process, as fuel for heating of steel or as energy for an onsite

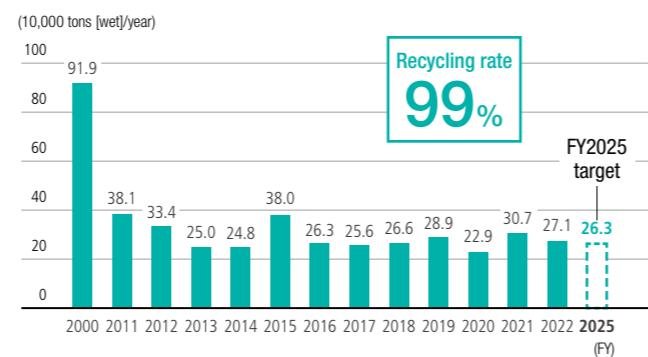
power plant. Concerning water resources, 90% of water used in cooling and cleaning of products and manufacturing facilities are reprocessed and repeatedly used. These are examples of our efforts to make maximum use of limited resources and energy, without waste.

## Promotion of in-house zero emissions

### By-products generated and final disposal

In the iron and steel-making process, over 600 kg of by-products, such as steel slag, dust, sludge, and used refractory bricks, are generated for each ton of crude steel produced. In fiscal 2022, Nippon Steel produced 34.25 million tons of crude steel and generated 20.57 million tons of by-products. We are committed to recycling these by-products both in and outside the Company, maintaining the high recycling rate of 99%. For the final disposal amount, we will continue efforts to reduce generation of by-products toward achieving the fiscal 2025 target.

### Nippon Steel's final disposal amounts



## Effective use of steel slag

Almost all steel slag is effectively utilized. Approximately 70% of blast furnace slag is used for blast furnace cement, while steelmaking slag is used for materials for road base layers, civil engineering work, soil improvement, marine environment improvement, fertilizer, etc.

"Blast furnace cement," a mixture of pulverized blast furnace slag and ordinary Portland cement, contributes to a 40% reduction of CO<sub>2</sub> emissions during manufacturing, since the cement clinker burning process can be omitted. The blast furnace cement also excels in long-term strength and is registered as Eco Mark-certified product. The steel slag products help reduce natural crushed stone mining and have the energy saving impact during cement manufacturing. As a result, they are designated as a "designated procurement item" under the Act on Promoting Green Procurement, and have been certified as recycled products by some local governments.

Nippon Steel's pavement materials, KATAMA™ SP, are advantageously used in keeping with the characteristics of steel slag which hardens by reacting with water. They are used for forest roads and farm roads, as well as for weed preventive pavement to be installed near mega-solar panel installations and other locations.

Geo-Tizer™ made of steel slag can be mixed with soft soil (mud, such as surplus excavated soil from construction sites or farmland soil) to reform the soil to make it usable. Unlike conventional soil-improvement materials (i.e., cement and lime), this soil produces less dust, significantly reduces CO<sub>2</sub> emissions, and is less expensive, enabling reduction of construction cost. The remediated soil is outstanding in compacting and can also be easily excavated, as it does not excessively solidify.

Calcia modified soil — a mixture of steelmaking slag calcia modifier and dredged soil — has been used to improve the marine improvement, such as by backfilling deep-dug seabed areas and creating shallow bottoms and tideland. In addition, Nippon Steel's Vivary™ Unit, which are composed of steel slag and humus made from waste wood, provides iron needed for seaweeds to flourish, promoting regeneration of an area of the sea bed that had lost much of its living organisms.

Moreover, as steel slag contains nutrition that helps plants grow, it is also widely used as fertilizer, contributing to improving farming productivity.

## Increase in recycling of waste generated in society (waste plastics)

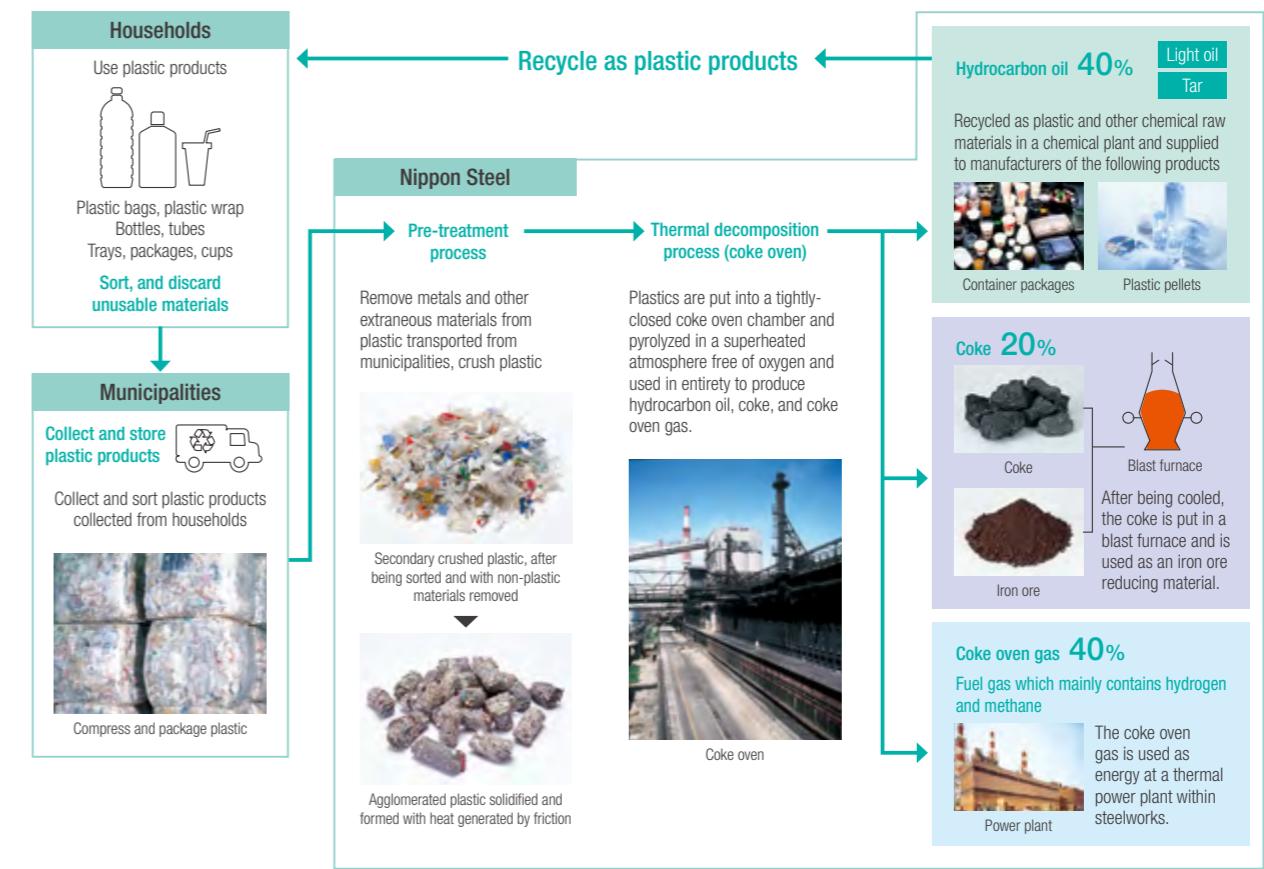
We recycle 100% of waste plastics collected from ordinary households through chemical recycling by using a coke oven in accordance with the Containers and Packaging Recycling Law of them. Specifically, waste plastics are used as hydrocarbon oil (40%), coke furnace gas (40%), and part of coke (20%). Currently, Nippon Steel is processing approximately 200,000 tons annually, or about 30% of the volume of waste plastics collected nationwide, in cooperation with local governments. Our method of using coke oven has an extremely high recycling efficiency and a great treatment capacity, contributing to a circular economy in many regions. The cumulative amount processed in fiscal 2000–2022 was approximately 3.91 million tons, equivalent to 12.50 million tons in terms of reduction in CO<sub>2</sub> emissions (the amount of annual CO<sub>2</sub> absorption<sup>3</sup> in artificial cedar forests in the area as big as approximately 300,000 Yankee Stadiums).

Recently, chemical fibers and food trays have also been recycled by the same method. Furthermore, as the Plastic Resource Recycling Promotion Law enacted in fiscal 2022 calls for collection not only of container packaging plastics but also products made of plastics in bulk collection, we are also recycling plastics collected in bulk. In addition, we are also working hard to develop technologies for expansion of treatment to meet the increasing plastics processing needs in the future.

This expanded use of waste plastics has been incorporated in our "Carbon Neutral Vision 2050" measures to combat climate change, and is presented as one of the examples of the efforts of Nippon Keidanren (Japan Business Federation) member companies' activity in its "Recycling Economic Partnership."

<sup>3</sup> One hectare of artificial cedar forest absorbs approximately 88 tons of CO<sub>2</sub> per year (source: the website of the Forestry Agency).

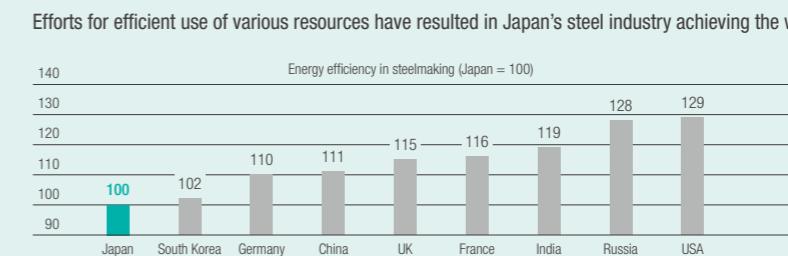
### << Recycling of waste plastics >> Thermal decomposition enables 100% effective re-use of plastics



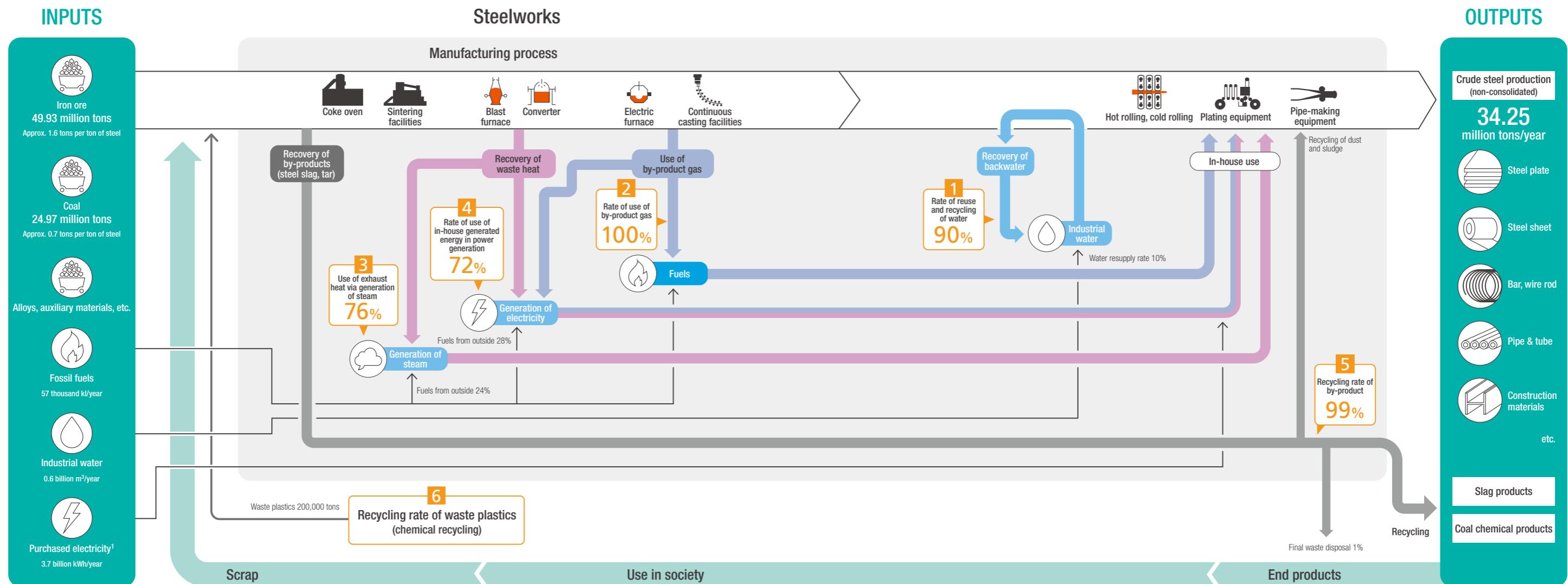
## Energy Material Balance

We are not only moving toward the achievement of zero emissions with minimal environmental impact and recycling internally generated materials, with utilizing the steel manufacturing process, but also actively recycling waste materials generated by society and other industries.

### Energy efficiency in steelmaking by country (2019)



Source: International Comparisons of Energy Efficiency (Sectors of Electricity Generation, Iron and steel, Cement), RITE, 2019 (The Japanese translation and numerical values were provided by the Japan Iron and Steel Federation.)



### Efficient use of resources

#### 1 Water resources p. 40

Of water used in cooling and cleaning of products and manufacturing facilities, approximately 90% is reprocessed and repeatedly used, while the remaining approximately 10%, which disappears mainly due to evaporation, is replaced.

#### 2 By-product gas

By-product gases, such as coke oven gas generated when coal is thermally cracked in an oxygen-free environment in the coke manufacturing process and blast furnace gas generated from blast furnaces, are fully utilized as fuel gas for steel heating furnaces or energy sources for power generation plants on the premises of steelworks.

#### 3 Electricity

Nippon Steel itself generates 88% of the electricity it uses at steelworks, 72% of which is from internally generated energy sources such as exhaust heat and by-product gases. In the future, we will also consider making more efficient facilities and switching fuel in order to further lower carbon generation.

#### 3 Use of exhaust heat

Exhaust heat, generated in the blast furnaces, sintering facilities, coke ovens, converters, and other facilities, is recovered and used in steam generation and power generation.

#### 4 Recycling of waste plastics

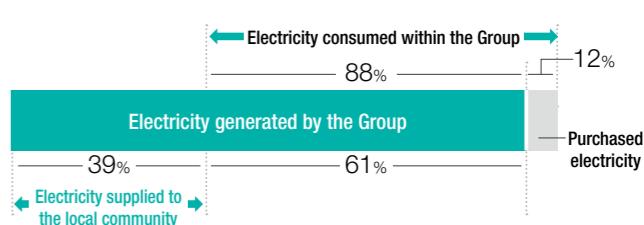
Approximately 200,000 tons per year, or about 30% of plastic containers and packaging collected from households nationwide, are fully recycled by a chemical processing method using coke furnaces.

#### Coke Dry Quenching (CDQ) for large-scale waste heat recovery

The CDQ equipment quenches hot coke made in the coke oven with inert gas, and the heat is used to generate steam for power generation. Compared to the conventional wet quenching, 40% energy saving has been achieved.



#### Nippon Steel Group's<sup>2</sup> Electricity Supply and Demand Balance (FY2022)



■ The Group internally generates 88% of the electricity it uses.

■ The Group supplies 39% of internally-generated electricity to the local community.

<sup>2</sup> Including cooperative thermal power companies and affiliated electric arc furnaces

## Conservation of Biodiversity and Nature Positive



Nippon Steel has affirmed the Declaration of Biodiversity by Keidanren and Action Policy of the Japan Business Federation and has accordingly been taking initiatives on biodiversity preservation. We also participate in the 30by30 Alliance for Biodiversity, established by a coalition of volunteers from governments, companies, and NPOs, contributing to the vitalization of nature positive efforts through these activities.



### Policy for the initiatives

We will promote the initiatives on conservation of biodiversity, which are closely aligned with measures to deal with climate change and creation of a circular economy, under the following policy.

- As a member of Nippon Keidanren, we comply with the "Declaration of Biodiversity by Keidanren and Action Policy."
- Recognizing both that our business activities greatly rely on the nature's gifts, and that biodiversity is vital for realizing a sustainable society, we understand the relationships of our business activities with biodiversity and are pledged to respond to challenges rooted in diverse local features, in order to build a society in harmony with nature.
- As a member of the international community, we also recognize that initiatives aimed at building a society in harmony with nature are closely related to global issues of measures to deal with climate change and creation of a circular economy. We aim to realize a sustainable society through an integrated environmental corporate management which includes these initiatives in business activities.

### Specific initiatives

#### 1 Creation of Hometown Forests

##### Reproducing "the grove of a village shrine" and nurture biodiversity

We have carried out the "Creation of Hometown Forests" projects at our steelworks and factories in Japan under the guidance of the late Dr. Akira Miyawaki (professor emeritus of Yokohama National University), with the aim of facilitating harmonious coexistence between nature and humans. This project comprises research on the natural vegetation inherent to a certain area in a nearby grove associated with a historical shrine (*Chinju-no-mori*), careful selection of suitable trees, growth of their saplings in pots, and planting them in designated places by local residents and our employees.

This was the first project by a private company in Japan to create a forest that harmonizes with the local scene and is based on an ecological approach. This is one way we try to raise the awareness of our employees regarding the environment. At present, our forests in aggregate have grown to total around 850 ha (about the size of 180 Yankee Stadiums).

Wild birds and animals visit the forests we make and maintain at our steel works sites across Japan. Wild birds and animals inherent to the land return to the forests. Thus, the "Creation of Hometown Forests" helps conserve biodiversity, and sequester CO<sub>2</sub>.



#### 2 Creation of Sea Forests

##### Implemented in 44 spots in Japan to improve sea desertification

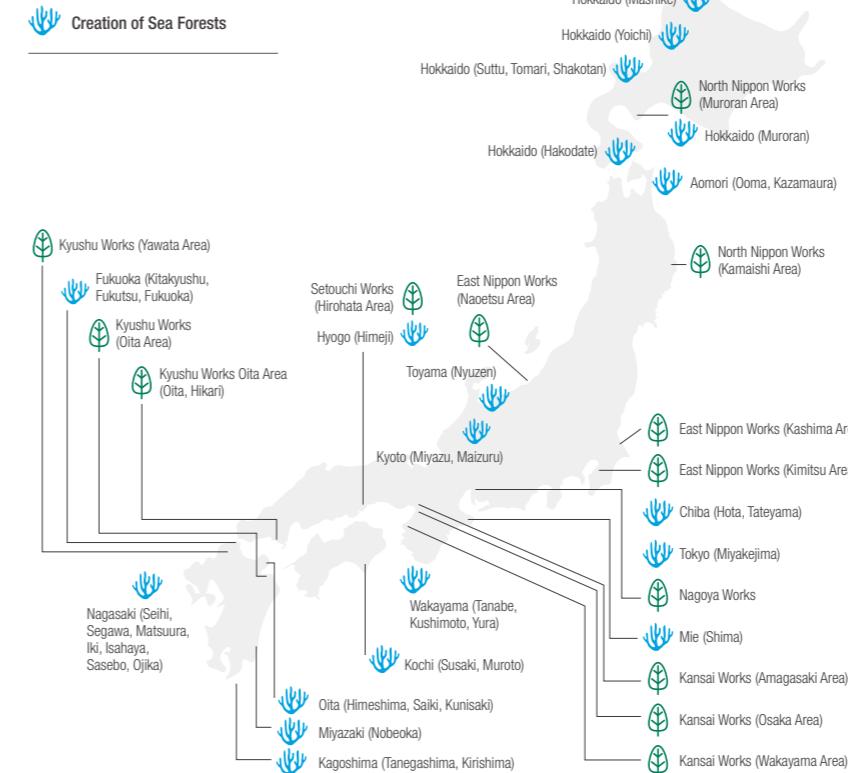
With the aim of offsetting a part of the decline in the supply of iron from nature, which is said to be one of the causes of sea desertification, Nippon Steel has developed the iron supply material "Vivary™ Unit" via joint research with The University of Tokyo and uses it to promote regeneration of seaweed beds.

While humic acid iron is the combination of iron ions and humic acid in the soil of a land forest in the natural environment, we have developed the technology to artificially generate humic acid iron by using steel slag and humic substance originated from waste wood. The Vivary Unit has received a safety certificate from the Safety Check and Certification System of steel slag products of the National Federation of Fisheries Cooperative Associations.

In Mashike Town, Hokkaido, starting from an experiment in 2004, we developed a large-scale project (300-meter coastal line) by 2014, confirming expansion of seaweed beds and an increase in intake of sea urchin. This project is also expected to restore once-atrophied seabed and steadily raise biodiversity.



- Creation of Hometown Forests
- Creation of Sea Forests



#### Some animal inhabitants of the Hometown Forests

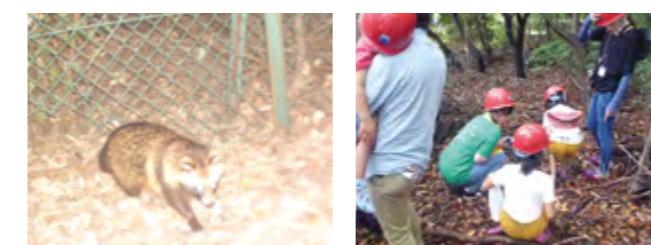
Muroran	Ezo deer, Ezo red fox, Ezo squirrel, eagle, buzzard, magpie
Kamaishi	Moon bear, Japanese serow, deer, hare, black-tailed gull
Naoetsu	Japanese dace, carp
Kashima	Pheasant, shrike, duck
Kimitsu	Bulbul, pheasant, little tern, swallow, egret
Nagoya	Raccoon, pheasant, bulbul, shrike, swallow, great tit
Osaka	Weasel, starling, bulbul
Wakayama	Raccoon, marten, bulbul, tiger keelback
Sakai	Duck
Amagasaki	Heron, bulbul, lizard, killifish, white-tailed skimmer
Hirohata	Buzzard, shrike, oriental turtle dove, bulbul, starling, bunting
Yawata	Weasel, pheasant, gray heron, Japanese cormorant
Kokura	Gull, Japanese wagtail, <i>grapheum sardon</i>
Oita	Whooper swan, kingfisher, killifish, mayfly, firefly
Hikari	51 species of birds including black-tailed gull and herring gull



#### 3 Participation in community projects

##### Participation in ecological preservation activities in the community

Since 2012, the Nagoya Works of Nippon Steel has participated in the Inochi-wo-Tsunagu (Life Sustaining) Project, which has participation by a local students' planning committee, representatives of 11 companies, the Eco-Asset Consortium and the Japan Ecologist Association of Support (NPO). This project seeks to develop an ecosystem network to link green areas at each company site and vicinity. To thereby increase the potential of the linked areas, an animal path was established and a fixed-point observation camera has recorded raccoons coming and going through the pathway. The project also included experience-based activities, including corporate greenery visits, fun-filled learning events for families, and craft-making events. The project received the Minister of the Environment Award at the 2021 Sustainable Social Development Award as this activity's creation of a network that transcends student and corporate boundaries, which led to a wide range of cooperative activities, were highly evaluated.



#### 4 Contribution by use of by-products

##### Steel slag being used for rice cultivation

Steel slag, a by-product of steelmaking, contains nutritional matter that helps grow plants. It is therefore used as a fertilizer for rice cultivation, dry-field farming, and pasture grass. Silica contained in steel slag promotes photosynthesis by keeping leaves upright and improving their light receiving orientation, while iron is effective in preventing root rot and leaf blight. The steel slag also contains phosphoric acid, manganese, boron, and various other components of fertilizer. Nippon Steel donated converter slag fertilizers to cooperate for research by Tokyo University of Agriculture for salt removal in farmland in the Soma area of Fukushima Prefecture, which was devastated by the earthquakes and tsunami of March 2011. The slag fertilizers has proved effective in rapid and efficient salt removal. The restoration of rice fields also means to restore habitats for birds, frogs, and various other living things.



## Contribution to activities aimed at achieving the 30by30 biodiversity target

In March 2023, we participated in the 30by30 Alliance for Biodiversity to contribute to achieving the 30by30 diversity target the Japanese government strives to achieve, based on the rationale of the Kunming-Montreal Framework adopted at the 15th Conference of the Parties to the Convention on Biological Diversity (COP15) held in December 2022. The alliance is a coalition of volunteers working on the public-and-private sectors to conserve and protect

at least 30% of their own country's land and sea areas by 2030 (30 by 30), with the goal of halting and reverse biodiversity loss by 2030 (nature positive).

We aim to have our areas under conserved biodiversity registered as Other Effective area-based Conservation Measures (OECM), including the Creation of Hometown Forests at our steelworks and the Creation of Sea Forests.

### What is an Other Effective area-based Conservation Measures (OECM)?

An OECM is an area with a biodiversity value, under conserved biodiversity through various efforts by companies, private organizations/ individuals, and local governments, and where the government certified that "it is under conserved biodiversity through private-sector efforts." A certified area will be registered in the international database as an OECM, with its overlap with protected areas excluded.



## Strengthening initiatives for biodiversity conservation and nature positive

With biodiversity conservation and nature positive now drawing attention as significant global issues, just like carbon neutrality and a circular economy, we regard nature positive as a critical environmental issue, strengthening our efforts to take various measures. At the same time, we will strive to enhance the quality of information disclosure considering the Task Force on Nature-related Financial Disclosures (TNFD), which we are now formulating for release in September 2023.

### Enhancement of governance

We report and discuss environmental policy-related issues every six months at the Environmental Planning Committee chaired by the Representative Director in charge of Environment, with "biodiversity conservation and nature positive" added from fiscal 2023 as one of the deliberation/review items.

As with other environmental policy-related issues such as climate change measures and the creation of a circular economy, the current review details on biodiversity conservation and nature positive are also reported and deliberated at the Management Committee and the Board of Directors meetings under the supervision of the Board of Directors.

### 1 The process to survey the impact our business activities have on nature (LEAP approach)



### What is the Task Force on Nature-related Financial Disclosures (TNFD)?

Aiming to support shifting global financial flows from negative to positive for nature under the recognition of biodiversity and natural resources risks, the TNFD is a disclosure recommendation with a mission to develop and provide a framework for risk management and information disclosure to encourage organizations to report and act on ever-changing nature-related risks.

According to its latest draft framework, while considerations are given to the consistency between the TNFD and the Task Force on Climate-related Financial Disclosures (TCFD), such as the same basic design. However, the TNFD requires broader consideration, due to, for example, difference from the TCFD in the evaluation of activity areas in "Strategy," traceability in "Risk Management," the quality of stakeholder involvement, and the consistency between their climate change and nature targets in "Indicators and Targets" and so on.

## Environmental Risk Management



Nippon Steel is promoting management of environmental risk with the aim of continually enhancing preservation of the environment in various regions, with due consideration of environmental risks, which differ by each steelworks and factory, and with due consideration to compliance with Japan's Air Pollution Control Act and other regulations.

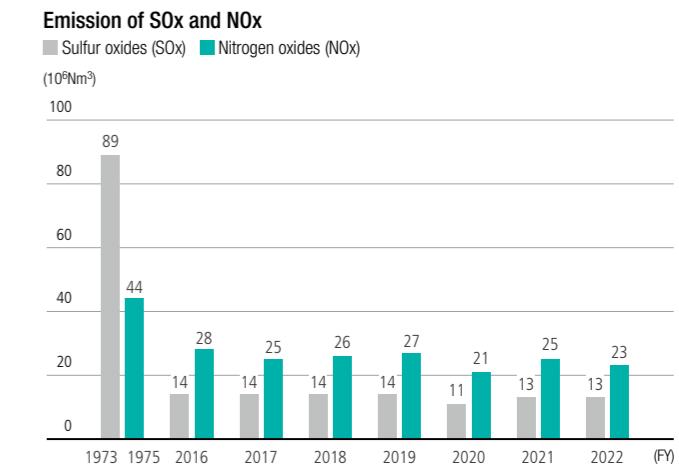
## Atmospheric risk management

### Atmospheric pollution prevention

In order to reduce emissions of sulfur oxides (SO<sub>x</sub>) and nitrogen oxides (NO<sub>x</sub>), Nippon Steel is taking measures such as using low-sulfur fuel, adopting low NO<sub>x</sub> generating burners and installing effective equipment, including equipment that reduces SO<sub>x</sub> and NO<sub>x</sub> emissions.

### Prevention of scattering of raw materials and dust

To curb emissions of soot and dust generated from factories and raw material yards, we try to enhance their function by installing dust collectors and prevent scattering of particles by installing windscreens, windbreak trees and sprinklers, based on air pollution risk analysis through scientific simulation. We also conduct constant monitoring and regular patrols to ensure that no abnormal emissions are released.

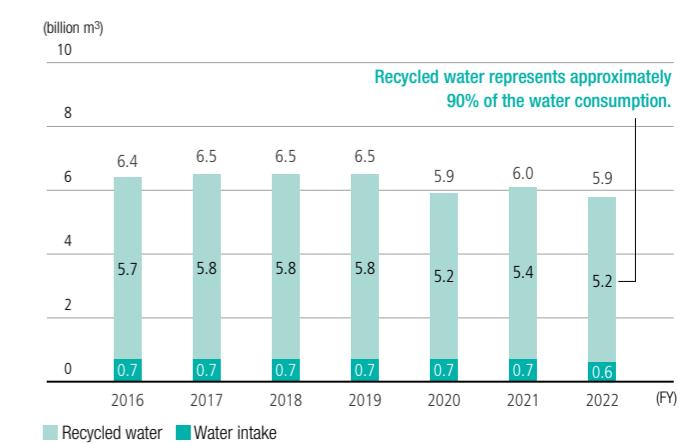


## Water environment preservation

### Efforts to control the water intake and reduce wastewater discharge in steelworks

We use about 6.0 billion m<sup>3</sup> of industrial water a year, of which approximately 90% is derived from recycled or reused water to reduce wastewater discharge, at all of our steelworks and factories combined. We try not to waste precious water resources, and to control wastewater discharge. To achieve this, we make daily efforts to maintain and improve the performance of wastewater treatment equipment, and the inspection and control of wastewater quality. Our operational bases in Japan are evaluated by the World Resources Institute (WRI) Aqueduct to confirm that we are not prone to high-level water stress. Nevertheless, in preparation of the remote chance of a water intake restriction, some of our steelworks possess their own water reservoir. In certain circumstances, we contribute to easing water stress of the community by providing water for agricultural use or by cooperating in other ways.

### Nippon Steel's water consumption (excluding power generation facilities)



## Measures to reduce the risk of violating laws and regulations

In consideration of the importance of complying with the Water Pollution Control Law and conserving the water quality in the sea area to which it is discharged, we ensure that in the event of an operational problem the drainage outlets will not release abnormal wastewater outside the steelworks. Water drainage automatic monitoring systems, water shutoff gates, emergency reservoirs, etc. are installed to prevent water pollution.

We also strive to check, repair, and maintain equipment in order to prevent water pollution, and to train our personnel in methods of checking of operations and controlling work procedures. Moreover, our steelworks have taken measures, such as to install a large storage tank so that water tainted with iron ore powder would not directly be released into the sea even if our steelworks were struck by a local torrential rain caused by weather abnormality.

If there is a crack in an embankment facing the sea, there is a risk of leakage of groundwater with unknown contaminants. In order to prevent this, the embankment is regularly inspected from the sea side enabling us to maintain and manage it in a sound condition. In areas with potential risk of leakage of water which may exceed permissible levels of contaminants, boards or a sheet water barrier may be installed so as to prevent leakage even if a crack develops on the embankment.

Regarding the draining of effluent that exceeded the effluent standards in the Kimitsu Area of our East Nippon Works in fiscal 2022, we sincerely apologize for having caused concerns and inconveniences to residents, the municipal authorities, and all other stakeholders. Our measures to prevent the recurrence of this environmental incident are described on the following page.

## Measures to prevent the reoccurrence of environmental incidents in the Kimitsu Area of the East Nippon Works

In the Kimitsu Area of the East Nippon Works, colored effluent containing coke gas desulfurization liquid flowed out from our sites in June 2022, and, between June 30 and July 2, the draining of effluent that exceeded the effluent standards was found to have occurred at Effluent Outlet No. 7. Furthermore, our subsequent internal investigations identified the draining of effluent that exceeded the regulatory values at other effluent outlets and drainage channels and our inappropriate treatment

### 1. Concerning the incident of colored effluent outflow

In June 2022, desulfurizing liquid leaked from a repaired section of a tank that temporarily stores coke gas desulfurization liquid. The colored effluent overflowed above a dike surrounding that tank, inflow into drainage systems via the rainwater collection side ditch and the underground passage and flowed out from our sites. The tank had undergone overhaul inspections and wall thickness measurements as well as daily and monthly inspection and it had been repaired accordingly, however, this could not prevent the leakage that occurred this time.

### 2. Concerning the draining of effluent exceeding the effluent standards via Effluent Outlet No. 7

In response to the colored effluent outflow incident, we conducted daily water quality measurement at all effluent outlets. As a result, between June 30 to July 2, we found that the effluent at Outlet No. 7 indicated measured values of cyanide and total nitrogen exceeding the effluent standards, which was attributable to the dust collection water for a blast furnace. Furthermore, during this investigation into the causes, we found effluent discharge had been conducted using methods different from those in the notification to the authorities, such as the redundant water generated in the dust collection system of the blast furnace being sent to a different drainage system utilizing a temporary pump. We also identified the existence of

### 3. Concerning the incident identified from voluntary thorough inspections

As a result of a voluntary comprehensive inspection that we conducted in response to the incident described above, we found that there were unreported cases of exceeding the effluent standards and the values agreed upon with municipal authorities at multiple effluent outlets and drainage channels. This included the cases where, in statutorily required measurements at Effluent Outlet No. 16, in cases where measurement results had exceeded the effluent standards for cyanide and total nitrogen, such measurement results were not reported to the administrative agencies concerned. Instead, additional sample collection was conducted, and the measurement results that fell within the effluent standards were recorded and stored as the statutorily required measurement results. Also, the cases we found included where, in measurements other than the statutorily required ones at Effluent Outlet No. 16, the draining of effluent exceeded the effluent standards

### 4. Issues with mindset, issues with organizational/operational systems, and countermeasures to prevent reoccurrence

We consider that the causes of these incidents include mindset issues, such as misconceptions about statutorily required measurements and notifications under the Water Pollution Prevention Act, insufficient sharing of risks with supervisors and other departments, and insufficient dissemination of the awareness regarding environmental compliance among those involved in water treatment operations;

#### Countermeasures to prevent the reoccurrence

##### [Measures taken in the Kimitsu Area]

1. Reorganize the organizational structure and establish divisions specializing in environmental and plant safety
2. Strengthen environmental management within East Nippon Works
  - Bring about a change in awareness that prioritizes legal compliance and preservation of the regional environment
  - Elevate the priority of water quality control among senior management of East Nippon Works
  - Enhance training of personnel in charge of water quality control
  - Revise the roles of the division in charge of water quality measurement and subcontractors
  - Restructure of water quality measurement workflow (fundamental overhaul of the workflow from sampling to measurement and data receipt, and establishment of a structure for reporting to administrative agencies concerned)
  - Reinforce of internal audits
  - Establish a system to prevent and check for inadequate notifications of facilities to the administrative agencies
  - Transfer the responsibility for the quality management of dust collection water for blast furnaces to the operating department

##### [Company-wide measures]

1. Reorganize the organization within the headquarters, and establish the Environmental Technology and Management Division specializing in the management of environmental risks at the company-wide level
2. Reinforce the company-wide environmental management function
  - Restructure the Environmental Committee into the Environmental Technology and Management Committee, whose role is to review issues and measures related to water quality, air, and other environmental risks and the Environmental Planning Committee
  - Reinforce and review of the content of environmental audits and internal factory audits
  - Expand the implementation of managerial and other such measures undertaken in the Kimitsu Area to other works and areas, where necessary

For more information about this matter, please refer to the press release. <https://www.nipponsteel.com/en/news/>  
 • Submission of the Report on the Effluent Incidents at Kimitsu Area of East Nippon Works (September 30, 2022)



## Soil risk management

We are taking appropriate soil management in compliance with the "Soil Contamination Countermeasures Act," "guidelines for investigations and measures based on the Soil Contamination Countermeasures Act" issued by the Ministry of the Environment, and the regulations set forth by local government ordinances, and so on. We report to the local government when

performing landform modification work such as excavation which is required to be reported. We conduct pollution surveys when needed.

Starting in fiscal 2018, the Revised Soil Contamination Countermeasures Act is being enforced in stages will be expanded. We will continue to comply with relevant ordinances.

## Management of discharged chemical substances

### Comprehensive management of discharge

Nippon Steel appropriately manages and tries to improve the production, handling, and discharge or disposal of chemical substances in accordance with the Chemical Substance Management Law<sup>1</sup>, Chemical Substance Evaluation and Regulation Law<sup>2</sup>, and other laws concerning the management of chemical substances as well as the procedures employed. According to the targets of the Chemical Substance Management Law, we thoroughly manage the material balance, which includes the amount of chemical substances handled, the amount discharged to the environment, disposable amount, and the amount used as products. We are making preparations to properly submit notifications in fiscal 2024 in accordance with the revised Control Law that came into effect on April 1, 2023. Similarly, we take care in managing the Volatile Organic Compounds (VOC<sup>3</sup>), which are said to cause photochemical oxidants and suspended particulate matter. In complying with the Chemical Substance Evaluation and Regulation Law, we identify and provide notification of the amounts of production and sales of the targeted chemical substances. Nippon Steel also took the lead in promoting use of alternatives to using steelmaking materials and equipment that contain hazardous materials such as polychlorinated biphenyl (PCB) and mercury. According to safe handling standards, we systematically replace or dispose possibly hazardous parts and materials, given the time limit for disposal or the expiration date, stipulated for each area.

### Management of discharge based on the Chemical Substance Management Law

In 1999, two years before the enforcement of the Chemical Substance Management Law, Nippon Steel began surveying chemical substances according to the voluntary control manual developed by the Japan Iron and Steel Federation (JISF). At present, in compliance with the Chemical Substance Management Law, we monitor 462 chemical substances and try to control their emission and improve the way we manage it. In fiscal 2022, there were 50 target substances for notification and the emission amount was 337 tons into the atmosphere and 23 tons to public water areas, while the disposal amount of mostly manganese, chrome, other metals, and their compounds to outside of the steelworks was 5,395 tons in aggregate.

Every year, data is compiled by each steelworks and experience in carrying out reduction measures is shared with other steelworks. In addition, the compiled results are disclosed on our website.

We have similarly been working on reducing volatile organic compounds (VOCs). In fiscal 2009, the 30% reduction target relative to fiscal 2000 was achieved. Since then, low discharge levels have been maintained.

## Appropriate treatment of industrial waste

In order to appropriately handle industrial waste generated in our business activities, we thoroughly carry out (1) management by sorting industrial waste depending on the status of its occurrence, (2) appropriate selection and continuous management of collectors, transporters, and disposal contractors, and (3) appropriate management of Manifests (industrial waste management documentation). In order to enhance compliance in waste treatment by

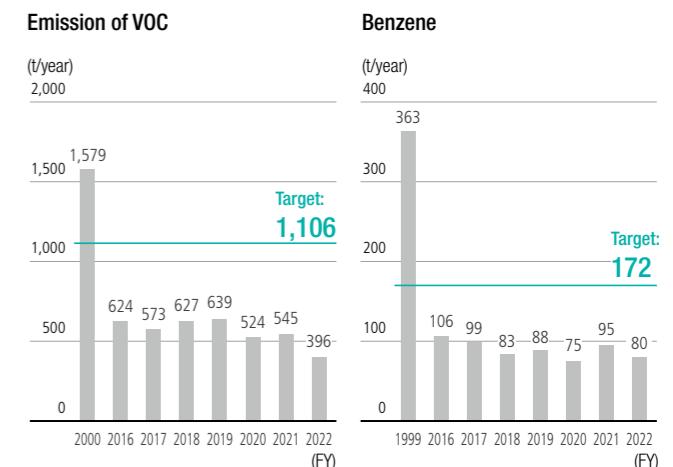
## Voluntary priority control of select chemical substances

### Dioxin

Some of our facilities, such as sintering facilities and incineration facilities, are a source of emissions of dioxins into the atmosphere. All these facilities have conformed to the emission concentration standard and have achieved levels of emissions far below the voluntary reduction target, based on the JISF guidelines, relative to fiscal 1997.

### Benzene, tetrachloroethylene, dichloromethane

We developed a voluntary reduction plan of hazardous air pollutants specified in the environmental standard, which we handle. As a result of our systematic undertaking, we have already reached the targets for all three pollutants and have been maintaining the target levels.



<sup>1</sup> An abbreviation of the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (Law concerning Pollutant Release and Transfer Register/PRTR)

<sup>2</sup> An abbreviation of the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.

<sup>3</sup> Volatile organic compounds (VOC): Organic chemical compounds emitted into the atmosphere in the form of gases, which are considered to be the source of undesirable airborne particles and photochemical oxidants, which became subject to control under the Air Pollution Control Act of 2004, as amended.

appropriately managing the Manifests, all Nippon Steel steelworks and offices have adopted the e-Manifest system and fully utilize it for waste management.

We also evaluate collectors, transporters, and disposal contractors based on our internal rules and conduct on-site inspections at predetermined frequency, so as to continuously and appropriately ensure proper management.

## Respect for Human Rights



Nippon Steel respects human rights and strives to create the working environment which allows diverse human resources to be more empowered.

### Basic policy

In compliance with the Universal Declaration of Human Rights and other international norms on human rights, the Nippon Steel Group is in the business of creating and delivering valuable and attractive products and ideas, by respecting our employees' diverse views and individualities and utilizing them for the good of all. Based on the United Nations Guiding Principles on Business and Human Rights, the Nippon Steel Group Conduct Code has been set. By adhering to its nine principles, Nippon Steel conducts business ethically, while paying full heed to human rights issues arising with the increasing globalization of the economy. Nippon Steel gives due attention to the rights of workers, and staunchly opposes the use of forced or child labor. These are prerequisites of our corporate activities. We have also prohibited as unjust the discriminatory treatment of workers based on nationality, race, belief, creed, gender, age, sexual orientation, and disability. In addition, we give careful consideration to the traditions and culture, business practice, and labor practice of each country or region as we accelerate overseas business development.

Based on these basic ideas concerning respect for human rights, we strive to create a workplace environment where employees can share diverse

values and maximize their abilities. We thereby seek to improve productivity, work conditions, benefits, and the working environment, with the aim to enrich the life of employees and achieve the corporate development.



Informal gathering of employees dispatched from Nippon Steel and local employees of our overseas operating companies

### Efforts to prevent human rights abuses

#### Addressing human rights risks

From the viewpoint of promoting human rights awareness activities by assigning human rights awareness advocates at each steelworks and each office, and of implementing corporate-wide human rights awareness activities, we hold a "corporate-wide forum of human rights awareness advocates" in March each year to exchange views on human rights awareness education and new human rights risks, and to consider the related action policy for the next fiscal year. Based on this, we hold a "corporate-wide forum of human rights anti-discrimination promotion" at the beginning of the fiscal year, chaired by the Executive Officer in charge of Human Resources, with the human resources managers of each steelworks and each office as members. At this forum, the fiscal year's policy for promoting human rights development is determined.

In addition to implementing human rights awareness activities in accordance with the policies decided at the forum, each steelworks and each office are actively engaged in employee awareness-raising activities, including holding workshops on a specific issue of the steelworks or office. We also participate in enlightenment organizations and activities hosted by public entities and others in each community. We do this as concerted efforts for human rights enlightenment with the communities.

Along with the group-wide expansion of our efforts to Group companies in Japan and overseas, monitoring surveys on the status of compliance with labor-related laws and regulations, the establishment of consultation contacts, and other issues are regularly conducted via a checklist on internal controls.

Through these efforts, we are continuously and systematically promoting activities to prevent human rights abuses. This includes the understanding of human rights risks that change with the times and the development of a system and a strategy to reduce the risks.

#### Prevention of forced or child labor

Adhering to international norms concerning forced or child labor, Nippon Steel has the policy of prevention and eradication of both types of labor. We comply with applicable regulations and conduct regular monitoring surveys of our Group companies to prevent such violations in our business activities.

#### Compliance concerning salaries

In compliance with laws and regulation concerning salary and wages payment, Nippon Steel has set up pay at a higher level than minimum wage stipulated by the country, region, and type of work where we do business. With regard to bonuses, we regularly survey related matters, including the status of each country, region, and type of work, hold serious meetings with the labor union in each time, to appropriately reward employees with due consideration given to business conditions and financial performance.

### Human rights awareness education

Based on the policy decided at the "corporate-wide forum of human rights anti-discrimination promotion," information on human rights awareness is incorporated in training courses for all ranks, from new employees to experienced ones. We also provide education on a variety of subjects, including the issues of harassment and anti-discrimination, understanding of LGBTQ, and human rights issues in the conduct of our business.

Two-way communication with employees based on good labor-management relations is important in order to prevent human rights abuses. We therefore incorporate education toward building sound labor-management relationships in training of executives of the Company and the Group companies.

In addition to general education that contributes to the prevention of human rights abuses in workplaces, we also address specific human rights abuse risks in formulating and oversight of specific work assignments. Examples include education on fair recruitment selection by employees assigned to the tasks of hiring in order to prevent job discrimination, and education on cross-cultural understanding and communication for those assigned

to overseas business in the context of preventing human rights abuses (i.e., consideration for each country's unique traditions, culture, business practices, and labor-management practices).

The number of recipients of training courses by rank on human rights (FY2022 results)

**5,541**



Training on human rights

### Mechanism of corrective actions

We have clarified whom to contact for consultation on various compliance issues including human rights. This is a part of efforts to establish a groupwide claim handling mechanism that makes it easy for employees and related personnel to ask for consultation, and that enables the Company to understand and identify incidents of discrimination.

Specifically, a Compliance Consultation Room has been established to accept inquiries and reports and give counseling regarding human rights abuses such as harassment, from employees of the Company and Group companies and their families, as well as from employees of business partners. Reports and consultations from various stakeholders are accepted through the Inquiry Form accessible on the website. Regarding the response to these individual incidents, such as internal reports and consultations, we investigate the facts and, if necessary, seek advice from outside parties, including lawyers and outside professional organizations, to protect the privacy of the persons

and to ensure that they do not receive unfavorable treatment. We then provide guidance and education to those involved, and strive to appropriately resolve the incidents.

Furthermore, since labor-management relations play an important role in preventing human rights abuses and resolving related incidents, in the event of disputes concerning the interpretation of collective agreements, labor-management agreements or other rules directly related to them, a grievance committee is established to resolve the dispute, based on the agreement concerning complaint-handling procedures that has been concluded with the labor union. The committee comprises members from both the management and the labor side.

Labor-management discussions (FY2022)	Number of union members and unionized rate (March 31, 2023)
<b>59</b> times for the entire Company	<b>926</b> times at steelworks and offices <b>25,115</b> (100% unionized)

In-house magazines for the entire Company as well as each steelworks and each office are regularly published as a means to send various messages to employees. PR magazines are also published to convey our business and other information outside. Our steelworks and offices also regularly set up a place for dialogue with the nearby residents' associations to ask for their understanding of our business operations and listen to opinions and requests from them; this is part of what we do to realize better communication with the local community.

## Diversity & Inclusion



Through our efforts in promotion of diversity and inclusion, we are committed to creating a company where diverse employees are empowered and feel proud and fulfilled.

### Basic policy

From the perspective of creating a company where diverse employees are productive, perform at their best, be empowered, and feel proud and fulfilled, we are reinforcing our diversity & inclusion efforts with a focus on the following five areas, as one of important management issues.

- 1 Promote female employee's participation and career advancement
- 2 Realize work life balance so as to enable employees with various backgrounds and circumstances to perform at their best
- 3 Develop health management in order for employees to perform at their best until the retirement age of 65
- 4 Prevent harassment
- 5 Promote empowerment of the elderly and the disabled

The Diversity & Inclusion Department has been established as a dedicated unit to promote these efforts.

#### Status of employees (non-consolidated basis)

	Men	Women	Total
Number of employees (March 31, 2023)	25,504	2,827	28,331
Number of new hires (April 2023)	762	86	848
Average years of service (March 31, 2023)	17.7	12.9	17.2
Average age (March 31, 2023)	39.8	34.8	39.3
Turnover rate <sup>1</sup> (FY2022)	2.0%	4.3%	2.2%

<sup>1</sup> The rate of voluntary retirees to all employees

### Promotion of women's participation and career advancement

#### What we have done so far

We have endeavored to establish a comfortable working environment for female employees. Specific programs include: 1) a childcare leave benefit which is more generous than legally required; 2) a program for employees who rejoin the Company after having left it because of childcare or nursing care and other reasons; 3) a leave option to assist overseas relocation of a spouse; and 4) a temporary exemption program for employees who have difficulty in relocation because of childcare or nursing care and other reasons. We have also been opening 24-hour childcare centers in steelworks and provide maternity work clothes for use by steelwork employees who are in the childbirth/childcare phase, in order to help them continue their shift work with confidence. We are also working to improve the workplace infrastructure such as showers, toilets, and dressing rooms at manufacturing sites, and to improve the work content.



In-house childcare center  
(East Nippon Works Kashima Area)

Number of in-house childcare centers (April 2023)	Number of users of in-house childcare centers (April 2023)
7 centers	147

#### Toward further promoting women's participation in the workplace

Based on the various programs and work environments that we have established, we have developed the following action plan to support female employees to continue to demonstrate their abilities through career development, and to promote their empowerment in all workplaces and levels, including enhancement of promotion to managerial positions.



#### Plan of action as a general employer, based on the Act on the Promotion of Female Participation and Career Advancement in the Workplace in Japan

In order to develop an employment environment where female employees can perform at their best, an action plan is formulated as follows:

- 1 Plan period: 5 years (April 1, 2021–March 31, 2026)
- 2 Goals, details of efforts, and implementation schedule

**Target 1** Aim to at least double and possibly triple the number of female employees in management positions in 2025 from 36 in 2020, and to increase by at least four times and possibly seven times by 2030.

#### From FY2021

- Hire more women.
- Confirm the individual circumstances and intentions of female employees and consider placement and development measures based on their circumstances in order to enable them to continue to work and actively perform.
- Invest in the working environment so as to expand the placement of women, mainly at steelworks (improvement in work infrastructure, work content, etc.)
- Consider and implement work support measures for employees in the childcare status period, such as measures for childcare centers that offer night-time service.
- In light of the enhancement of the programs related to childbirth and childcare, prepare a brochure to introduce the relevant programs, distribute it to employees, and revise related programs as needed.
- Provide career education that will contribute to the further promotion of female employees' performance.
- Provide education on diversity to managers who supervise female employees.

**Target 2** Aim at 75% or higher utilization rate of paid leave days.

#### From FY2021

- Prepare a pamphlet on the vacation and leave program, distribute it to employees, and develop educational activities.
- Encourage taking paid leave days by setting with the labor union some specific days recommended for paid leaves and by conducting a campaign to do so in the summer.
- Managers to take the initiative in taking off on paid leave days.
- Managers to support each employee to take paid leaves as scheduled.

	2021	2022	2023
Number of female employees in management positions (As of April)	45	55	65
FY2020      FY2021      FY2022			
Utilization rate of paid leave days	60.0%	77.8%	82.9%

<sup>2</sup> Including the effects of temporarily suspended operation to reduce production in response to a major drop in steel demand

#### Improved hiring and retention

We have been working to hire a greater number of women to promote their participation and career advancement. We are encouraging remote working to facilitate a shift to a flexible workstyle and to reduce long work hours so that those with a constraint on the workplace or work time due to childcare or other conditions can continue to work. Career assessments for female employees have been conducted to facilitate flexible placement and development based on the understanding of individual circumstances and to improve retention rates.

At the same time, we will continue to make changes to enhance the working environment, including improvement of the environment for expanding

work placement for women especially in steel mills, and the operation of childcare centers that can also be used during the nighttime.

#### The ratio of women in overall hiring (Average ratio for 2021–2023)

Office staff and engineers	Operators and maintenance personnel	Overall hiring
22%	8%	11%

#### Support for employees' career development and work-life balance

We facilitate the development of female employees by providing them with opportunities for growth through proactive efforts in anticipation of their various life events, and by actively promoting their advancement to managerial positions. As a development policy for the appointment of employees to managerial positions, we have established new respective career training programs for young and middle-class employees respectively since fiscal 2022. These programs motivate participants through conversations with senior female employees and foster exchanges among participants, in addition to helping them develop career aspirations based on lectures and group work. For operators and maintenance staff, we started exchange meetings for female team leaders from different steelworks/areas in fiscal 2021. This provides an opportunity for female team leaders to share their workplace challenges and concerns and find clues to the resolution.

We are creating a workplace culture where work and home life are comfortably balanced by supporting employees in various ways, including improving and disseminating brochures explaining the relevant programs and guides for employees facing life events as well as for their managers.

We also provide to managers training concerning unconscious bias and diversity management.

With the aim of encouraging male employees with young children to actively participate in childcare, since the second half of fiscal 2021 we have been encouraging them to take childcare and related leave.

#### Utilization of childcare support program (FY2022)

Childcare leave users and acquisition rate	Return ratio of female employees after childcare leave	Number of users of the short-work hour program for childcare
612 men (56%)	146 women (100%)	97.3% 124

	FY2020	FY2021	FY2022
Childcare leave acquisition rate among eligible male employees (a combined rate of male employees taking childcare leave and those taking childcare-purpose paid holidays) <sup>3</sup>	8%	25%	56%
	(-)	(81%)	(100%)

<sup>3</sup> Started calculation in FY2021

## Realizing the work life balance as a means to enable people with diverse situations perform well in the workplace

### Restraint on long-work hours

As a precondition for an environment in which diverse human resources can perform at their best, we are committed to reducing long work hours based on appropriate work time management. Prior to the revision of the Labor Standards Act, starting in fiscal 2018, we set up work time capping rules for all employees, including managers, to promote improved work management and work practices that lead to more efficient, higher-value-added output. In addition, we had set a goal of less than 2,000 hours on average for the total annual actual working hours, and have achieved it.

We will continue to pursue workstyles that achieve maximum results within a limited amount of time, while incorporating the effects of business reform and DX measures.

### Enabling flexible ways of working

All human resources with their diverse attributes and circumstances, such as age, gender, and restrictions on work time and workplace due to childcare and nursing care, ideally should make the most of their finite time available and perform at their best. From this viewpoint, we are expanding our work system to move away from traditionally-set ways of working and pursue more flexible and diverse ways of working in accordance with the nature of work at any given time and fluctuation in workload flow of operations needed at that

time, and the circumstances of each individual. Specifically, we are utilizing the telework system and expanding workplaces that use the "coreless flexible system," which eliminated the core time — an essential time period to be in the office. Based on these systems, we aim to achieve improved productivity and employees' work-life balance, while pursuing ways in which individuals can perform at their best.

### Realization of a flexible way to take time off from work

We have been establishing the environment for our employees so that it facilitates a flexibility in the ways to take time off from work, tailored to the circumstances of individual employees and their life stage.

Annual paid holidays can be taken on a half-day basis to meet employees' needs. Each of our steelworks and offices designates dates on which employees are encouraged to take holidays. The head office, for example, sets mainly Fridays in August, as "Eco-paid leave days" and recommends making it easier for employees there not needing to attend meetings and other events on those days to take off.

Concerning childcare leave, in addition to providing a longer period than the statutory limit, the expired annual leave days accrued by each individual can be recovered to paid off-days for parental leave. In addition, from the viewpoint of encouraging child-rearing male employees to actively participate in childcare, we are focusing on clarifying the corporate policies, fostering a workplace culture that encourages employees' use of the system, and promoting the use of childcare leave and childcare-related leave benefits by all male employees whose spouses have given birth to take childcare leave and childcare-related leave on an individual basis.

Matched to the ongoing aging of Japanese society, programs for nursing care leave and time off for nursing care have been established to help employees continue working while attending to nursing care. The expired leave days that have been accrued can be used for nursing care purposes, as part of our efforts to provide an environment in which employees can work with peace of mind while providing care.

The expired annual leave days can also be utilized for such purposes as prenatal checkups and recurrent (relearning) education, in addition to childcare and nursing care, sick leave, care of elementary to junior high school children, volunteer work, and infertility treatment. For recurrent education, we have

established a leave system for obtaining a degree at a university or another educational institution.

To promote the use of these programs, we distributed a brochure that summarizes each type of work and vacation program applicable for each life stage. We try to make the programs better known through various training programs.

### Performance of ways of working and taking time off (FY2022)

Average overtime hours per worker per month	22.2 hours
Utilization of paid leave days	82.9%
Average paid leaves taken	16.6 days
Childcare leave users and utilization rates	612 men (56%) 146 women (100%)
Nursing care leave and vacation program users	13
Users of the short-work hour system for nursing care	2



### Benefit programs

In order to support the various life stages of employees and enable them to achieve a good work-life balance, we are also focusing on welfare measures. We support employees' personal life with various programs: provision of

housing, including dormitories and company housing, and a cafeteria plan (work-life support program).

## Health management aimed for employees to work at their best up to the age of 65

### Basic policy

We aim at ensuring that all employee work at their best from the time of joining the Company to retirement, which has been extended to the age of 65. To accomplish this, we assist them to maintain and enhance both mental and physical health. We conduct health promotion measures focusing on disease prevention as well as early detection and treatment. We are committed to providing advanced health checkups including cancer or mental disorder screening and encouraging employees to get regular checkups and provide consultation or counseling about lifestyle or stress coping by health care

professionals, as needed. Employees are expected to also be committed to implementing measures for their own health maintenance, such as getting various checkups and improve their daily lifestyle. We believe that such efforts by both the Nippon Steel Group and its employees become a source of motivation for work. They are encouraged to balance their work and health and they try not to get sick and, in case they get sick, they continue working while undergoing treatment.

### Nippon Steel Corporation Group Code of Conduct

5 Create a healthy, safe, and comfortable work environment, and respect the character and diversity of our employees.

### Nippon Steel's Basic Policy on Safety and Health

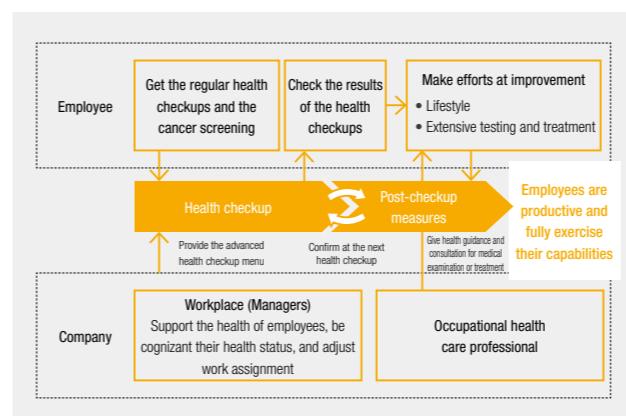
#### Basic Philosophy

- Ensuring and maintaining the safety and health of employees of the Nippon Steel Group is the Group's most important, top-priority values and the basis that supports business development.
- Under the Management Principles of "developing and bringing out the best in our people," the Nippon Steel Group makes continuous efforts to abide by this philosophy and continues to contribute to society through their safety and health.

#### Specific Guidelines

- We observe applicable laws and regulations, and give top priority in all business decisions to ensuring safety and health.
- We maintain awareness and understanding of actual workplace conditions, provide the guidance needed to ensure safety and health, and remove factors that might lead to accidents.

### Commitment to the health of both the Company and its employees



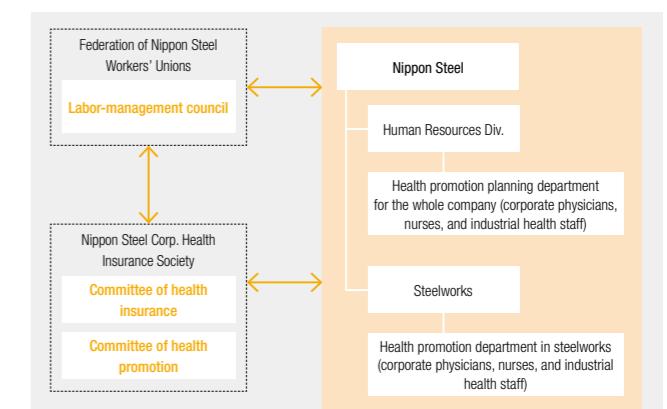
### Promoting physical wellness

#### Cerebral cardiovascular disease control

We have established a unique company-wide system that enables us to assess and manage the risk of diseases based on the results of health checkups. We provide health guidance according to risk factors or control the frequency of health checkups.

It is important that workers with high risk of cardiovascular disease improve their lifestyle. We will improve the implementation rate of specified health guidance, which aimed at improving the dietary and exercise habits of

### Organization for health promotion



workers, by setting a target rate and promoting medical visits. We cooperate with the Health Insurance Union for achieving the goal.

Specified Health Guidance (2021)		
Actual implementation rate	81.2%	Target implementation rate 70%

## Promoting physical wellness

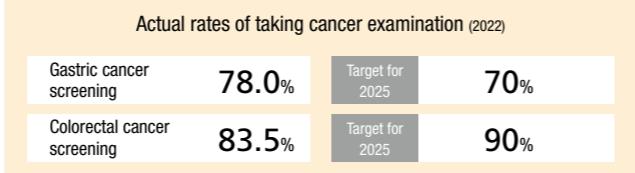
### Cancer disease control

Various cancer screening (including non-statutory exams) based on age and gender are incorporated in our health checkups.

In particular, regarding exams for gastric and colon cancer, which are high risk diseases, we set the evidence-based priority target age and

Type of examination	Priority target (target age and test frequency)
Gastric cancer examination (gastric fluoroscopy)	Once every 2 years, 50-years old or older
Colorectal cancer test (fecal occult blood)	Once a year, 40-years old or older
Prostate cancer test (PSA)	Once every 3 years, 50-years old or older
Breast cancer screening (mammography)	Once every 2 years, 40-years old or older
Cervical carcinoma of the uterus (uterine cytology)	Once every 2 years, 20-years old or older
Gastric cancer risk test (pylori)	When joined the company and at 40
Liver cancer risk test (hepatitis virus)	When joined the company and at 40

screening frequency for the examination. We also set our target rate of exam-taking and encourage employees to take exams for early detection and treatment of cancer.



## Promoting mental wellness

Aiming for each employee in the Nippon Steel Group to enjoy a vigorous life on and off the job, we provide a consulting service for prevention and early detection in the area of mental health. We have incorporated the issue of mental health in various in-house seminars and offer education on how to be aware of one's own stress and to deal with it. For managers, we additionally offer education on how to care for their subordinates and manage their teams, and how to coordinate with the corporate health care professionals (occupational physicians, health nurses, and other staff). Moreover, we provide stress checks through a workplace stress survey every fall. Occupational health care professionals give guidance for improvement by teams and individuals based on the result of the stress check. In contributing to a vigorous work environment, managers implement necessary measures according to the issues of a team or an individual, coordinating with the personnel department and the health department. Because early detection and early response are important in the treatment of mental illness, we identify those who are at risk at the Health Consulting Contact by various measures in association with the Company's mental health e-learning and questionnaire event conducted every June. Occupational health care professionals swiftly respond to the findings of the events to foster mental wellbeing.

## Support to employees who work overseas

To enable employees who have been assigned to work overseas to be free of undue worries, a seminar for the employees and their family is held before the overseas assignment, and information on mandatory vaccination, the local medical system, and other matters are provided. Under the policy of providing continuous health management support during overseas assignments, interviews with occupational health care professionals are regularly conducted counseling via online and at the time of a temporary return to Japan, in addition to aftercare checkups of the regular medical exams. Moreover, one of the Company's physicians periodically visits overseas offices, researches

### Our mental health initiatives

Classification	Details
Proactive action (Self-care)	<ul style="list-style-type: none"> <li>Stress check for awareness of their stress</li> <li>Training for new hires and young employees</li> </ul>
(Care by management supervisors)	<ul style="list-style-type: none"> <li>Workplace analysis of stress check to help employees become aware of their stress</li> <li>Support from supervisors or colleagues</li> <li>Training for managers</li> <li>Providing mental health education program by occupational health care professionals</li> </ul>
(Care by occupational health care professionals)	<ul style="list-style-type: none"> <li>Screening of those in poor conditions in the interview during a regular health checkup</li> <li>Screening of highly-stressed people via stress checkups</li> <li>e-learning to extract those who wish to be consulted</li> <li>Establishment of a health counseling contact</li> </ul>
Early detection	<ul style="list-style-type: none"> <li>Screening of those in poor conditions in the interview during a regular health checkup</li> <li>Screening of highly-stressed people via stress checkups</li> <li>e-learning to extract those who wish to be consulted</li> <li>Establishment of a health counseling contact</li> </ul>
Support for employees' return to jobs and prevention of recurrence	<ul style="list-style-type: none"> <li>Support for employees' return to jobs based on the return-to-work program</li> <li>Re-designing of work assignments for a smooth return to the workplace</li> <li>Regular interviews after return by occupational health care professionals</li> </ul>

local medical institutions and the daily-life environment, and meets with the employees who work overseas to offer advice. We have contracted with a medical service company to provide the medical care locally, in preparation for the employees possibly becoming ill overseas.

In the event of another pandemic, necessary infection prevention measures, including evacuation measures, based on what we have learned from responses to COVID-19, have been implemented in consideration of the local infection situation and the state of medical care, with the first priority on the safety and health of the employees who work overseas and their families.

## Health-wellbeing activities

In addition to the above-stated health measures, we collaborate with the Health Insurance Union and labor unions in a variety of health-wellbeing activities, such as the "Health Challenge Campaign" living habits, "Health e-learning" for improving employee health awareness, and passive smoking preventive measures.

Classification	Details
Health Challenge Campaign	<ul style="list-style-type: none"> <li>A company-wide measure in which employees challenge for two months to improve their own life habits</li> <li>Provide courses that are effective in improving health checkup results and lifestyle. Ex. Take 8,000 steps a day/Have good breakfast</li> </ul>
Health e-learning	<ul style="list-style-type: none"> <li>Twice a year for all employees</li> <li>The themes for FY2022: "Mental health: Mental signal and recommendation of early consultation (Part 2)" and "Cancer prevention and cancer screening"</li> </ul>
Passive smoking preventive measures and non-smoking guidance	<ul style="list-style-type: none"> <li>Since April 2020, smoking in Company buildings has been prohibited (excluding designated smoking rooms).</li> <li>Implementation of guidance on how to quit smoking at the on-site clinic or other clinics or via website For employees who wish to stop smoking, an occupational health care professional will provide individual guidance.</li> </ul>

## Preventing harassment

We are strengthening efforts to prevent harassment in order to create an environment where diverse human resources can work diligently with peace of mind.

In the past, we have clarified our internal policies, created, and disseminated leaflets to inform and enlighten all employees, and repeatedly provided education on harassment in training at milestones, from new employees to managers. From fiscal 2020, in addition to the above initiatives, we are conducting a "Harassment Prevention Campaign" every December. In the campaign, we offer e-learning and self-checks for all the employees and board members, and workplace dialogue specifying themes such as creating an open workplace.

In addition, a guide on harassment prevention and appropriate guidance was issued for managers in fiscal 2022 to help them create a sound workplace.

Dedicated consultation and reporting points of contact have been established so that employees who face a harassment issue can consult with other people, in addition to someone close to themselves, such as their supervisor or co-worker. We are striving to create an environment wherein a harassment issue can be resolved without the employee concerned taking it on all alone.

Each of the contact points takes individual actions and makes sure not to disbenefit anyone for reporting or cooperating. After investigating and confirming the existence of a problem, we take strict measures in accordance with employment rules and other regulations.

## Empowerment of the elderly and the disabled

### Employment for the elderly

With regard to the promotion of the empowerment of the elderly, we extended the retirement age to 65 from 60 in fiscal 2021, after consultation with labor unions, and taking into account the declining working population, the response to the extended starting age of the pension system, and the maintenance and improvement of initiative at our workplaces.

Assuming that the same work will be carried out, even after the age of 60, the employment scheme as well as the salary and bonus scheme will remain the same up to the age of 65.

Under this new system, hopefully, all generations, up to 65 years of age, will continue to perform at their best at the front lines of our workplaces, while also invigorating the skill transfer process and communication within the workplace between generations, thereby creating a vibrant company.

### Employment rate of the disabled (as of June 2023)

2.45%



Work scenery at one of the special-purpose subsidiaries

## To secure human resources and promote active participation

In the middle of major environmental changes such as intensifying recruitment competition due to population decline in recent years, diversification of individual career views, and fluidity in the labor market, in order to realize our management strategy, it is extremely important to secure human resources and to promote the further active participation of employees. As one of our most important management issues, we will implement various personnel and public relations measures more than ever before.

In order to secure human resources, in addition to the stable recruitment of new graduates and the recruitment of postdoctoral researchers such as highly specialized doctoral personnel, etc., we will actively recruit experienced

personnel, including the alumni recruitment. We will also develop public relations measures to raise awareness of our company among a wide range of generations, on top of students who are seeking job. We will also raise the level of compensation for employees, including starting salaries.

In order to promote active participation of human resources, we will strengthen measures to improve employee engagement by fostering internal dialogue and communication and providing opportunities for challenge and growth, such as sending mid-career and young employees overseas.

By promptly putting these current measures into action, we will examine and implement more initiatives to secure and empower human resources.

## Human Resources Development

Based on the belief that “the development of excellent personnel is a prerequisite for the development of excellent technologies and the production of excellent products,” Nippon Steel is striving to enhance “initiative at workplaces” and “technological advancement” and to improve its overall manufacturing capabilities.

### Human resources development

#### Basic Policy for Human Resource Development

Recognizing that the source of competitiveness is the power of people, Nippon Steel's Management Principles state that “we develop and bring out the best in our people to make our Group rich with energy and enthusiasm,” positioning human resource (HR) development as a priority theme. A goal of HR development is to create people who can understand and implement our Corporate Philosophy and our Employee Action Guidelines. With this in mind, each employee shares in taking the lead in HR development.

Nippon Steel's basic approach to HR development is for supervisors to transfer to their subordinates, through daily dialogues on the job, understanding and knowledge of criteria for judgment and of operational skills. In order

for this mindset to be shared by all employees, the following Basic Policy for Human Resource Development has been adopted.

Unit	FY2020 <sup>1</sup>	FY2021 <sup>1</sup>	FY2022
Number of training/ learning hours	hours/year per employee [million hours/year]	62 [1.82]	32 [0.90] <sup>2</sup> 28 [0.80] <sup>3</sup>

<sup>1</sup> Some corrections to the data reported in Sustainability Report 2022 and other materials due to data scrutiny and recalculation corrected, and the training/learning during operation with reduced production in FY2020 and FY2021 included.

<sup>2</sup> FY2021 data affected by partially suspended or postponed training and reduced new hires during the COVID-19 pandemic.

<sup>3</sup> Unlike in FY2020 and FY2021, training/learning not provided during operation with reduced production in FY2022 due to recovery in production.

#### Basic Policy for Human Resource Development

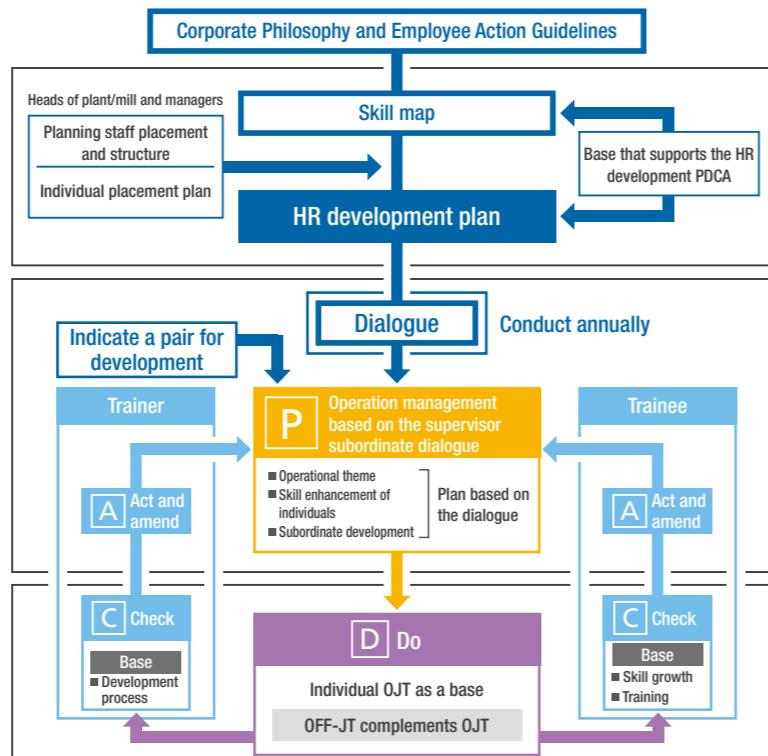
- 1 HR development is the job itself, and supervisors play an important role in HR development.
- 2 OJT training is a basis of HR development and is complemented by off-the-job training.
- 3 Supervisors share objectives and outcomes of HR development clearly with their subordinates.
- 4 Each individual strives for continual personal improvement for further growth.

### Personnel development of operators and maintenance staff

The operators and maintenance staff relentlessly build up their skills in steelmaking and maintenance, starting from joining the Company, on the assumption of continued long-term employment to retirement. They thus fundamentally support the Company's initiative at our worksites. Smooth transmission of technology and skills from veterans to younger workers is essential and a system that facilitates this is needed. Therefore, after identifying, through a supervisor-subordinate dialogue, the skill or skills to be acquired, a skill development plan is developed and carried out. Training is conducted mainly through On-the-Job Training (OJT), and the HR Development PDCA is kept up to date for use by repeatedly revising and implementing the development plan based on the progress of individuals.



Human resource development PDCA (conceptual rendering)



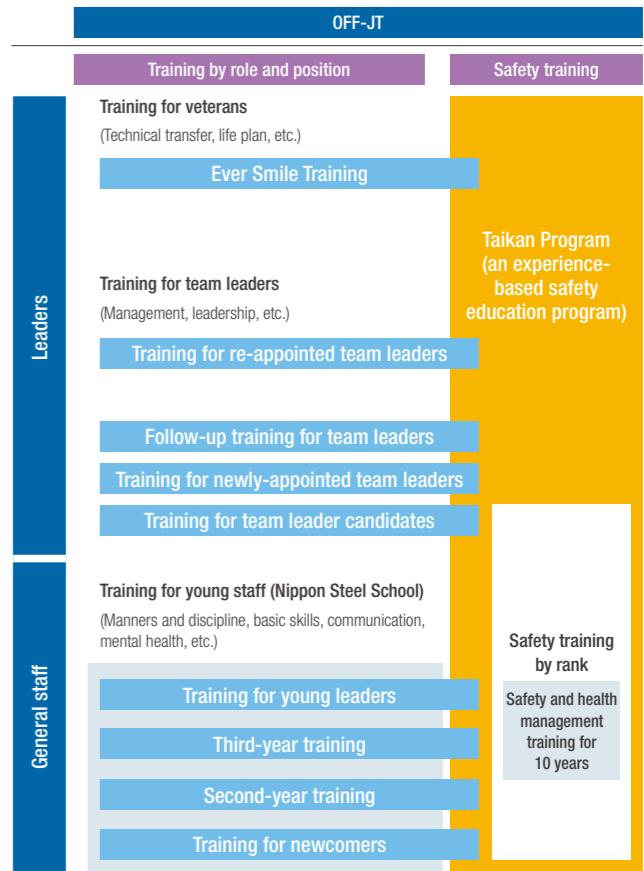
Off-the-job training (OFF-JT), which complements OJT, is used throughout the Company by organizing the minimum skills and knowledge required by each rank of employees of Nippon Steel into a company-wide standard system. Through this, we work at education of workplace leaders to further increase their ability to add to and improve our knowledge base from the field (“field technology”) and at measures to maintain and improve motivation of the elderly to continue working with health and motivation.

We are also actively promoting cooperation in HR development with partner companies, which play an important role in our steelmaking, from the perspective of deepening and expanding our partnerships. Specifically, in addition to the training of each partner company, we also conduct training for the employees of our cooperative companies. Level-specific training to impart and improve knowledge and skills needed for partner companies' employees in different ranks, such as newcomers, young staff, team leaders, job leaders, and line managers, is available, with Nippon Steel's employees serving as instructors. Through these efforts, we support the HR development of our partner companies, encourage exchanges between our on-site employees and their employees, and establish a foundation for smooth business execution.



Another area we focus on is to diversify recruitment sources (especially for female employees and mid-career recruitment), and we strive to create a workplace climate in which diverse personnel can be motivated and collaborate with each other through human rights awareness and harassment prevention.

#### Development of operators and maintenance staff

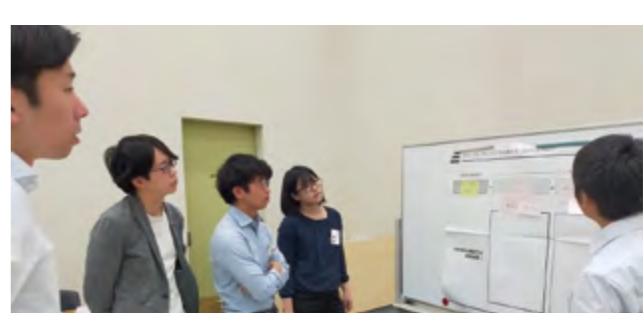


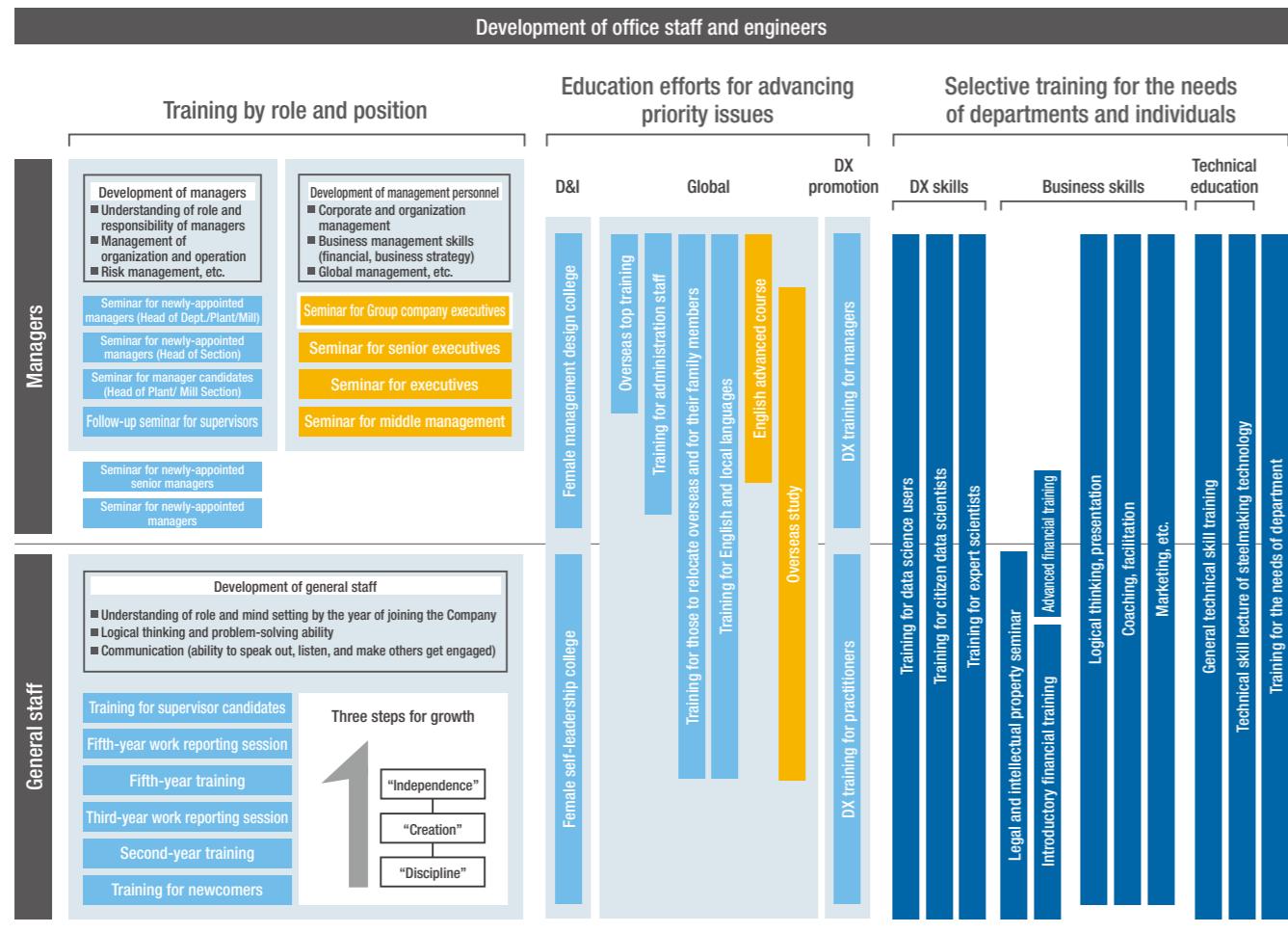
Note: In addition to the above, training to import and improve knowledge and skills needed for partner companies' employees by rank (newcomers, young staff, team leaders, job leaders, and line managers) with Nippon Steel's employees as instructors is available.

### Personnel development of office staff and engineers

Following the Basic Policy for HR Development, Nippon Steel uses a HR Development PDCA for office staff and engineers, who implement OJT-based HR development plans. Specifically, development plans are formulated for each person based on the Corporate Philosophy, Employee Action Guidelines, and organizational strategies. Based on a concrete one-year plan, a supervisor and a subordinate have an extended dialogue throughout the OJT period, review the development situation at year-end, and formulate the next year's plan.

The OFF-JT is also being enhanced to complement the OJT. Various training programs are aimed at acquiring the knowledge and skills required for each qualification and position. An employee's period of time from joining the Company to becoming a manager is divided into three steps: “Discipline,” “Creation” and “Independence.” Work reporting sessions and training by rank are carried out at the milestones of the 2nd, 3rd, or 5th anniversaries of the start of employment. In addition, selective training to improve the skills needed for work, and technical education programs to systematically learn the knowledge needed for our engineers are available. These can be taken based on individual development needs upon the dialogue between supervisor and subordinate.





"Discipline": In the initial few years, new hires learn the basics in each of our fields of expertise, and acquire the manners and basic patterns for work as a social person through each practice.

"Creation": The employees in this step are assigned to perform a certain task from start to finish, develop their execution ability, identify their own field of expertise, and acquire a firm basic foothold in it.

### Development of managers

The training courses are provided to managers to match the managers' qualification and position so that they can acquire proper understanding of their responsibilities and authority as managers and knowledge, skills, and mindset that contribute to enhancing their management as supervisors and group management capabilities. In recent years, we have given increased attention to management education. We added new courses including one for line manager candidates to enhance line management skills on the manufacturing field, and one for new managers to ensure they have a correct understanding of their roles and responsibilities as managers and acquire the risk management and job and organizational management skills. In addition to these, we enhance education on dialogue skills as a supervisor.

### Development of staff who support technological advancement

In order to train human resources that achieve world-leading technologies and manufacturing capabilities, courses to learn the essential knowledge and technologies for steelmaking engineers are prepared. In particular, the content of courses classified as steelmaking process-specific technologies is at the core of Nippon Steel's technology. We have developed an environment in which we can learn from basic technologies to advanced technologies, with excellent in-house engineers as instructors.

### Global personnel development

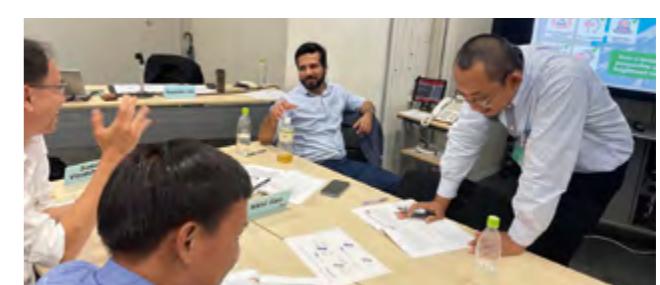
For our employees to effectively work in any country where we are active, we provide pre-assignment training aimed for them to acquire basic knowledge to do business in the country and understand cultural differences. We have also set standards for English language skills to be reached by each level, and are working to raise the overall level of our group. For those whose job requires English skills, there is a program aimed at raising their proficiency level in English so that they can perform their jobs overseas without need for translators or interpreters.

Further, to train future players of our domestic and overseas businesses, middle-management seminars are designed for young managers to acquire the knowledge, skills, and mindset necessary for business management.

Concerning development of overseas local staff, we make efforts to transfer to them Nippon Steel's operational skills, mainly through OJT, according to the Company's Basic Policy for HR Development. In the ASEAN countries and India, where our overseas Group companies are concentrated, training courses by rank, as well as OFF-JT courses for specific skill learning and other subjects are conducted.



Participants in the training for senior management in ASEAN and India, in front of the head office building in Tokyo



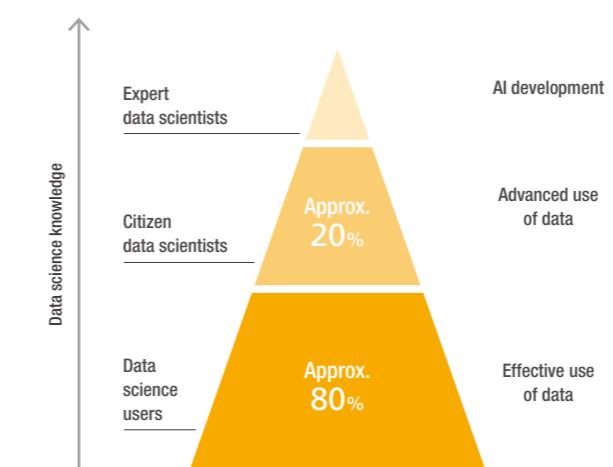
Management program in the training for senior management in ASEAN and India

### Development of staff who drive DX

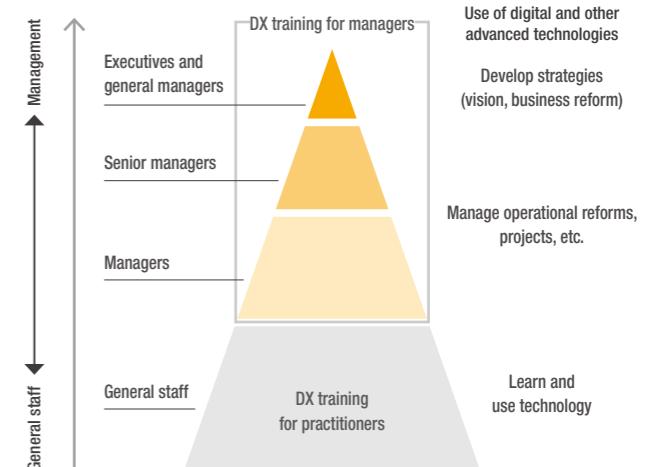
We are developing human resources in both data science and digital management. As for data science education, our goal is to develop DX skills training to enable all office staff to become data science users "who can effectively use data" by 2030, and to grow at least 20% of our office staff and engineers into citizen data scientists "who can make advanced use of data."

As for digital management education, we have been conducting training all managers to understand their role in the promotion of DX and encourage them to change their mindset, so that they can facilitate operational process reform using digital technology. Through the education from these two aspects, we intend to accelerate our production and business process reform, using data and digital technology.

### Data Science Training



### Digital Management Training





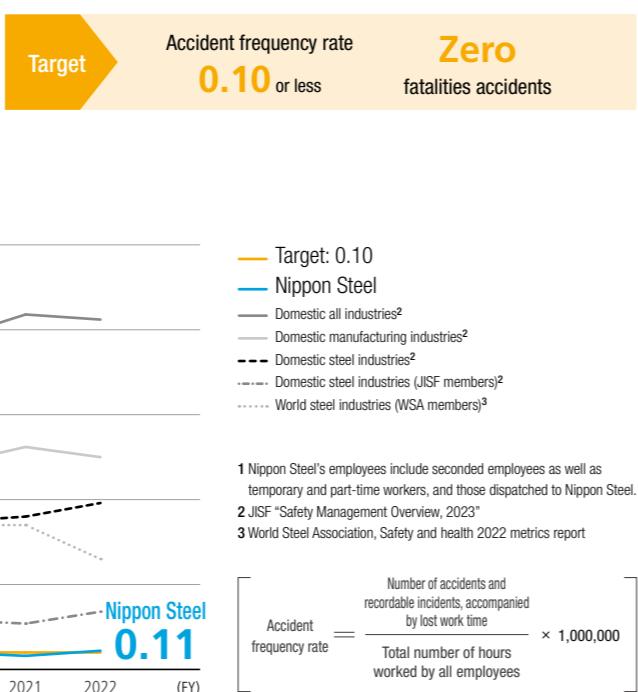
## Safety

In keeping with the basic philosophy that “safety and health of employees of the Nippon Steel Group is the Group’s most important, top-priority values and the basis that supports business development,” the Nippon Steel Group has firmly adhered to its manufacturing values, which include observing the principles of prioritizing safety, protecting the environment, and preventing disasters. We are working on all of the related activities to improve the level of our Occupational Safety and Health Management System (OSHMS) while creating a safe and secure workplace. Our safety and health policy applies not only to our company but also to our affiliated partner companies.

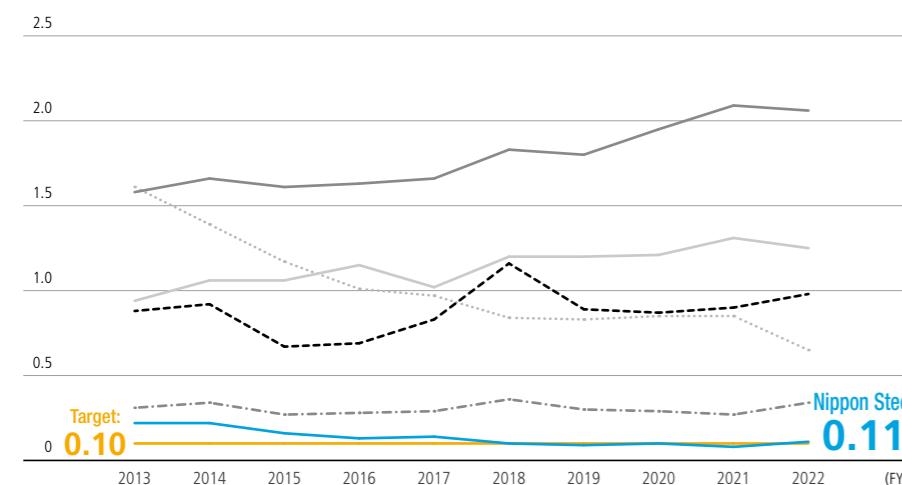
### Reducing disaster risks to zero, and group-wide sharing of effective measures

We make a risk assessment when planning a new project and regularly conduct safety and risk assessment for existing projects, to prevent accidents and reduce risks. We also seek for greater safety of equipment even when such equipment is essentially safe, and take countermeasures against human error. We also actively promote use of IT in safety measures, such as checking worker location data via GPS, safety surveillance cameras, and helmet-mounted cameras. We conduct analysis of actual accidents for prevention of similar accidents and make known effective examples of accident-preventive measures. As a result of continuous execution of these measures, safety improved in fiscal 2022. There were 5 accidents for Nippon Steel's employees<sup>1</sup> and 16 for employees of subcontracting companies

(including zero fatal accident for Nippon Steel and one in subcontracting companies) The accident frequency rate was 0.11 (compared to Japan's steel industry average of 0.98) and the accident severity rate was 0.04 (vs. 0.26). We will continue to strive for a safe work environment with the safety wellness targets for fiscal 2023 that are zero fatalities/severe accidents and less than 0.10 as the accident frequency rate.



### Accident frequency rate



### Acquisition of third-party certification

Nippon Steel's 12 steelworks and offices acquired the ISO (JIS Q) 45001 Health and Safety certification (published in March 2018) as of April 2023. We target to acquire the certification for all our steelworks and offices.

#### Acquisition of ISO (JIS Q) 45001 certificates

FY2019	Kansai Works Wakayama Area
FY2020	Amagasaki Area and Osaka Area of Kansai Works; Nagoya Works; Kyushu Works Oita Area; East Nippon Works Kashima Area
FY2021	Naoetsu Area and Kimitsu Area of East Nippon Works, North Nippon Works Muroran Area, Setouchi Works Hirohata Area
FY2022	North Nippon Works Kamaishi Area, Kyushu Works Yawata Area



Kashima Area's ISO (JIS Q) 45001 Health and Safety certification

### Safety training

We make efforts to improve training for accident prevention. The safety training programs are attended by all newly-appointed managers of manufacturing worksites (81 managers in fiscal 2020, 80 in fiscal 2021 and 65 in fiscal 2022). Our Taikan Program (an experience-based safety education program) allows employees to experience worksite risk through simulation, so as to better prepare them in anticipating and managing risk. In addition, we regularly hold safety and health education programs (74 participants in fiscal 2022) for the safety and health staff of our Group companies and major cooperative companies, striving to enhance information sharing about our safety and health management approaches and activities and the acquisition of knowledge about laws and regulations related safety and health.



Efforts Toward Safety and Health Management  
<https://www.nipponsteel.com/en/csr/safety/index.html>

## Disaster Prevention



For our company, trust and coexistence with our customers, local communities, and society are of the utmost importance, and it is important for the continuity of our company that we do not cause disaster-related accidents that damage our trust. For this reason, our disaster prevention promotion activities aim to improve disaster prevention management while building mechanisms and systems for autonomous and continuous activities, taking measures to reduce risks of disaster-related accident, and preventing disaster-related accidents.

### Initiatives to reduce disaster risks

Nippon Steel's Plant Safety Division is promoting initiatives for risk reduction in disaster prevention by working in three areas of focus: 1) corporate-wide implementation of measures against risks that emerge from instances of disaster, to prevent recurrence; 2) identification of disaster occurrence risks based on risk assessment plant by plant and by each of their process technology divisions; and implementation of tangible/intangible measures to reduce risks and control residual risks; and 3) voluntary monitoring (auditing) concerning appropriate implementation of 1) and 2), by persons in charge of

disaster prevention in each works; understanding of the control status through sessions with managers at the head office; and implementation of corrections, if needed. Targeting zero serious disaster-related accidents, we promote essential disaster prevention improvement measures in manufacturing sites.



#### Specific disaster prevention initiatives

##### 1 Prevention of disaster recurrence (mitigating risks exposed by disaster)

- Enhance drills for initial response (drills at all plants in all steelworks; enhanced drill programs; use of dedicated training facilities, improvement of hazard sensitivity by use of CG, etc.)
- Improve fire-fighting capacity of the in-house fire defense function, in cooperation with experts (joint fire drilling with public fire fighters; training for leaders, etc.)
- Prevent forgetting past incidents and accidents (panel presentations in training facilities; session to learn about past incidents during training)

##### 2 Disaster prevention risk assessment

###### (identification of new potential disaster risk)

- Identify and assess risks in manufacturing sites based on the corporate-wide guidelines; manage residual risks; and develop and promote permanent measures
- Identify accident risks related to operating processes and facility design and promote the drafting of permanent measures by outside experts and the process technology division in the head office
- Strengthen disaster prevention management in the facility measures of the Medium to Long-Term Management Plan

##### 3 Measures to mitigate existing risks

###### (measures for disaster prevention equipment)

- Prevent disaster recurrence; investment in measures for compliance and risk assessment

##### 4 Auditing concerning disaster prevention

- Voluntary monitoring by disaster prevention organization at each steelworks for regular check-ups and corrective action on the status of disaster prevention activities at the manufacturing work front
- Regular check-up and corrective action on the implementation status of disaster prevention management of each steelworks based on the hearings in the head office

##### 5 Third-party monitoring toward enhancing safety competency in steelworks

- Assessment of steelworks by an NPO, the Japan Safety Competence Center

##### 6 Measures against earthquakes and tsunamis and measures for natural disaster mitigation

- Promote measures against earthquakes in the order of 1) human injury prevention, 2) area damage prevention, and 3) production measures
- Prepare procedures, carry out practical training, and devise measures for disaster mitigation to the nine categories of natural disasters (earthquakes, tsunamis, typhoons, heavy rains, floods, lightning, landslide disasters, blizzards, volcanic eruptions)

##### 7 Group companies disaster prevention management

- Meetings to enhance coordination for disaster prevention management; individual visits to a workplace where a disaster or accident happened or which has risks related to disaster prevention

### Activities

### Efforts to prevent occurrence and recurrence of accidents

As part of disaster prevention efforts, we conduct activities to prevent occurrence and recurrence of accidents.

For occurrence prevention (initial response training), we have identified approximately 800 high-risk facilities and operations across the Company and conduct training to deal with them. This makes our training more practical. There are 90 best practices of initial response training developed by different workshops, which are shared across the Company to upgrade the training in each workplace.

For recurrence prevention, in addition to the corporate-wide disaster risk assessment guidelines, we have established and standardized disaster risk assessment guidelines that particularly address the launch of new facilities and the

temporary/permanent removal of production lines as part of our ongoing actions to manage emerging risks from changes in the production status.

Since the formation of the Plant Safety Division in 2014, our infrastructure for company-wide safety management (standardization) has been strengthened, as demonstrated by the fact that no serious disaster-related accidents have occurred since 2019. In addition to building such infrastructure (standardization), we will implement initiatives to support manufacturing sites disaster prevention activities, including those conducted by managers, to make our disaster prevention activities sustainable through the spread and enhancement of safety culture.

## Quality Management



Quality management is one of the most important aspects in obtaining the trust and satisfaction of customers in the provision of products and services. At the Nippon Steel Group, all employees engaged in manufacturing and services are responsible for thorough quality management to improve quality.

### Nippon Steel Group's basic quality management policy

In line with the Japan Iron and Steel Federation's Guideline toward the enhancement of quality assurance system, we are promoting the enhancement of education on quality compliance (compliance with laws and regulations) and activities to reduce quality risks and implementing a basic policy of identifying quality risks through quality audits throughout the Group.

Quality management issues are shared by the Quality Management Committee, chaired by the Executive Vice President. By having the Committee review actions to take for resolving the issues, we strive to maintain and improve our quality management system.

### Activities aimed at strengthening the quality assurance system

Nippon Steel's quality assurance system is based on autonomous quality management activities at individual steelworks, product units, and Group companies in Japan and abroad.

The Quality Management Division, in cooperation with the steelworks and Product Units, promotes quality compliance education, behavioral risk reduction activities, and the identification and mitigation of quality risks through quality audits. The code of conduct for quality, called the five basic rules of quality behavior, has been made known to all employees, with a focus on improving the awareness in quality compliance and preventing quality problems to occur. Information on quality-related events is promptly shared across the Group and at appropriate times measures are launched to resolve issues through standardization, systematization, and automatization. These measures are then implemented to enhance identification management of actual products to improve reliability of testing and inspection.



Guide to the Five Basic Rules of Quality Behavior



Quality auditing by the Quality Management Division

#### Specific activities

##### 1 Education on quality compliance

Employees of the Company and the Group companies receive quality compliance education. It covers such topics as the importance of compliance with laws and regulations, the impact that our products and work have on society, quality risk management, and internal rules and standards. This education takes the form of training that effectively uses quality e-learning and digital tools.

##### 2 Activities to reduce behavioral risks

Based on the analysis of the causes of past quality issues, we have established the basic principles that employee involved in quality management should follow and are working to disseminate them as the Five Basic Rules of Quality Behavior. To improve reliability of testing and inspection, we also work to eliminate risks from human intervention by automating data retrieval and introducing systems for product identification and product quality judgment before shipment.

##### 3 Quality audits

The Quality Management Division performs periodic quality audits of the Company and the Group to enhance customer confidence. Audits include a review of compliance with the Japan Iron and Steel Federation's Guideline, conformity with standards and specifications, and quality-related behavioral risks. We are nurturing auditors at steelworks and Group companies to strengthen the autonomous audit system. We also receive external reviews, such as those for ISO 9001 and JIS certifications, to raise the credibility of our quality management system.

### Quality management system and standardization activities

#### Quality management system (ISO 9001 certification)

All steelworks of Nippon Steel are ISO 9001 certified. By implementing the quality management system, we ensure that the processes used to provide products and services to customers are appropriately managed.

Following the reorganization of our manufacturing bases in Japan, we are integrating the quality management systems, which have been individually certified at the steelworks or area level. Once completed, the integration will enable each steelworks to clarify their quality policy and to accelerate their continuous quality improvement activities.

#### Standardization activities

With regard to Japanese and international steel standards (JIS, ISO, and ASTM), we promote the establishment and revision of standards by participating in the standardization activities led by the Japan Iron and Steel Federation and contribute to the standardization (rules development) of steel products through public-private cooperation. Building systems for standardization also helps us nurture human resources specialized in standardization.

## Research & Development

Our R&D resources are one of the largest in scale in the global steel industry. Our diverse researchers with wide-ranging expertise play active roles internally and externally. We will continue the challenge of maximizing the potential of steel as a material, that is, achieving our goal of "mastering steel."

### R&D activities for a sustainable future

In addition to being diverse in characteristics, steel is highly recyclable and thus has a relatively low impact on the environment throughout its lifecycle. By engaging in R&D to advance the way this attractive and abundant resource is used, we contribute to the sustainable development of society as we implement our management plan. Specifically, our R&D challenges include further strengthening the development of products with high added value and efficient processes, developing product/solution technologies that contribute to CO<sub>2</sub> emissions reduction to move toward a carbon neutral (CN) society (see p. 26), which is a top-priority management issue, developing a

breakthrough steelmaking process through industry-academia-government cooperation (see p. 23), and developing CO<sub>2</sub> capture, use, and storage technologies (see p. 24).

R&D expenses (FY2022, consolidated)  
¥ 70.5 billion/year

### Strengthening the development of high-value added product and process development

Examples of our high-value added products include corrosion-resistant plated steel sheets, alloyed galvanized sheets (GA), hot-dip aluminum-plated steel sheets, nickel-plated steel sheets, grain-oriented electrical steel sheets (GO), non-oriented electrical steel sheets (NO), laminated steel sheets, H-beams with constant external dimensions, and high-alloy seamless steel pipes. We focus on R&D in these areas to support a sustainable society.

In process development, we utilize various kinds of large-scale laboratory equipment that can accurately simulate the operation of actual production facilities for each process of ironmaking, steelmaking, and rolling, as well as computerized simulation technology. Thus, we are promoting R&D to create highly efficient steelmaking processes that help conserve natural resources and the global environment.

## Intellectual Property Management

The Nippon Steel Group has produced intellectual property items, such as new products and technologies, that contribute to a sustainable society. In addition to leveraging them to grow our business, we positively use them for broader purposes such as external licensing, promotion of cooperation with external organizations, and the formation of new market rules through standards development.

### Nippon Steel's intellectual property policy

We perform intellectual property activities under the company-wide slogan, "Intellectual property is the source of our corporate activities. Maximize corporate value through enhanced protection management and active utilization." We are strengthening our awareness of directly linking intellectual property created from short-term and medium- to long-term R&D implemented based on business strategies to maximizing business earnings and corporate value. Based on a specific business strategy and this slogan, we will formulate and act on a flexible and effective intellectual property strategy that responds to all aspects (offense and defense) of individual

products and technologies and share the results throughout the Company to continuously strengthen the strategy.

Number of patents held (March 31, 2023)	
Japan	Overseas
Approx. 14,000	Approx. 16,000

### Promotion system of intellectual property activities

Business divisions take the lead in making a trinity of management strategy, R&D strategy, and intellectual property strategy, and then carry out specific intellectual property activities. These activities are supported by the Intellectual Property Division.

However, the Intellectual Property Division is actively involved in management from a traversing perspective regarding intellectual property activities that span business divisions. After company-wide intellectual property meetings to discuss the progress of these activities and determine

the direction of how to proceed with intellectual property activities, the final decision is made by the Corporate Policy Committee and the Board of Directors. In addition, the results of discussion in the Corporate Policy Committee and the Board of Directors are fed back to the business divisions and people involved in the inventions to strengthen the daily intellectual property activity. Further, through continuous information management and intellectual property training, we are improving the awareness and skills of all the employees related to intellectual property.

## Production and Supply Chain Management



To realize the production and supply of steel products required for a sustainable society, Nippon Steel is making various initiatives and DX (digital transformation) for stable procurement, stable production and shipping in all aspects of the supply chain, from the procurement of raw materials, fuel, equipment, and materials to customers.

### Sustainable procurement efforts

Economic development of emerging countries is a major element of change in the global purchasing environment, requiring Nippon Steel to make strategic purchasing for enhancing manufacturing capabilities. At the same time, it is becoming increasingly important for not merely our Company but also our entire supply chain to fulfill social responsibilities in order to realize a sustainable society. Against this background, we steadily and continuously procure raw materials, other materials, and equipment to achieve a stable supply of steel products for a sustainable society.

In terms of procurement of raw materials and fuels, we are sourcing from suppliers worldwide, including Australia, North America, South America, South Africa, and China, for a stable supply of more than 100 million tons of raw materials for the steelworks. The supply of materials is mainly iron ore and coal. In the procurement of equipment and materials, we purchase around one million product items of equipment and materials — from gigantic facilities such as blast furnaces to electric and mechanical products as well as safety, emergency, and office supplies — from about 3,000 suppliers.

In engaging in these procurement activities, we are committed to compliance with laws and regulations, consideration of environmental conservation, elimination of racial discrimination and human rights abuses, confidentiality and thorough information management as prerequisites. We then strive to maintain and improve mutual understanding and trust with suppliers from a long-term perspective. In July 2020, upon affirming agreement with efforts made by the Ministry of Economy, Trade and Industry, we made a declaration for the establishment of partnership relations with suppliers and other business partners to establish cooperative and co-existing relationships.

In connection with procurement of equipment and materials from numerous suppliers, we hold a Material/Equipment Procurement Partners Meeting, to be held once every three years with an objective to share our purchasing policy, in order to deepen dialogue and share procurement policies based on management strategies.

In fiscal 2018, about 1,300 suppliers attended our first Partners Meeting, where we asked them to cooperate in strengthening partnerships to improve manufacturing competitiveness and in promoting procurement activities to achieve the goals of the SDGs. In 2021, we held the second Partners Meeting, and, in addition to conveying the same message as in the first meeting, we shared our commitment to sustainable development of our entire supply chain with the suppliers, who are our business partners.

#### Basic policy on equipment and materials procurement

- 1 Compliance with laws
- 2 Equal opportunities
- 3 Building of a partnership
- 4 Fair disclosure of information and quick transaction processing
- 5 Consideration to resource protection and environmental preservation
- 6 Preservation of confidentiality

### Consideration to reducing environmental impact in procurement activities

Based on the Life Cycle Assessment concept, Nippon Steel is taking initiatives in reducing environmental impact at various points along the supply chain. In keeping with rising demand for tighter management of chemical substances, we have created management standards for 16 toxic chemical substances, including cadmium, jointly with customers and suppliers. We then established a system to manage substances of concern contained in purchasing products, including packaging materials.

In addition, as stipulated in the Charter of Corporate Behavior by Keidanren, we have set up internal rules, including an appropriate purchasing policy, which puts us on record as fully considering resource protection and environmental preservation. Moreover, we have participated in the Green

Purchasing Network (GPN) since 1996, when the network was founded, in order to promote green purchasing activities. Jointly with businesses, governments, academia, local governments, and NGOs, we have taken the initiative in developing a framework to prioritize the purchasing of products and services that represent less environmental load.



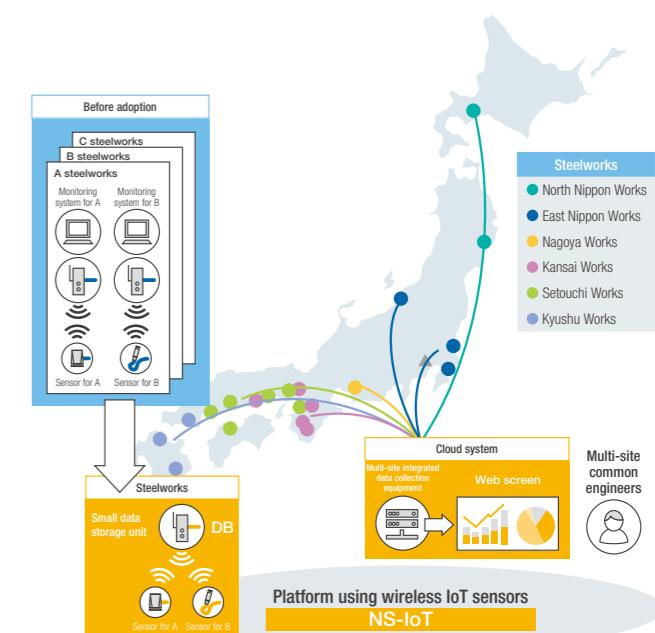
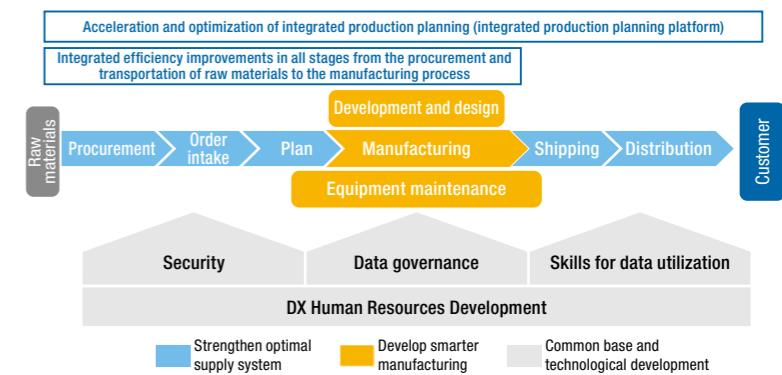
Toxic material management concerning quality assurance  
<https://www.nipponsteel.com/en/csr/customer/support.html>

### Innovation of steel business processes by making full use of DX

Nippon Steel will promote DX to innovate all steel business processes. We are steadily making progress toward the goal of 100 million tons in global crude steel capacity and ¥1 trillion in consolidated business profit by strengthening business competitiveness and tackling the challenge of carbon neutrality, as laid out in our Medium- to Long-Term Management Plan, as well as by constructing a solid integrated business framework spanning everything from raw materials to manufacturing to distribution.

In these efforts, we use DX to swiftly implement various measures to realize "innovative evolution of manufacturing capabilities by developing smarter manufacturing," "strengthening of customer relations by reinforcing the flexible and optimal supply system," and "global management support through enhancement of business intelligence."

#### DX-driven innovation of the supply chain and engineering chain



#### Advanced utilization of operational and facility data using wireless IoT sensors (NS-IoT)

We have built a wireless Internet of Things (IoT) sensor-utilization platform NS-IoT for centralized management of data from each steelworks site by using LPWA (low power wide area wireless communication) and cloud technology.

By centralizing the management of data from sensors and leveraging integrated big data from multiple locations for facility status detection and trend monitoring, the data-driven production process has been achieved. The system will be extended to the entire company and Group companies, starting with East Nippon Works Kimitsu Area and Kashima Area, with a view to expanding the system as a package to other manufacturing industries, etc.

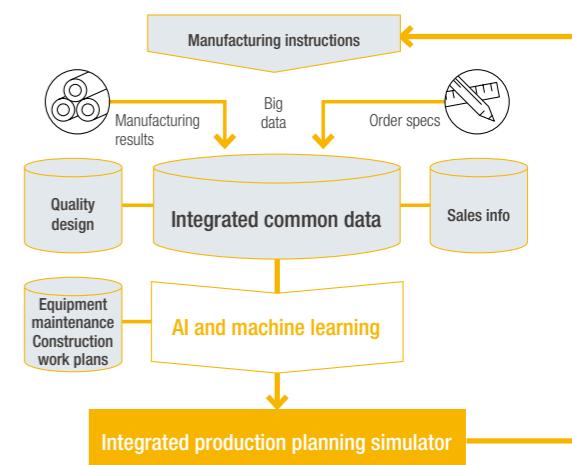
This platform will be used to stabilize production and further enhance quality by improving labor productivity through the use of automation and predictive detection, and by advancing production technology.

#### Acceleration and optimization of integrated production planning

The steel industry uses a variety of raw materials, such as iron ore, coal, and scrap metal, to produce diverse steel products for automobiles, ships, bridges, and household appliances. Of these, approximately 70,000 different sheet steel products are produced, and approximately 40,000 orders are handled each month. The production plan is a complex combination of multiple processes, ranging from crude steel production to rolling to surface treatment.

Based on the latest sales information and big data collected by each steel mill on the manufacturing process efficiency and detailed order specifications, we quickly create optimized integrated production plans and build an "integrated production planning platform" that is shared throughout the Company. We will use this platform to unify company-wide information and introduce an integrated production planning simulator that can accurately respond to customer orders and changes in the raw material procurement environment. By applying advanced mathematical optimization technology, this production planning simulator enables rapid selection of the optimal plan from a large number of planning patterns consisting of a huge amount of data. With this initiative, we aim to significantly reduce the workload at each steelworks through the sophistication of production planning operations and strengthen optimal production control throughout the Company.

#### Integrated production planning platform





## Together with Local Communities

Nippon Steel has many manufacturing bases all over Japan and are engaged in business activities rooted in local communities. In accordance with our attitude of maintaining harmony with local communities and society, we are promoting a wide range of activities, including promotion of environmental preservation, support in education and sports, mecenat (in French, mécénat, meaning sponsorship or patronage) of art and culture, holding dialogues with shareholders and investors, and coordinating with government bodies.

### Environment preservation activities, jointly with local communities

In our Basic Environmental Policy, we are committed to conducting business activities that take into account the perspective of environmental conservation in the community. We are promoting environmental risk management, by means such as detailed responses to different environmental risks at each steelworks, and environmental protection activities in partnership with the local communities.

#### Kashima City coastal clean-up

In the East Nippon Works Kashima Area, we are conducting coastal cleaning activities in cooperation with Kashima City, Kashima City Tourism Association, Kashima Coast Protection Association, Kashima Junior Chamber, Kashima City Construction Cooperative Association, Ibaraki Prefecture Itako Civil Engineering Office, and Kashima Port Office. Since the start of this activity in 1984, the cleaning area has been gradually expanded. In 2023, approximately 1,600 people participated and collected about 8 tons of trash. This continued activity with residents in the community has received numerous awards. In April 2021, Nippon Steel's East Nippon Works Kashima Area received a Medal with Green Ribbon as an Environmental Beautification Association.



#### Participation in activities of the "Mori wa Umi no Koibito" NPO

We are also a regular corporate member of the NPO, *Mori wa Umi no Koibito*, represented by Mr. Shigeatsu Hatakeyama, a fisherman raising oysters and scallops in Kesennuma City, Miyagi Prefecture, who received the Forest Heroes award from the United Nations in 2012. The NPO's activities are based on a scientific mechanism according to which the ecological linkage of forests, villages, and sea nurtures the blessings of the sea forest. In other words, the forestation leads to an increase in iron-humic acid that flows down rivers, and which enriches growth of oysters and scallops near the river mouth. Since 2012 we participated in the NPO's tree planting activity at Murone Mountain in Iwate Prefecture, which began in 1989. In 2023, 30 people, consisting of employees of Nippon steel and Group companies, as well as their families, participated in the 35th round of tree planting activity.



### Support for educational activities

#### Monodzukuri and environmental education

With the aim of showing the joy of product-manufacturing, Nippon Steel holds demonstrations on "tatara ironmaking"—Japan's indigenous ironmaking technique. Every year we are host to approximately 130,000 people at our plant visits in order to make Nippon Steel as well as the steel industry to be better understood. In fiscal 2022, the COVID-19 pandemic made it difficult to undertake these programs. As part of our efforts to the extent possible, in addition to "on-site classes" in which people are dispatched from each steelworks or branch office in response to local requests, we are providing online learning sessions in the East Nippon Works Kashima Area. We have also resumed accepting training from private companies for the first time in two years.



#### Internship programs and the endowment of a university course

For many years, Nippon Steel has been internship opportunities to students to help them learn our business and gain some work experience. We also endow university courses, which are related to technological innovation (one of our business strategies) and "carbon neutrality in 2050" objective.

## Together with government and public institutions —Involvement in public policies and legal compliance

### Suggestions on public policies, opinions as the industry, and cooperation with government

Over the years, Nippon Steel has provided personnel to key positions of the Japan Business Federation (Keidanren) and the Japan Iron and Steel Federation (JISF), and through the activities of these organizations, has expressed opinions and urged them to take action on deregulation matters and the implementation of institutional reforms aimed at improving the Japanese economy.

In the local communities, we also strive to cooperate with various organizations such as the local government and the local chamber of commerce and industry.

- Voicing opinions on deregulation and institutional reform aimed at maintaining and improving the vitality of the Japanese economy
- Contribution to standards development activities in Japan and abroad, including those for JIS and ISO standards, that are aimed at smoothly facilitating global economic development and helping to resolve social issues
- Participation in public policy studies, such as infrastructure development, revision of the Corporate Governance Code, Sustainability Standards Board of Japan (SSBJ), tax reform, Digital Transformation (DX), workstyle reform and regional revitalization
- Recommendations on national strategy to achieve a "virtuous cycle of environmental sustainability and economic growth," the need for policies that will strengthen the international competitiveness of industries, and energy policy
- Promotion of voluntary initiatives by industry to achieve Japan's medium- to long-term targets based on the Paris Agreement (Carbon Neutral Action Plan)
- Involvement in the formulation of "Towards Green Transformation" by Keidanren (Japan Business Federation), etc.

### Adherence to relevant laws and regulations, and building of an appropriate relationship with government and public institutions

Based on the Nippon Steel Group's Corporate Philosophy and Code of Conduct, we have developed company rules and guidelines for the prevention of bribery of domestic and foreign public officials, compliance with anti-monopoly law and environmental regulations, and protection of personal information. We make sure that our officers and employees are aware of and adhere to laws and regulations and other rules.

### Fair tax payment

We comply with relevant laws and regulations, and pay tax appropriately in all countries in which we operate. We maintain transparent, constructive communication with tax authorities, eliminate action that could be construed to be for evasion of taxes and bear fair tax burden.

### Efforts to enhance dialog with shareholders and investors

To achieve sustained growth and improve corporate value over the medium to long term the Company has adopted the Basic Policy for Information Disclosure and Dialogue with Shareholders and Investors. We strive to proactively provide information and cooperatively respond to questions raised by shareholders at the General Meetings of Shareholders. In addition, we regularly hold management overview briefings and plant tours in various locations, and issue interim reports. (In fiscal 2022, we did not conduct plant tours, to prevent the spread of COVID-19 infections.)

For institutional investors we host, among other events, briefings on quarterly results, the Medium- to Long-Term Management Plan, the Carbon Neutral Vision, and our DX strategy; visits to our steelworks and research centers; small meetings with investors; various conferences; and visits to overseas institutional investors. These are opportunities to discuss our management strategies, businesses, operating performance, and sustainability issues with representatives of institutional investors in relevant fields.

The opinions of shareholders and investors obtained through these initiatives are promptly shared by the management team and each inhouse sector and reported and fed back periodically to the Board of Directors.



Visit to steelworks

### Activities in the support of art, music, and sports as social contribution

#### Activities in the support of music

Nippon Steel is active in corporate philanthropy activities in the support of music, particularly through the work of the Nippon Steel Arts Foundation. The Foundation manages Kioi Hall in Tokyo, organizing performances of its resident chamber orchestra and promoting Japanese traditional music. We also give the annual Nippon Steel Music Awards, established in 1990, to young classical music performers and to those who have contributed to the development of classical music.

#### Activities in the support of sports as a social contribution

Nippon Steel manages or supports sports teams in the local communities of its steelworks. These include a judo club, which has produced Olympic medalists; baseball teams, which have sent many of its players to the professional leagues; a football team, a rugby team, and a volleyball team. All of these teams also contribute to their local community through such various activities as sports classes for children, coaching of junior teams, and making our athletic facilities available to local residents for games and training. Together with local residents who support our teams, we strive to provide renewed vigor to our local communities, and at the same time to support their healthy lifestyle.

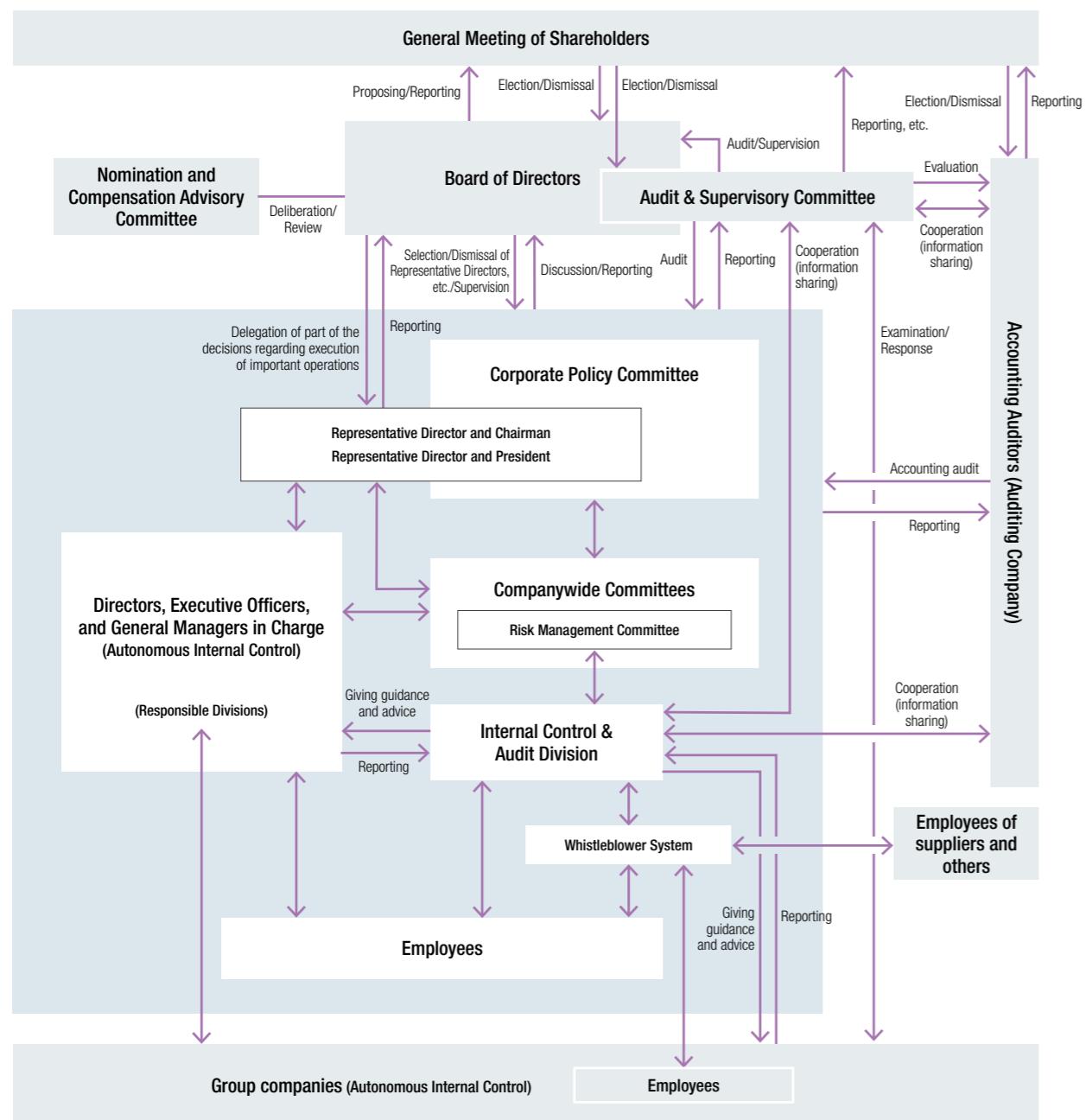
## Corporate Governance



The Nippon Steel Group is engaged in business activities based on its Corporate Philosophy — that we will pursue world-leading technologies and manufacturing capabilities, and contribute to society by providing excellent products and services. Heeding that Philosophy, the Nippon Steel Group has established a corporate governance system suited to the businesses of the Nippon Steel Group in order to achieve the sound and sustainable growth of the Nippon Steel Group and increase its corporate value over the medium to long term, in response to the delegation of responsibilities by and trust of all stakeholders, including its shareholders and business partners.

## Basic policy of corporate governance

Nippon Steel has adopted a company structure with an Audit & Supervisory Committee. This is because Nippon Steel strives to speed up management decision-making, enhance discussions on the formulation of management policies and management strategies at the Board of Directors by prioritizing items to be discussed, and strengthen the supervisory function of the Board of Directors.



[More information on corporate governance](#)



Corporate Governance Report  
<https://www.nipponsteel.com/en/ir/management/disclosure/>



Annual Securities Report  
[https://www.nipponsteel.com/en/ir/library/pdf/securitiesreport\\_2021.pdf](https://www.nipponsteel.com/en/ir/library/pdf/securitiesreport_2021.pdf)

## 1 Corporate governance system

The Board of Directors of Nippon Steel is comprised of 15 members, of whom ten are Directors (excluding Directors who are Audit & Supervisory Committee Members) and five are Directors who are Audit & Supervisory Committee Members, and is chaired by the Representative Director and President. Independent Outside Directors account for one-third (five out of 15, including one female Director) of all members of the Company's Board of Directors.

By all Directors appropriately fulfilling their respective roles and responsibilities, prompt decision-making is achieved corresponding to changes in the management environment, and multifaceted deliberations and objective and transparent decision-making are secured. In addition, Directors who are Audit & Supervisory Committee Members have the voting rights on the Board of Directors regarding decisions on proposals for the election and dismissal of Directors as well as on election and dismissal of Representative Director, and other decisions in general regarding business execution (excluding decisions that have been delegated to directors). The Audit & Supervisory Committee has the authority to give its opinions at the General Meeting of Shareholders

## 2 Internal control system

Nippon Steel has established internal control and risk management systems, based on autonomous activities by internal divisions and group companies, according to the Basic Policy on Internal Control System, which was resolved by the Board of Directors, and the Internal Control Basic Rules.

The Internal Control & Audit Division cooperates closely with each area's functional division in charge of risk management, develops annual plans concerning internal control and risk management, prepares a scheme for check and review, regularly ascertains the status of internal control across the entire Group, and works at continual improvement.

### 3 Risk management

The status of risk management initiatives is reported to the Corporate Policy Committee and the Board of Directors after deliberations by company-wide committees chaired by the Executive Vice President for each purpose and field. In addition, the vice president in charge of internal control serves as the chairperson for overall internal control, including matters related to risk management in each field (labor safety, harassment, environment, disaster prevention, quality

## Director skills matrix

We believe that our Board of Directors, as a whole, must have the necessary skills and experience based on our Group corporate philosophy, medium- to long-term management plan, etc. The main skills and experience possessed by each Director are as presented in the table below.

Name	Position	Corporate Planning / Business Strategy	Finance / Accounting, Monetary / Economy	Personnel / Labor Affairs / HR Development	Governance / Risk Management / Legal / Compliance	Technology / R&D	Sales / Purchas / Marketing	Global	Environment / Sustainability	Public Administration / Public Policy
<b>Directors (Excluding Directors who are Audit &amp; Supervisory Committee Members)</b>										
Kosei Shindo	Representative Director and Chairman	●		●	●			●	●	●
Eiji Hashimoto	Representative Director and President	●		●			●	●	●	●
Naoki Sato	Representative Director and Executive Vice President			●	●				●	
Takahiro Mori	Representative Director and Executive Vice President	●	●				●	●		
Takashi Hirose	Representative Director and Executive Vice President	●					●	●		
Kazuhisu Fukuda	Representative Director and Executive Vice President				●	●			●	
Tadashi Imai	Representative Director and Executive Vice President	●		●	●	●			●	
Hiroyumi Funakoshi	Representative Director and Executive Vice President	●		●	●				●	
Tetsuro Tomita	Director (Outside Director)	●		●	●			●		
Kuniko Urano	Director (Outside Director)		●	●					●	
<b>Directors who are Audit &amp; Supervisory Committee Members</b>										
Shozo Furumoto	Senior Audit & Supervisory Committee Member (full-time)				●			●		●
Masayoshi Murase	Audit & Supervisory Committee Member (full-time)	●		●	●					
Seiichiro Azuma	Audit & Supervisory Committee Member (Outside Director)	●			●			●		
Hiroshi Yoshikawa	Audit & Supervisory Committee Member (Outside Director)	●		●	●			●		●
Masato Kitera	Audit & Supervisory Committee Member (Outside Director)		●	●				●		●

Note: The check mark indicates the main skills and experience (up to four in principle) possessed by each Director, based on their career history and experience.

regarding the election, compensation, etc. of Directors, excluding directors who are Audit & Supervisory Committee Members. This structure strengthens the supervisory function of the Board of Directors over management. The execution of important matters concerning the management of Nippon Steel and the Nippon Steel Group is determined at Board of Directors' meetings after deliberations in the Corporate Policy Committee (once a week, in principle) comprised of the Representative Director and Chairman, Representative Director and President, Representative Directors and Executive Vice Presidents, and other members, pursuant to Nippon Steel's rules.

As a deliberative body prior to the Corporate Policy Committee and the Board of Directors, we have established company-wide committees chaired by the Executive Vice President for each purpose and field. (As of April 1, 2023, there are a total of 23 committees, including the Ordinary Budget Committee, Equipment Budget Committee, Investment and Loan Committee, Risk Management Committee, Green Transformation Promotion Committee, and Environmental Planning Committee)

As a whistleblower system, the Compliance Consulting Room was established to receive information relating to the risks associated with operation not only from officers and employees of Nippon Steel and the Group companies, but also from their families and others. It is also positioned as one of the bodies that monitor the status of internal control activities, in addition to its functions on compliance and optimization of operations, such as to prevent accidents and violation of laws, and to improve operations.

assurance, financial reporting, information security, etc.). The Risk Management Committee, which is held every quarter, deliberates and approves the status of initiatives, and reports important matters to the Corporate Policy Committee and the Board of Directors. Through these mechanisms, our Board of Directors supervises important managerial risk control.

## Independent Assurance Report

### Independent Assurance Report

To the Representative Director and President of Nippon Steel Corporation

We were engaged by Nippon Steel Corporation (the "Company") to undertake a limited assurance engagement of the environmental performance indicators marked with ★ (the "Indicators") for the period from April 1, 2022 to March 31, 2023 included in its Nippon Steel Sustainability Report 2023 (the "Report") for the fiscal year ended March 31, 2023.

#### The Company's Responsibility

The Company is responsible for the preparation of the Indicators in accordance with its own reporting criteria (the "Company's reporting criteria"), as described in the Report.

#### Our Responsibility

Our responsibility is to express a limited assurance conclusion on the Indicators based on the procedures we have performed. We conducted our engagement in accordance with the 'International Standard on Assurance Engagements (ISAE) 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information' and the 'ISAE 3410, Assurance Engagements on Greenhouse Gas Statements' issued by the International Auditing and Assurance Standards Board. The limited assurance engagement consisted of making inquiries, primarily of persons responsible for the preparation of information presented in the Report, and applying analytical and other procedures, and the procedures performed vary in nature from, and are less in extent than for, a reasonable assurance engagement. The level of assurance provided is thus not as high as that provided by a reasonable assurance engagement. Our assurance procedures included:

- Interviewing the Company's responsible personnel to obtain an understanding of its policy for preparing the Report and reviewing the Company's reporting criteria.
- Inquiring about the design of the systems and methods used to collect and process the Indicators.
- Performing analytical procedures on the Indicators.
- Examining, on a test basis, evidence supporting the generation, aggregation and reporting of the Indicators in conformity with the Company's reporting criteria, and recalculating the Indicators.
- Visiting the Company's North Nippon Works Muroran Area selected on the basis of a risk analysis.
- Evaluating the overall presentation of the Indicators.

#### Conclusion

Based on the procedures performed, as described above, nothing has come to our attention that causes us to believe that the Indicators in the Report are not prepared, in all material respects, in accordance with the Company's reporting criteria as described in the Report.

#### Our Independence and Quality Management

We have complied with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which includes independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. In accordance with International Standard on Quality Management 1, we design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

/s/ Kazuhiko Saito

Kazuhiko Saito, Partner, Representative Director  
KPMG AZSA Sustainability Co., Ltd.

Tokyo, Japan  
October 24, 2023

Notes to the Reader of Independent Assurance Report:

This is a copy of the Independent Assurance Report and the original copies are kept separately by the Company and KPMG AZSA Sustainability Co., Ltd.

## Awards Received in FY2022<sup>1</sup>

Award name	Sponsor	Detail
Best Quality Supplier Award, Zero Defect Supplies Award, Best Target Achieved Supplier in Delivery (three awards)	Toyota Industries Engine India Pvt. Ltd.	In addition to receiving the Delivery award for six consecutive years, the company also received Best Quality and Zero-Defect awards for the first time in recognition of its stable, continuous supply of high-quality products, along with contribution to further improvement and enhancement of quality for global models. (SMI Artek Crankshaft)
2022 Award for Excellence in Corporate Disclosure in Steel/Non Ferrous Metal Industry Category, ranked first for three consecutive years	Securities Analysts Association of Japan	The Company appreciated that the top management is actively engaged in sending out information; communication with investors is well established and the direction of the Company is clearly indicated; substantial resources are allocated to the IR department, and high-level discussions can be conducted regarding the direction of the Company concerning management, ESG, and other matters; as for ESG-related matters, the Company makes efforts to disseminate information on such topics as decarbonization and DX, ahead of other companies, and as a large influential company, it has presented concrete action plans by identifying problems from a multifaceted perspective. (Nippon Steel)
67th Shibusawa Award	The Japan Electric Association, Commemorative Project Committee for Dr. Motoji Shibusawa for His Receiving of the Person of Cultural Merit Award	Commercialization of quake-resistant slip-joint structure utility poles coated with hot-dip zinc-aluminum alloy to provide excellent corrosion resistance, for practical use on overhead line poles of new Shinkansen lines (Hokuriku and Hokkaido Shinkansen). (Nippon Steel)
IEC 1906 Award	International Electrotechnical Commission (IEC)	Contribution to the creation of international standards for magnetic materials and their measurement methods (Nippon Steel)
The 9th Monodzukuri Nippon Grand Award "Excellence Prize"	METI, MEXT, Ministry of Health, Labour and Welfare, and Ministry of Land, Infrastructure, Transport and Tourism	Development of coating cycle extension steel CORSPACE™, which contributes to reducing the lifecycle cost of steel bridges and port facilities (Nippon Steel)
The 69th Okochi Prize "Production Prize"	Okochi Memorial Foundation	Development of new manufacturing process of titanium sheets by direct slab casting system and surface structure control (Toho Titanium Co., Ltd., Nippon Steel)
2023 Data Management Awards "Data Management Grand Prize" (first recipient in the steel industry)	Japan Data Management Consortium	The Company certified as having achieved noteworthy efforts and results in data management activities, and whose efforts will serve as a model for others now and in the future.
The 55th Ichimura Prize in Industry for Distinguished Achievement	Ichimura Foundation for New Technology	Development of painting cycle extension steel CORSPACE, which contributes to extending the life of steel bridges and port facilities (Nippon Steel)
2023 The Commendation for Science and Technology by the Minister of MEXT (Development Category)	Ministry of Education, Culture, Sports, Science and Technology (MEXT)	Development of new brake pads for Shinkansen (Central Japan Railway Company, Nippon Steel)
2023 World Steel Sustainability Champion (received for the third time)	World Steel Association	Sustainability activities such as measures demonstrating strong environmental commitment, and measurement and disclosure of various data based on environmental policies; and publication of Sustainability Reports to stakeholders (Nippon Steel)

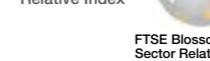
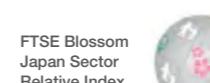
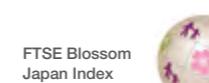
<sup>1</sup> Includes some awards received in April–June 2023

#### Corporate profile (as of March 31, 2023)

Name	Nippon Steel Corporation
Head office	2-6-1 Marunouchi, Chiyoda-ku, Tokyo 100-8071, Japan
Establishment	April 1, 1950
President	Eiji Hashimoto
Capital	419,524 million yen (426,024 shareholders)
Stock listings	Tokyo, Nagoya, Fukuoka, Sapporo
Number of employees	106,068 (consolidated)
Group companies	360 consolidated subsidiaries 97 equity-method affiliates

#### External evaluation

Nippon Steel Corporation has been selected as a constituent of many indexes including the MSCI Japan ESG Select Leaders Index, FTSE Blossom Japan Index, FTSE Blossom Japan Sector Relative Index, and S&P/JPX Carbon Efficient Index (adopted by the Government Pension Investment Fund, GPIF) as well as the FTSE4Good Index Series, which is a widely used stock index.



### 2022 CONSTITUENT MSCI JAPAN ESG SELECT LEADERS INDEX

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This report is available for download in PDF format.

#### Publication date

October 2023

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