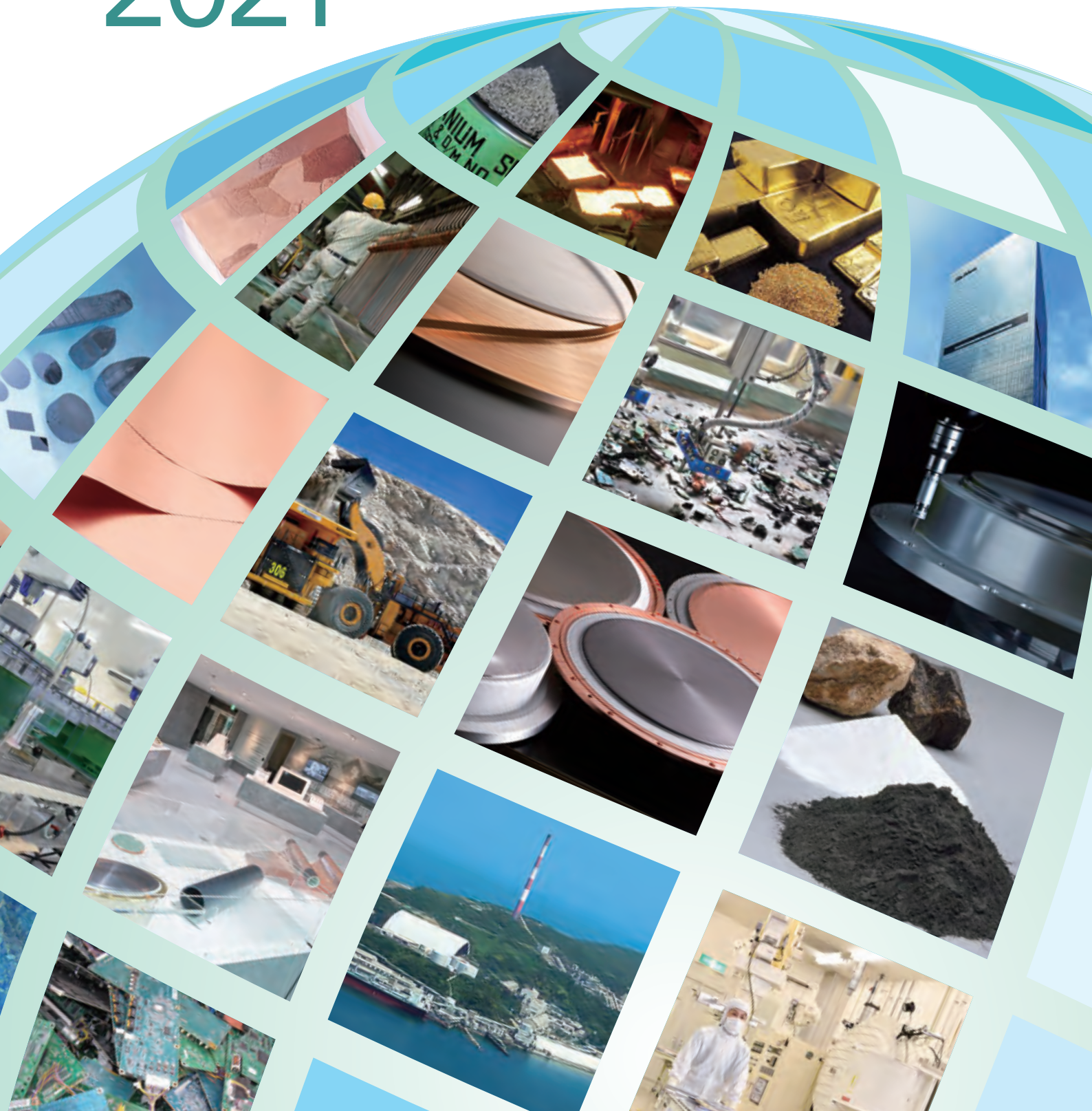
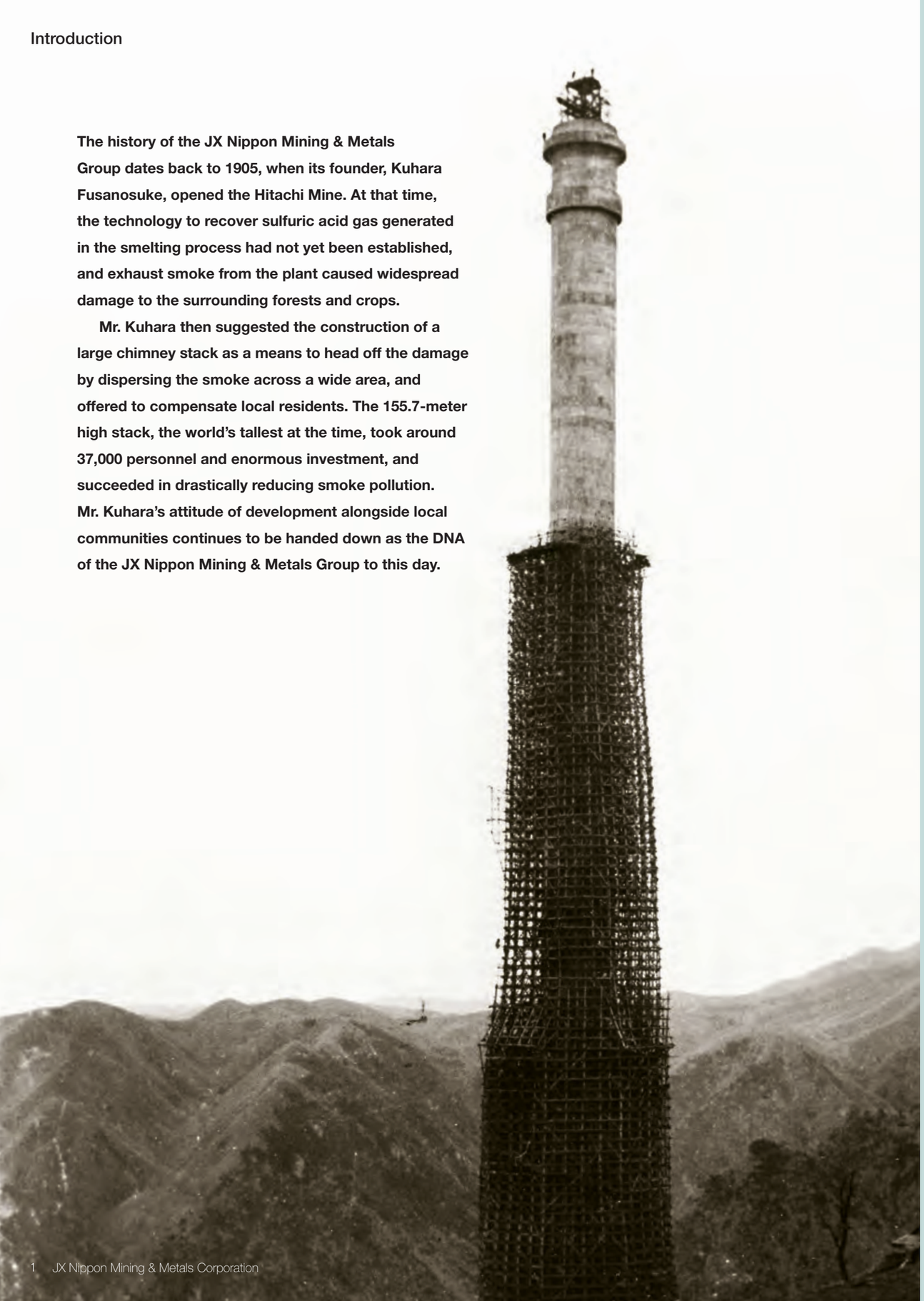
JX Nippon Mining & Metals Corporation

SUSTAINABILITY REPORT 2021



The history of the JX Nippon Mining & Metals Group dates back to 1905, when its founder, Kuhara Fusanosuke, opened the Hitachi Mine. At that time, the technology to recover sulfuric acid gas generated in the smelting process had not yet been established, and exhaust smoke from the plant caused widespread damage to the surrounding forests and crops.

Mr. Kuhara then suggested the construction of a large chimney stack as a means to head off the damage by dispersing the smoke across a wide area, and offered to compensate local residents. The 155.7-meter high stack, the world's tallest at the time, took around 37,000 personnel and enormous investment, and succeeded in drastically reducing smoke pollution. Mr. Kuhara's attitude of development alongside local communities continues to be handed down as the DNA of the JX Nippon Mining & Metals Group to this day.



JX Nippon Mining & Metals Group Code of Conduct

1. Our social mission

Based on continuous technological development and full awareness of our responsibilities in designing products, we will develop and produce a variety of products efficiently while minimizing waste. At the same time, we will promote recycling and reduce the impact of our operations on the environment. By doing so, we hope to obtain the satisfaction and trust of our customers and of society as a whole.

2. Compliance with laws and regulations and engagement in fair trade

We will comply with domestic and/or overseas laws and regulations, and will engage in fair, transparent and free competition and trade based on the fulfillment of our social responsibilities.

3. Disclosure of corporate information and protection of personal information

We will communicate not only with our shareholders, but also with the public at large, and will disclose corporate information in an active and equitable manner while focusing on the protection of personal information.

4. Creation of an optimum health, safety and working environment

We will place top priority on health, safety, and disaster prevention and will ensure a comfortable working environment that respects employees' personality, human rights, and individuality.

5. Environmental conservation

Based on the awareness that tackling environmental issues is an essential requirement for corporate existence, we will engage in activities aimed at conserving the global environment, including biodiversity, in a voluntary, active and continuous manner.

6. Enhancement and strengthening of risk management

We will establish a risk management system based on scientific data to enhance and strengthen risk management.

7. Harmonious relationship with society

We will commit ourselves to social contribution activities and work as a good corporate citizen to achieve a harmonious relationship with the rest of the society of which we are part.

8. International business operations

In international business operations, we aim to contribute to sustainable development by protecting the fundamental human rights of people in countries and areas where we operate, and by respecting their cultures and customs.

9. Elimination of antisocial activities

We stand firm against all antisocial forces and groups that threaten social order and safety.

10. Management responsibilities

Management executives will take the lead in implementing this code of conduct and ensure it is thoroughly implemented across the Group. In the event of any non-compliance with the code of conduct, the management executives will investigate the causes, work to prevent reoccurrence, disclose information to the public promptly and accurately, and be held accountable for the event.

Contents

Sustainability Report 2021

Editorial Policy

The JX Nippon Mining & Metals Group engages in ESG management in all its business endeavors, toward the sustainable development of society. We issue one edition of the Sustainability Report each year to disclose appropriate corporate information to a broad range of stakeholders, including customers, suppliers, shareholders and investors, employees, and the international and local communities. As an important communication tool, this report is designed to enhance stakeholders' understanding of our ESG activities. The Sustainability Report 2021 has been prepared in accordance with the GRI Standards* Core option as required by the 10 Principles of the International Council on Mining and Metals (ICMM) and by the ICMM's Assurance Procedures.

* International guidelines issued by the Global Reporting Initiative, incorporating standard items for CSR reporting. The indicators in this report that are assured by a third-party organization are marked with a check.

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Definitions of Terminology

"JX Nippon Mining & Metals" ("The Company"): The terms "JX Nippon Mining & Metals" and "the Company" refer to JX Nippon Mining & Metals Corporation.
"The JX Nippon Mining & Metals Group" ("the Group"): The terms "the JX Nippon Mining & Metals Group" and "the Group" refer to JX Nippon Mining & Metals Corporation and all its subsidiaries. However, the companies subject to reporting vary among different sections of the report (see "Scope of this Report" for details).
"The ENEOS Group": The term "the ENEOS Group" refers to the corporate group formed by ENEOS Holdings, Inc., the parent company of JX Nippon Mining & Metals Corporation. Along with the Company, the core operating companies of the ENEOS Group are ENEOS Corporation and JX Nippon Oil & Gas Exploration Corporation.

Publication Date

January 2022
Publication date of previous report: February 2021
Publication date of next report: January 2023

Reporting Period

April 2020 - March 2021
In principle, this report covers our business activities during fiscal 2020. To ensure comprehensive disclosure, however, it also includes certain information regarding important events that occurred prior to or after this period.

Scope of this Report

This report covers JX Nippon Mining & Metals Corporation as well as domestic and overseas Group companies. However, in certain parts of the report (listed as "Corresponding Sections" in the table below), we report main indicators only for those companies as described under "Scope of this Report" in the table below.

Corresponding Sections	Scope of this Report
Business Overview	Companies included in the consolidated financial statements of JX Nippon Mining & Metals. * The Company and its consolidated subsidiaries listed on the right that have the ◎ symbol after their names.
Environment	Energy and GHGs: Business locations of quantitative importance to the JX Nippon Mining & Metals Group (including business locations with production activities and closed mines) (Companies listed below marked with ●) Other environmental data: Businesses where total energy consumption per fiscal year is equivalent to 1,500 kiloliters of crude oil or more (Companies listed below marked with ＊)
Employees, Society, Corporate Governance	The Company and 81 companies in which the Company has 50% or greater voting rights directly or indirectly. * Main companies covered by this report are those marked with ★ below.

Main Companies Covered by This Report

Domestic

JX Nippon Mining & Metals Corporation ◎●＊★
JX Metals Trading Co., Ltd. ◎●★
Toho Titanium Co., Ltd. ◎●＊★
JX Nippon Mining Ecomanagement, Inc. ◎●★
Yoshino Mines Co., Ltd. ◎●★
Oya Mines Co., Ltd. ◎●★
Hokuriku Mines Co., Ltd. ◎●★
Shin-Takatama Mining Co., Ltd. ◎●★
Kaneuchi Mining Co., Ltd. ◎●★
Hitachi Mines Co., Ltd. ◎●★
Shakanai Mines Co., Ltd. ◎●★
Hanawa Mines Co., Ltd. ◎●★
Hokushin Mining Co., Ltd. ◎●★
Namariyama Mining Co., Ltd. ◎●★
Kamikita Mines Co., Ltd. ◎●★
Toyoha Mine Co., Ltd. ◎●★
Shimoda Hot Springs Co., Ltd. ◎●★
Kamine Clean Service Co., Ltd. ◎★
Furuuchi Chemical Corporation ◎●★
Ibaraki Nikko Kensetsu Co., Ltd. ◎★
JX Metals Plant Saganoseki Co., Ltd. ◎★
Kasuga Mines Co., Ltd. ◎●★
JX Nippon Exploration and Development Co., Ltd. ◎★
MFN Investment LLC ◎★
Nippon Caserones Resources Co., Ltd.
Pan Pacific Copper Co., Ltd. ◎●＊★
Keihin Kaseihin Center Co., Ltd. ◎●★
PPC Logistics Co., Ltd. ◎★
JX Metals Smelting Co., Ltd. ◎●＊★
Nissho Kou-un Co., Ltd. ◎★
Japan Copper Casting Co., Ltd. ◎●＊★
Japan Korea Joint Smelting Co., Ltd. ◎★
JX Nippon Environmental Services Co., Ltd. ◎●＊★
JX Nippon Tomakomai Chemical Co., Ltd. ◎●＊★
JX Nippon Mikkaichi Recycle Co., Ltd. ◎●＊★
JX Nippon Tsuruga Recycle Co., Ltd. ◎●＊★
JX Nippon Takasho Co., Ltd. ◎●★
Ichinoseki Foil Manufacturing Co., Ltd. ◎●★
JX Nippon Coil Center Co., Ltd. ◎●★
JX Metals Precision Technology Co., Ltd. ◎●＊★
Kitaibaraki Precision Co., Ltd. ◎●★
JX Nippon Foundry Co., Ltd. ◎●★
TANIOBIS Japan Co., Ltd. ◎●★
Toho Material Co., Ltd. ●
Advanced Forging Technology, Inc. ●

Overseas

Hong Kong Nikko Shoji Co., Ltd.◎★
Shenzhen Nikko Shoji Co., Ltd.◎★
Materials Service Complex (Thailand) Co., Ltd.◎●★
Materials Service Complex Coil Center (Thailand) Co., Ltd.◎★
Nikko Metals Taiwan Co., Ltd.◎●★
JX Nippon Mining & Metals Shanghai Co., Ltd.◎★
MLCC Finance Netherlands B.V.◎★
Nippon Mining of Netherlands B.V.◎★
Nippon LP Resources B.V.◎★
Nippon LP Resources UK Limited◎★
JX Nippon Mining & Metals Chile SpA◎★
Compania Minera Quechua S.A.◎★
JX Nippon Mining & Metals Exploration Peru S.A.C.◎★
JX Nippon Mining & Metals Exploration Chile Limitada◎★
Nippon Caserones Resources Canada Enterprises Corp.◎★
SCM Minera Lumina Copper Chile◎●＊★
Caserones Finance Netherlands B.V.◎★
JX Nippon Mining & Metals Philippines, Inc.◎●＊★
Nippon Mining & Metals (Suzhou) Co., Ltd.◎●＊★
Nikko Fuji Precision (Wuxi) Co., Ltd.◎●★
Materials Service Complex Malaysia Sdn. Bhd.◎●★
Nikko Metals Shanghai Co., Ltd.◎★
JX Nippon Mining & Metals Dongguan Co., Ltd.◎●★
JX Nippon Mining & Metals USA, Inc.◎●★
JX Nippon Mining & Metals Europe GmbH◎★
JX Nippon Mining & Metals Korea Co., Ltd.◎●★
JX Nippon Mining & Metals Singapore Pte. Ltd.◎★
TANIOBIS GmbH◎●＊★
TANIOBIS Co., Ltd.◎●＊★
TANTANIOBIS Smelting GmbH & Co. KG◎●＊★
TANIOBIS USA LLC◎★

* Company names are current as of fiscal 2020.

History of Value Creation

In recognition of our mission as a stable provider of nonferrous metal resources and materials to society, the Group has, since our founding in 1905, strived to generate new value even while answering the various changes in the business environment.
We are determined to continue striving forward, taking on this challenge of contributing to the development of a sustainable economy and society through innovation in the areas of resources and materials.

JX's Growth in Business, and in Value Provided

1905
Established

1914
Built the Hitachi Giant Stack

The rapid growth of the Hitachi Mine's business led to severe smoke pollution in its surrounding area. To deal with the pollution, the Company built what was then the world's tallest stack, at 155.7 meters. It began operation in March of the following year.

1929
Established Nippon Mining

1978
Built new recycling furnace

A new recycling furnace making use of smelting techniques was built at the Hitachi Smelter & Refinery, marking the launch of the Company's Recycling and Environmental Services Business. Using this furnace, we pursued the business of reclaiming valuable metals from plating sludge and other industrial waste.

1992
Nikko Metals Becomes Independent company

Spinoff of Nippon Mining's metals and metal fabrication businesses

2002
Established Nippon Mining Holdings, Inc.

Merger of Japan Energy and Nikko Metals

2010
Birth of the JX Group

The JX Group (JX Holdings) was born as one of the world's leading integrated energy, resources, and materials business groups, conducting business in each of the areas of petroleum refining and sales, oil field development, and metals

2016
Changed Japanese name of JX Nippon Mining & Metals

2017
JXTG Holdings (now ENEOS Holdings) Born

JXTG Holdings was established with the merger of JX Holdings and Tonen General Sekiyu K.K.

June 2020
Relocated Headquarters to the Toranomon area

The Okura Prestige Tower

2021
Net Sales **1,092.1** bil. yen
(fiscal year ended March 2021)
*Consolidated

No. of Employees **9,887**
(as of March 31, 2021)
*Consolidated

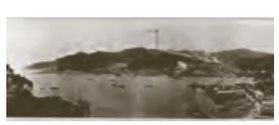
1905
Opened the Hitachi Mine

Company founder Kuhara Fusanosuke opened the Hitachi Mine, launching the resources development and smelting and refining businesses. From the very beginning of its operation, Mr. Kuhara actively promoted mechanization and modernization to improve productivity. The Hitachi Mine pioneered the custom smelter, using its full-fledged facilities to process not only ores from its home mine, but also those purchased from other firms.

Founder
Kuhara Fusanosuke

1916
Launched operations at the Saganoseki Smelter & Refinery

In order to further expand the mining, smelting, and refining segments fundamental to the Company's diversified business, the Saganoseki Smelter & Refinery was built in Oita Prefecture. It was one of the largest such plants in Japan. Even to this day, it remains a key location within the JX Nippon Mining & Metals Group, as a leading-edge smelter boasting worldclass technological capabilities and production capacity.



The Saganoseki Smelter & Refinery in 1916

1964
Launched operations at Kurami Works

The launch of operations at the Kanagawa-based Kurami Works marked the Company's earnest entry into the metal fabrication business. It featured the latest rolling mills, producing phosphor bronze and other copper alloy products. By answering the needs of complex markets for diverse, small-lot, and made-to-order products, as well as advanced technical demands on products, the Company carved out a solid position for itself in the metal fabrication field.

Kurami Works just after completion

1985
Launched operations at Isohara Works

The Company entered the electronic materials business in time for the rise of the electronics industry in the 1980s, making sputtering targets for semiconductors and transparent conductive films for liquid crystal displays, as well as materials for compound semiconductors. By establishing the Ibaraki-based Isohara Works as a new main manufacturing center, the Company expanded into development and manufacturing of copper foil and various electronics materials.

The newly-established Isohara Works

2014
Launched production at Caserones Copper Mine

The Group celebrated the official opening of the Caserones Copper Mine, a resource development project in the Republic of Chile fully funded by Japanese entities providing the Group's first copper concentrate shipments.

February 2021
Acquired all equity in the Caserones Copper Mine through the purchase of equity held by Mitsui Mining & Smelting Co., Ltd. and Mitsui & Co., Ltd.

Caserones Copper Mine

2018
Acquired shares in H.C. Starck Tantalum and Niobium GmbH (now TANIOBIS GmbH)

The Group acquired shares of H.C. Starck Tantalum and Niobium GmbH (now TANIOBIS GmbH), a German manufacturer of metal powders, with an eye to expanding its business areas in anticipation of dramatic demand growth for electronic components and devices.

TANIOBIS GmbH (Goslar Plant)

Value Creation Model

The JX Nippon Mining & Metals Group works to identify and recognize the social issues calling for resolution by JX, and seeks to promote a value creation model in growing sustainably and resolving social issues.

Key Social Trends

Expanding demand for advanced materials

- The spread of COVID-19 has accelerated the advance of the data society, and demand is increasing for smart devices and communication infrastructure.
- As supply shortages of semiconductors and other materials become apparent, demand is increasing rapidly for materials to resolve these shortages.

Global acceleration in addressing climate change

- As environmental issues become more apparent around the world, global companies are accelerating concrete actions to address climate change, particularly toward decarbonization.

Deepening resource shortages/depletion

- With greater resource consumption, competition is intensifying in acquiring high quality, low cost resources.
- There is focus on nonferrous metals to support future infrastructure and growing concerns about depletion

Inputs (Capital)

Financial capital

Intellectual capital

Human capital

Manufacturing capital

Social/Relationship capital

Natural capital

Business Activities (Business Model)

Long-term Vision

By pivoting from being an equipment industry company to a technology-based company, we will realize a highly profitable structure even in the face of intensifying international competition and contribute to the realization of a sustainable society as targeted by the SDGs*.

Focus Businesses — Core of our growth strategy

These businesses, like advanced materials and technology-based recycling, establish competitive advantage by using technology to differentiate

- Expanding the scope of revenue by building a system that constantly maintains a product/technology lineup with small-lot, diverse production and high profitability

Base Businesses

Businesses such as the mineral resources business and the smelting and refining business where we will enhance competitiveness and bolster the organizational foundation by further improving production efficiency, etc.

- Implementing structural reforms (e.g. thorough optimizations and reviewing resource portfolios) to maintain a certain level of profits

Materiality ▶ P37

Given the business environment where the Group operates and society's changing demands, we have established six materialities (priority issues) that we will prioritize, incorporating them into specific activity plans.

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Provide Advanced Materials That Support Lives and Lifestyles	▶ P43
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Outputs (Products/Services)

Treated rolled copper foil

Sputtering targets

High-purity tantalum powder

Refined copper

Titanium sponge

Outcomes (Created Value)

Advanced materials-derived products support a data-driven society, contributing to rich, convenient lifestyles

Limited resources are effectively utilized through recycling technologies, realizing a rich and sustainable world

Conducting community-based social contribution activities at domestic & overseas locations, as we have consistently valued harmony with local communities since our founding

* SDGs: An abbreviation for the Sustainable Development Goals.
This is a shared set of development goals among the international community to achieve a sustainable society with a deadline of 2030, adopted at a United Nations Summit in September 2015.

Murayama Seiichi
President and Chief Executive Officer
JX Nippon Mining & Metals Corporation

Message From the President

A Technology-Based Company Responding to the Expectations of our Stakeholders and Contributing to the Achievement of the SDGs

A Review of the First Year of our Medium-Term Management Plan

A Year of Steady Results Toward Our Long-Term Vision 2040

Fiscal 2020 began with the onslaught of the COVID-19 pandemic, which had an enormous impact on the world economy and society. I want to take this opportunity to express my heartfelt condolences to those who have been affected personally or through family members and friends, as well as for businesses that have been interrupted or forced to suspend operations.

The business activities of the JX Nippon Mining & Metals Group were also affected in ways more significantly than we expected. We have continued operations while engaging in strict infection control measures, including the restriction of personnel in and out of our facilities. In addition to daily safety measures and health management, employees have borne the heavy burden and restrictions of infection control measures, all while continuing with production, implementing improvements, and conducting energy-saving activities. These efforts are ongoing, and I am very grateful that we have been fortunate in not experiencing any production disruptions or restrictions at our Japanese facilities.

Fiscal 2020 was the first year of our medium-term management plan, which is very important to us. This year was important because it was the first year toward the group's Long-Term Vision 2040, and served as a time to plant seeds for this vision. In retrospect, I believe we achieved steady progress, thanks to the efforts of everyone in the group. In particular, we acted with a sense of urgency in expanding the capacity of our Focus Businesses, which is a key element of our growth strategy. This expansion came in answer to the rapid increase in demand for telework and other communications caused by the COVID-19 pandemic, which led to a dramatic increase in demand for the group's functional materials and thin film materials. Our manufacturing facilities responded quickly to increase production. I believe we fulfilled our responsibility to supply products that meet the needs of our customers and society.

At the same time, we strengthened the competitiveness of our Base Businesses, building a structure for the future. In February 2021, we completed the acquisition of the remaining interest in the Caserones Copper Mine. This mine is a key Mineral Resources Business that will add strength to our group by increasing the volume of clean ore. Our Metals & Recycling Business is another pillar of our Base Businesses. Here, we expanded our collection and treatment facilities in Taiwan and established a new distribution facility near Saganoseki, boosting our recycling business as we made progress in line with plan. Unfortunately, we experienced a decrease in production at the Caserones Copper Mine due to COVID-19-related restrictions on the number of workers allowed. Conditions for purchasing

ore in our Metals Business weakened due to supply disruptions at certain mines. However, higher prices for copper and precious metals supported profit performance, and we achieved higher year-on-year profits for fiscal 2020.

We believe the driving force behind these results was the awareness and pride of our employees in the fact that we supply materials indispensable to the achievement of digital societies so in demand across the world. Those involved in our Focus and Base Businesses are fully aware of the role that our group plays in the supply chain to provide materials needed by society. I believe this accounts for the highly motivated efforts of our group employees.

The relocation of our head office in June 2020 is also part of the measures to achieve our long-term vision. We secured the capacity based on our plan to increase personnel in conjunction with the strategic implementation of our medium-term management plan. An even larger goal, however, is to create a new work environment that encourages agile business management and the fostering of human resources capable of creating added value. These elements are indispensable for achieving the goals for which we aim today. What we require of our human resources in the future is a new behavior--the ability to create toward innovation. Our new head office is equipped with a variety of mechanisms for greater interaction with technology, improved work styles, and more interpersonal connections. We hope to use these head offices as a model to inspire a new awareness throughout the group. The new head offices also offer Activity-Based Working (ABW), aiming to foster a corporate culture and attitude by which employees choose where, when, and how to work, enjoying greater freedom to move and create.

Steering Toward ESG Management
Building ESG Systems for a New Stage of Growth

Our Long-Term Vision 2040 redefines the JX Nippon Mining & Metals Group business, while also declaring our transformation into a technology-based company. This definition and declaration demonstrate our commitment to contributing to the world through our Focus Business with high-value-added and differentiated advanced materials. At the same time, we will maintain our Base Businesses as a strong foundation for the present and future of society. Our medium-term management plan calls for a number of measures, designed with the necessary organizational structure, corporate culture, and climate in mind. We believe that ESG initiatives are important measures by which society recognizes the value of a corporation. Therefore, we have identified ESG initiatives as an important management issue.

We implemented two measures during fiscal 2020 to pursue ESG management. First, we reviewed the materialities associated with group businesses. We took a fresh approach from the perspective of prioritizing activities that leverage the characteristics of our nonferrous metals businesses in contributing to sustainable societies. We also clarified our vision by adding a new element to the mission of our Focus Businesses, which serve as a core of group growth: provide advanced materials that support lives and lifestyles.

In October 2020, we established the ESG Promotion Department to give shape to the idea of addressing ESG as an important management issue. The ESG Promotion Department is responsible for formulating ESG strategies from a group-wide perspective, ensuring such strategies are reflected in group management. The department also plays a central role in engaging with issues, highlighting the importance and seriousness of our ESG initiatives. Led by the ESG Promotion Department, we identified the following three priority issues in light of international trends and stakeholder demands: addressing climate change, contributing to a recycling-oriented society, and complying with international norms and initiatives. We plan to make capital investments of 300 billion yen over the next three years, of which 20 billion yen will be set aside for ESG investments to stimulate various activities, including decarbonization.

Responding to Priority Issues
Accelerating Activities for Group-Wide Decarbonization and Contributing to Recycling-Oriented Societies

The perspective of ESG management is indispensable to enhancing corporate value in the future. Awareness has never been higher in the international community with respect to measures for fighting climate-change and the creation of recycling-oriented societies, in particular. The JX Nippon Mining & Metals Group set a target to reduce our own CO_2 emissions to 50% of fiscal 2018 emissions as a step toward achieving net zero CO_2 emissions by fiscal 2050. We have also committed to net zero CO_2 emissions by fiscal 2050. However, recognizing the need to accelerate our response to social trends, we moved up the time frame for achieving the interim target of 50% CO_2 emissions reductions by ten years, aiming to achieve this goal by fiscal 2030. This is an important goal for our management and we are working hard to achieve this target.

We have already launched company-wide activities to this end. The first of these activities was the switch to CO_2-free electricity at the Caserones copper mine in January 2021. This is an effort to eventually eliminate CO_2 emissions from procured electricity, which today accounts for about 60% of the group's total CO_2 emissions. We switched to CO_2-free electricity at the Isohara Works and Kurami Works in April and the Saganoseki Smelter & Refinery in June. And we will continue to take steps to transition all works to CO_2-free electricity. In addition to a transition to CO_2-free electricity, we will also generate renewable energy at each works facility. Our first priority is to make steady progress in activities to achieve our interim goals. However, we expect technological development incorporating innovative ideas will be an essential part in reaching our final goal.

As a corporate group that handles nonferrous metals, the JX Nippon Mining & Metals Group will engage head-on in measures that contribute to decarbonization and the structure of a recycling-oriented society. We will also embrace the challenge of making dramatic increases in the ratio of recycled materials used in copper smelting. By using recycled materials throughout the supply chain, we will reduce energy consumption and promote the effective use of resources. In addition, we intend to utilize lithium-ion battery (LiB) recycling technology, which is a technology we have been developing over many years in our recycling business. Here, we will strive to establish closed-loop recycling for in-vehicle LiBs to support the popularization of electric vehicles.

Our nonferrous metal materials are indispensable for the spread of renewable energy and improved energy efficiency. We believe we will contribute to the decarbonization of society and accelerate progress toward recycling-oriented societies by providing a stable supply of high value-added materials, as well as through the pursuit of technological innovation through advanced materials. In addition to achieving net zero CO_2 emissions by fiscal 2050, we intend to create sustainable societies through our own technologies. We will continue to communicate this aspiration to our employees internally, as well as to external parties.

The Role of JX Nippon Mining & Metals
Supporting Cutting-Edge Advancements Toward Solutions to Social Issues, and Working Together With Stakeholders for a Brighter Future

Dealing with nonferrous metals provides a clear view to changes in the world. Our group has responded to these changes by providing nonferrous metal materials critical for society. To this end, we continue to create and innovate, which is a cycle that will propel us into the future. To keep up with the speed of change, we must quickly identify gaps between our current state and what lies ahead in our changing society. In other words, this gap represents a risk. To eliminate this risk, we must observe society carefully, anticipate the correct direction, and run toward this target. This approach requires creativity, logical thinking, and, above all, a courageous attitude in taking on challenges. If we shrink in fear of challenges, we will never overcome the risks that arise due to a changing society.

The ideal vision we hold for our group is to use our own technological capabilities to create advanced materials that create societies needed by the world, leading the way into a new era. This is a very big challenge. And without the proper attitude, we will not continue to grow as a company. The structure and cycle by which we continue to support cutting-edge solutions to social issues are elements we have maintained firmly since our founding. We will never allow a breakage in this structure and cycle as we move forward.

We will continue to meet the expectations of our stakeholders, working in collaboration as we progress toward a new society.

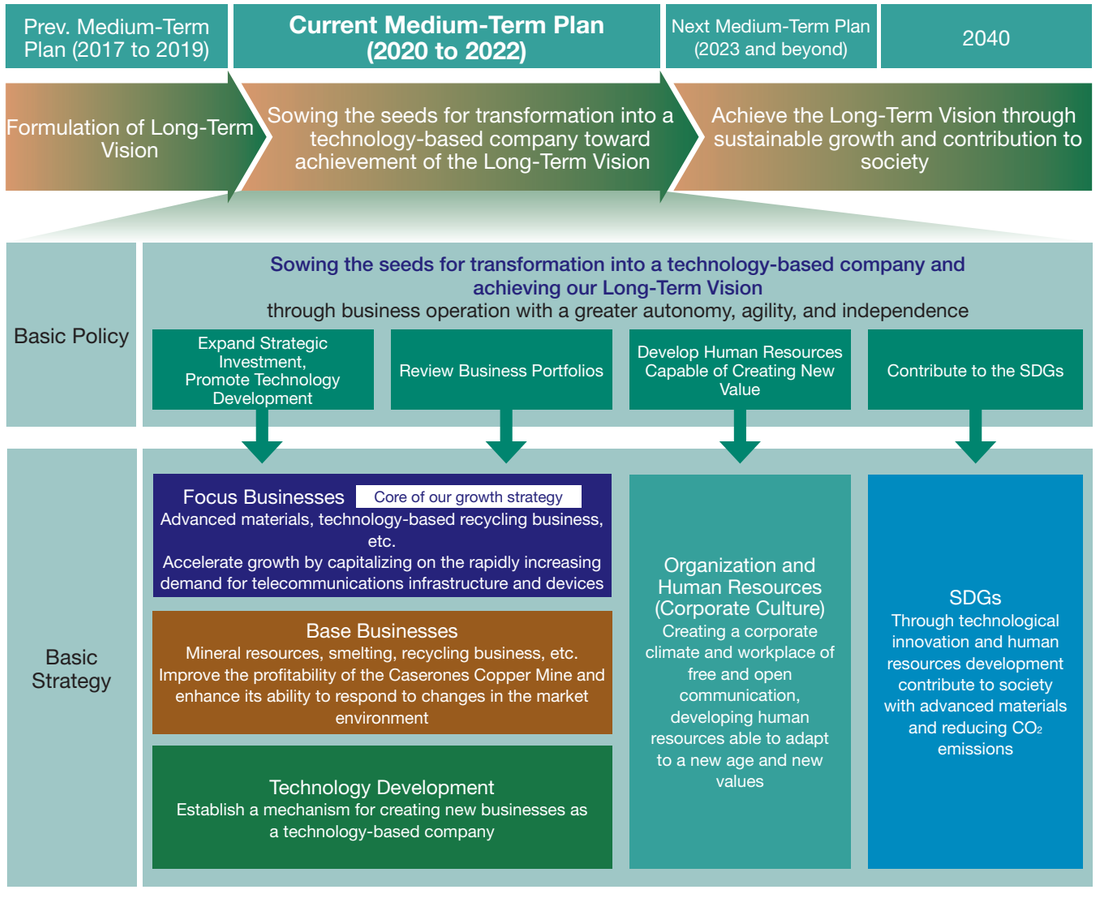
Medium-Term Management Plan for Fiscal 2020 to 2022

Beginning in fiscal 2020, the medium-term management plan is positioned as a three-year period for sowing seeds in anticipation of transforming into a technology-based company as set forth in the JX Nippon Mining & Metals Group Long-Term Vision 2040 formulated in May 2019. We are accelerating our efforts in new growth areas. We are promoting initiatives, human resource development, and the creation of an organizational culture suited to the characteristics of each business. We are implementing corporate management that further enhances autonomy, agility, and independence.

The JX Nippon Mining & Metals Group Long-Term Vision 2040

By pivoting from being an equipment industry company to a technology-based company, we will realize a highly profitable structure even in the face of intensifying international competition and contribute to the realization of a sustainable society as targeted by the SDGs

Role of the Current Medium-Term Plan



Summary of Business Results for Fiscal 2020

In the beginning of fiscal 2020, the global economy deteriorated rapidly due to the impact of the spread of COVID-19. Following that, there were signs of a recovery due to the supportive measures taken by various countries and the gradual resumption of economic activities. However, in the second half of the fiscal year, the impact of COVID-19 hit again, and a full-scale recovery was not achieved.

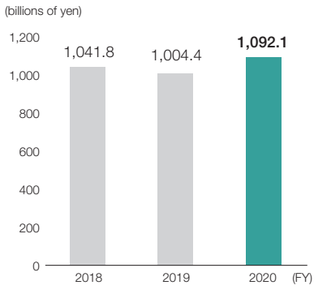
Copper prices temporarily fell due to concerns of a recession caused by the spread of COVID-19. Demand for refined copper however later recovered in China, while supply from copper mines in South America decreased. As a result, the starting price per pound rose from 216 cents to 401 cents at the end of the period.

Under this business environment, the Group continued business activities by taking thorough measures to prevent the spread of infection. Operations at the Caserones Copper Mine also continued with the implementation of measures to prevent the spread of infection. However, due to delays in mining, the production volume decreased compared to the previous year. On the other hand, the sales volume of each product in the Functional Materials Business and Thin Film Materials Business generally exceeded the previous fiscal year. This was mainly due to an increase in demand in the high-functional IT field, including smartphones, servers, and telecommunications infrastructure due to the increase in telework.

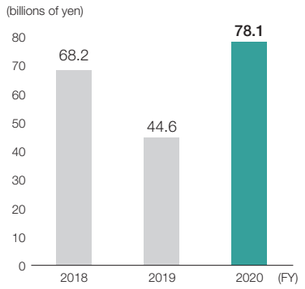
As a result, operating profit for the current fiscal year was 78.1 billion yen. This was mainly due to higher copper prices and increased sales of functional materials and thin film materials, despite the impact of lower production at the Caserones Copper Mine.

Financial Performance (Consolidated, IFRS)

Revenue

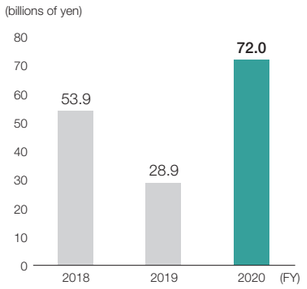


Operating Profit

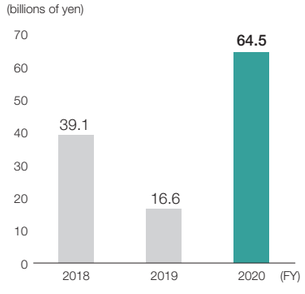


* Includes impact from inventory.

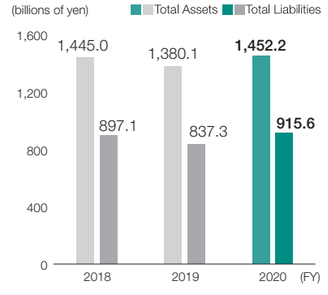
Profit before Tax



Net Income Attributable to Owners of Parent



Total Assets and Total Liabilities



Changes in Social Trends

With significant changes in social trends, the Group formulated a Long-Term Vision out of a sense of crisis about continuing with our conventional business model. We are now aiming at transforming ourselves into a technology-based company. In particular, fiscal 2020 saw changes in the industry structure due to the impact of the spread of COVID-19, growing momentum toward SDGs and ESG management, and accelerated movement toward social demands for carbon neutrality. The environment surrounding the Group is changing even more drastically. By clearly understanding these social changes, we aim to fundamentally change our organizational culture.

• Environmental Awareness

Creating the Long-Term Vision		At Present	
Expanding Needs for Advanced Materials	In addition to IT and mobility, digital data is being used in a variety of industries, including healthcare, energy, and construction. The need for advanced materials used in these fields will further expand	Expanding Needs for Advanced Materials	• The spread of COVID-19 has accelerated the development of a data-driven society, and demand for smart devices and telecommunications infrastructure has increased • To solve the shortage of semiconductors, demand for materials is rapidly increasing
Shrinking Domestic Market/ Focus on Emerging Economies for Sustainable Growth are Issues	The domestic market is shrinking due to the declining birthrate, aging population, and the industry hollowing out. The focus of economic growth is shifting to emerging economies in Asia and other regions, but the challenge is to deal with the environmental problems that are beginning to emerge even in emerging economies	Accelerating the Global Response to Climate Change	• As environmental problems become more apparent around the world, global companies are accelerating their response to climate change, especially concrete actions for decarbonization
Increasing Scarcity and Depletion of Resources due to the Expansion of the Middle Class	As the middle class increases, the amount of resources consumed also increases Acquiring good quality and inexpensive resources will be subject to competition. Resource shortages and depletion, as well as uneven regional distribution, will become more serious	Growing Scarcity and Depletion of Resources	• With the increase in resources consumed, competition for high-quality, inexpensive resources is intensifying • Focus on non-ferrous metals to support future infrastructure and growing concerns about depletion

Targets and Progress of the Medium-Term Management Plan for Fiscal 2020 - 2022

When we formulated the current medium-term management plan, we set the operating income target at 170 billion yen for the three-year cumulative period. However, against the backdrop of the aforementioned business environment, we expect to increase profits in both Focused and Base Businesses. In the Focus Businesses, we increased our sales target by 15 billion yen from the original target set in the medium-term plan due to increased sales resulting from strong demand growth. Excluding the impact of the copper price hike and the spread of COVID-19, we expect Base Businesses to post higher earnings than planned at the time of formulating the medium-term plan. Based on this outlook, we will continue to make company-wide efforts to establish earnings and a financial base. In addition, we will promote the use of ESG-related indicators as important management indicators.

Operating Profit

(Unit: billions of yen)

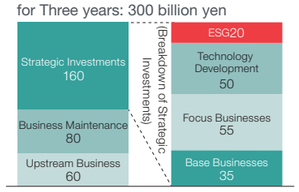
	Results for Fiscal 2020	Outlook for Fiscal 2021	2020-2022 Three-year Cumulative Total	
Functional Materials Business, Thin Film Materials Business, Other	31.1	36.0	115.0	Focus Businesses
Mineral Resources Business	34.9	32.0	187.0	Base Businesses
Metals & Recycling Business	27.3	18.0		
Common Business Expenses	(15.2)	(26.0)	(52.0)	
Total	78.1	60.0	250.0	

The outlook for Fiscal 2021 and the three-year cumulative outlook are as of May 2021.

• Strategic Investment

In the medium-term plan for fiscal 2020 - 2022, we will invest 300 billion yen over the three years in the development of advanced materials. Of this amount, 160 billion yen will be allocated to strategic investments for future growth, including capacity expansion, development of new materials, and exploration of rare metal mining interests. In addition, we will redefine our ESG investment quota of 20 billion yen to stimulate ESG activities such as decarbonization and resource recycling.

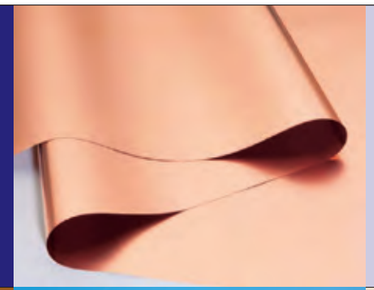
Cumulative Total of Investment Plan for Three years: 300 billion yen



(Unit: billions of yen)

Our Group Initiatives

Focus Businesses



- Significantly increase production capacity for semiconductor targets
- Solidify the supply chain by flexibly increasing production capacity in parallel with BCP measures such as strengthening overseas bases in preparation for disasters and geopolitical risks, securing raw materials in cooperation with other companies, and other measures

Base Businesses

- Improve operations at the Caserones Copper Mine, continue to reduce costs at all stages of the process, and strengthen maintenance systems
- Implement plan to increase the collection and processing of recyclable materials and increase the processing volume of recyclable materials by 1.35 times compared to fiscal 2019. At the same time, accelerate the development of technologies for further expansion in the future

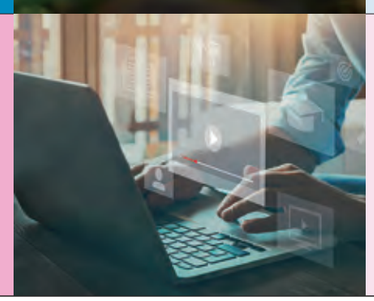
Technology Development

- Nurture and quickly commercialize businesses that will become pillars of the next generation (next-generation semiconductor materials, metal powder for 3D printers, crystalline materials, battery materials, LiB recycling)
- Promote industry-academia collaboration (establishment of a joint research chair with the Graduate School of Engineering, Osaka University, etc.)
- JX Nippon Research Institute for Technology & Strategy Co., Ltd. aims to become a think tank in the field of non-ferrous metals with a diverse pool of high-level human resources

ESG Management

- Promote initiatives to achieve long-term environmental targets (50% reduction of Group CO_2 emissions by fiscal 2030 compared to fiscal 2018, and net zero CO_2 emissions by fiscal 2050) as a response to climate change
- Strengthen the processing of recycled materials in copper smelting to build a recycling-oriented society and establish technology for closed-loop recycling of automotive LiB

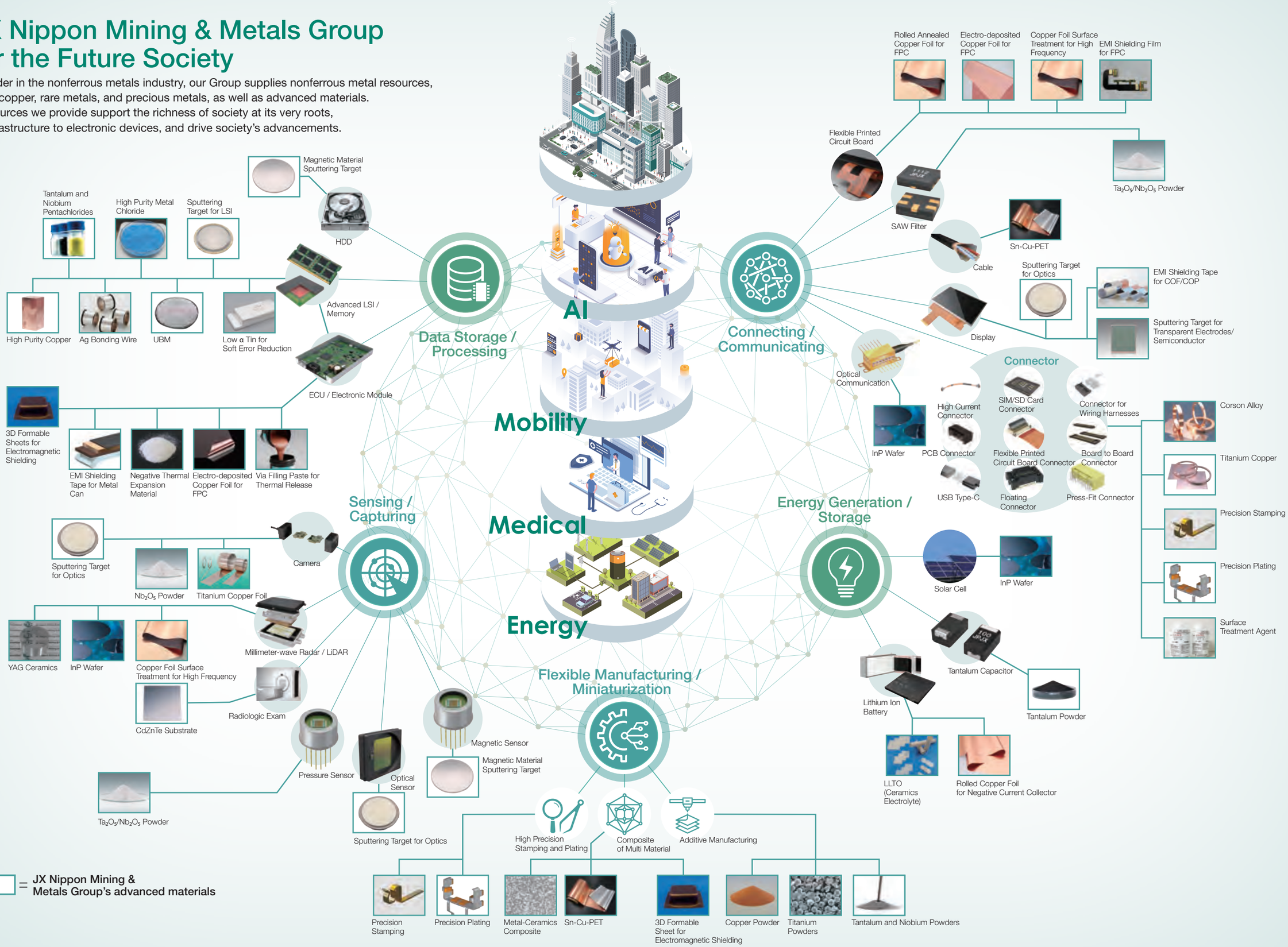
Human Resource Development



- Develop human resources from four perspectives: digital human resources, value-added human resources, ESG human resources, and global human resources

JX Nippon Mining & Metals Group for the Future Society

As a leader in the nonferrous metals industry, our Group supplies nonferrous metal resources, such as copper, rare metals, and precious metals, as well as advanced materials. The resources we provide support the richness of society at its very roots, from infrastructure to electronic devices, and drive society's advancements.



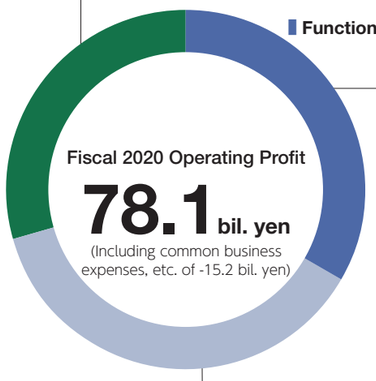
= JX Nippon Mining & Metals Group's advanced materials

Business Areas and Strengths

The Group's strengths lie in its integrated value chain from upstream nonferrous metal material processes–resource development and smelting–to downstream advanced materials processes–manufacturing and development–and even recycling used electronic devices. Furthermore, in each of our businesses, we are constantly in pursuit of innovation in resource and material productivity and working to create new value.

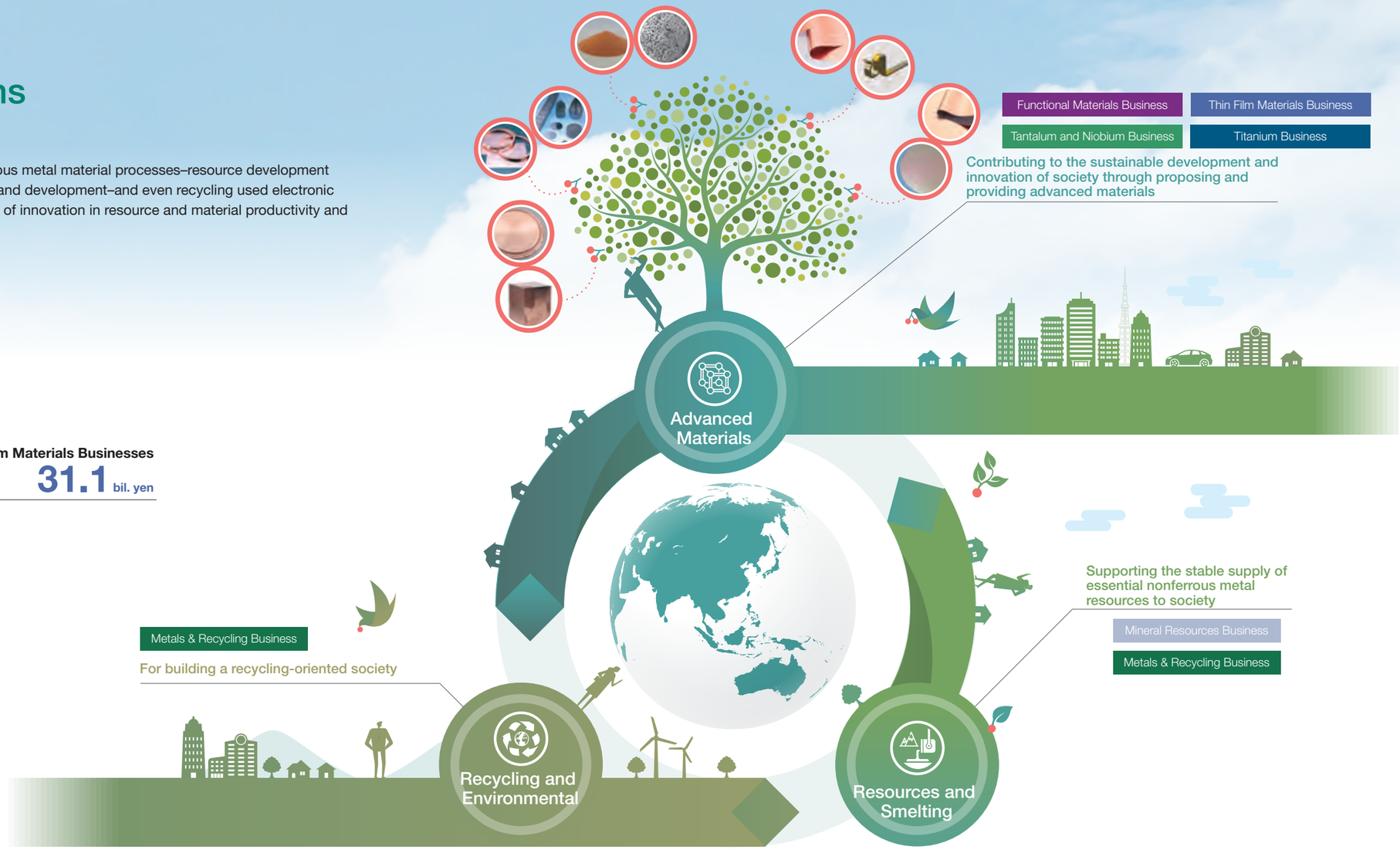
Profit Structure

Metals & Recycling Business
27.3 bil. yen



Functional Materials and Thin Film Materials Businesses
31.1 bil. yen

Mineral Resources Business
34.9 bil. yen

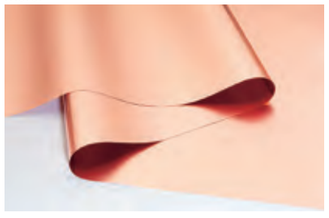


The Competitive Superiority of Our Businesses (Fiscal 2020)

Treated rolled copper foil for FPC

Approx.
80%
of global market share

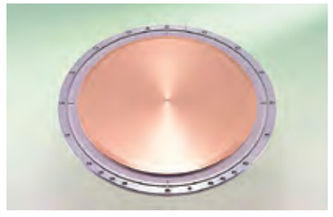
Our outstanding production and quality control systems, as well as our advantageous integrated production capabilities, mean our treated rolled copper foil products boast superior flexibility, thermal resistance, strength, conductivity, and more.



Sputtering targets for semiconductors

Approx.
60%
of global market share

The key factor for sputtering targets for semiconductors is a high degree of purity; JX leverages its highly stable processes to provide these targets, whether in mass production or special development.



High-purity tantalum powder for electronic materials

Approx.
50%
of global market share

TANIOBIS GmbH is a core supplier of high-purity tantalum powder, used in applications such as high-capacity miniaturized tantalum capacitors. In this way, we contribute to the miniaturization of smartphones, computers, and other electronic products.

Equity entitled copper mine production

Approx.
190,000
tons

The Mineral Resources Business is actively involved in promising mine development projects as early as planning stages, contributing greatly to the stable supply of copper resources to Japan.

Annual anode copper production capacity
(Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd.)

Approx.
450,000
tons

Volume of gold recovered from recycling

Approx.
7
tons per year

We use a large-scale copper smelting process to efficiently refine and recover gold, copper, and other nonferrous metal components from copper concentrate and recycled raw materials. By providing a stable supply of high-quality metals and creating a recycling-oriented system worldwide, we are contributing to the creation of a sustainable society.

Titanium sponge production capacity

Approx.
25,000
tons per year

Toho Titanium Co., Ltd. manufactures titanium sponge by adding its own unique technology to the Kroll process, a method for reducing titanium tetrachloride with metal magnesium.

Risks and Opportunities in Nonferrous Metals

Society faces greater and greater uncertainties, including the global spread of COVID-19, and companies continue to find forecasting difficult. In order to achieve sustainable growth, the Group will strive to minimize business risks while steadily linking medium- to long-term business opportunities to growth.

Global Environment / Resource Issues

Environmental Changes and Social Issues

- Deepening climate change issues
- Depletion of raw material resources, rising difficulty of development
- Degrading biodiversity, water resources, etc.
- Tightening environmental regulations and requirements

Risks and Opportunities

Risks

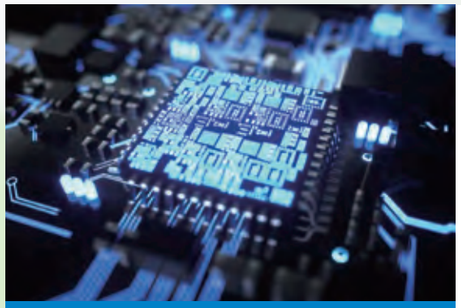
- Strengthening corporate roles in decarbonization
- Increasing physical risks (e.g. flooding/droughts) due to climate change
- Resource nationalism/hoarding
- Increasing environmental action costs

Opportunities

- Growing demand for essential advanced materials in society with low environmental impact
- Growing demand for recycled resources

Our Actions

- Initiatives to Achieve Net Zero CO_2 Emissions ▶P29
- Initiatives for the Circular Economy and Resource Recycling ▶P33
- Initiatives in Environmental Conservation for Water Resources, Biodiversity, Chemical Substance Management, etc. ▶P41



Advancements in Smart Society

- Spread of IoT/AI technologies, etc.
- Growing data transmission and storage volume

Risks

- Obsolescence of existing technologies due to accelerating technological development
- Growing risk of information security incidents and IT infrastructure failures

Opportunities

- Growing demand for advanced materials facilitating the data society
- Growing demand for electronic devices due to growth in emerging countries
- Improving market assessments of supply stability

- Initiatives to Develop Advanced Materials ▶P44
- Establishing Internal Systems and Developing Human Resources for DX Support and Technology-Based Systems ▶P46
- Accelerating Business and Technology Development Through Open Innovation ▶P49

Changes in the Social Environment and Social Culture

- Increasing importance of diversity and diverse work styles
- Coexistence with the local community
- Societal demands for stronger governance
- Stronger needs for disaster resilience

Risks

- Recruitment risk, reputation risk
- Negative impact on business and reputation due to non-compliance, incidents, etc.
- Lack of preparedness/response to disasters and pandemics

Opportunities

- Promoting innovation and securing human resources by promoting diversity
- Improving labor productivity and motivation by introducing diverse work styles
- Increasing corporate value by promoting coexistence with society and local communities

- Creating an Attractive Workplace ▶P53
- Initiatives for Respect of Human Rights ▶P61
- Initiatives for Coexistence and Co-Prosperity With Local Communities ▶P65
- Initiatives to Strengthen Governance ▶P69

Functional Materials Business

Employing advanced metal fabrication technology cultivated over the years of business, the Company has become a global supplier of copper foils for FPC, our mainstream product used in flexible circuit boards, as well as of precision Cu alloy products including titanium copper, Corson alloy, and phosphor bronze - all used in connectors and other parts. We are also engaged in precious metal plating and stamping, as well as other processes, on a global scale.

Key Strategies

- Expand applications of the rolled copper foil and advanced copper alloy products, and improve profitability
- Strengthen production capacity to expand business

Review of Fiscal 2020

The current COVID-19 pandemic has resulted in rapid changes in lifestyles including the spread of working from home and online education that have led to significantly increased demand in the core markets for our products, particularly in the fields of electronic devices such as smartphones, tablets, and PCs, and in communication infrastructure including base stations and data centers. Also, the first half of fiscal 2020 saw a drop in demand in the sales environment for devices used in automobiles but this recovered in the second half of the year, meaning this performed well overall.

In June 2020 we completed our investment into increased production of rolled copper foils and copper alloys that had been underway since fiscal 2017, and by starting full-scale operation, have responded to the current expansion in demand and thus achieved increased production and sales. In response to future growth in demand, we will achieve further improvements in efficiency and productivity, and by bolstering Group manufacturing facilities, will increase manufacturing capacity at each of the Group's sites thus expanding our production structures and strengthening our business foundations.

Hyakuno Manabu
Director and Senior Executive Officer, General Manager, Functional Materials Division, Senior Executive Staff, Technology Group
JX Nippon Mining & Metals Corporation

Outlook for Fiscal 2021

Demand for our advanced functional materials has remained strong from fiscal 2020 centered around the electronic device market and communications infrastructure market, and sales have remained strong going into fiscal 2021. The current expansion in demand is significantly advancing the development of the IoT/AI society, and this is expected to further accelerate in conjunction with the further full-scale deployment of 5th generation (5G) mobile communication systems which had been delayed as a result of trade friction between the U.S. and China.

In a society in which we need to achieve SDGs and become carbon neutral, we expect to see expanded demand for new applications such as the NEV market, recycling, and energy-savings, requiring more sophisticated and diverse materials characteristics. As a company, we will continue with the development of markets and technologies that anticipate changes in market needs, and strive to further bolster our production systems to address this growing demand.

TOPICS

Establishment of a Joint Venture and Installation of New Facilities to Meet Growing Demand for Advanced Functional Materials

In order to respond to growth in demand for advanced functional materials, Muroran Copper Alloy Co., Ltd. was established in August 2019 jointly with The Japan Steel Works, Ltd. within The Japan Steel Works Muroran Plant, and the installation of a melting and casting furnace was completed in September 2021. This joint venture will increase the Group's production capacity of hard copper alloys such as titanium copper and Corson alloys, and by integrating the steel melting technology and copper alloy manufacturing technologies from the two companies, will contribute to improvements in production technologies for copper alloy materials.

Looking forward, we will continue with the development of technologies that factor in dynamic expansion of capabilities and requirements, and by supplying the advanced functional materials required to achieve and develop our data-driven society, will contribute towards achieving the SDGs propounded by the United Nations.

Muroran Copper Alloy, Co., Ltd. Melting furnace

Thin Film Materials Business

Employing world-class nonferrous metal manufacturing technologies, we are a supplier of a wide variety of sputtering targets including for semiconductor applications, compound semiconductor materials, high-purity metals, and surface treatment. These and many other materials and services, provided on a global scale, find use cases in end products such as advanced devices, leading-edge IT equipment, medical instruments, and electric vehicles.

Key Strategies

- Establish a dynamic supply system to meet demand
- Strengthen new products and new business development capabilities
- Promote use of digital technologies for greater efficiency in manufacturing processes

Review of Fiscal 2020

Against the backdrop of a growth in the overall size of the market driven by an accelerated digital transformation because of the COVID-19 pandemic, the increased demand from people telecommuting and demand from stay-at-home workers has meant an increase in the semiconductor sector-related market. With the aim of responding to future market trends for which further future growth is anticipated, we are implementing capital investments to improve our production capacity. We have decided to move forward with our plan to expand overall process facilities in production facilities for our product's sputtering targets including copper, copper alloys, titanium, and tantalum used in forming ultra-fine interconnects for semiconductors that is part of our 2020-2022 medium-term management plan.

Nakamura Yuichiro
Director and Senior Executive Officer, General Manager, Thin Film Materials Division, Senior Executive Engineer, Technology Group
JX Nippon Mining & Metals Corporation

Outlook for Fiscal 2021

Fiscal 2021 will likely see ongoing uncertainty in the economic environment due to the widespread impact of COVID-19, the continuation of the United States' hardline policy towards China, and the state of Korea-Japan relations. However, the normalization of economic activities through more widespread vaccination, accelerated efforts towards digital transformation by many companies, and the mainstream adoption of 5G, IoT, and ADAS (Advanced Driver Assistance Systems) mean that we expect to see an increase in demand for our products. Furthermore, we expect the need for advanced materials to grow further in the medium to long term. Accordingly, we will steadily implement previously decided capital investment and thus increase our production capacity in order to meet this demand, flexibly responding to customer needs that vary due to changes in the market, thereby gaining their trust.

TOPICS

Expanded Production Capacity for Sputtering Targets for Semiconductors

Sputtering targets used for semiconductors are a mainstay product for the Thin Film Materials Business, mainly used in ultra-fine interconnects in leading-edge logic and memory chips, and demand for these continues to grow along with the move to a data-driven society. Factors such as telecommuting have resulted in increased demand for communications infrastructure and mobile terminals, and the semiconductor market is seeing accelerated growth. Looking forward, this underlying trend is expected to continue with the development of 5G and digital transformations.

We will enhance our production facilities for sputtering targets for copper, copper alloys, titanium, and tantalum used in ultra-fine interconnects for semiconductors, increasing our production capacity by 30% in fiscal 2020, and we are currently working on further expansion. We will continue our efforts to support expanded demand.

Production equipment used for semiconductor-grade sputtering targets such as electrolysis baths (Isohara Works)

Tantalum and Niobium Business

TANIOBIS GmbH (hereinafter “TANIOBIS”), our Germany-based Group company, is one of the world’s leading manufacturers of tantalum and niobium materials, with manufacturing and sales locations all around the globe. Primarily driven by TANIOBIS, we contribute to evolution of the IoT/AI society through stable supply of such products as metal powders used in capacitors and semiconductor materials, high-purity oxides for SAW devices and optical lenses, chlorides for semiconductors, and advanced powder materials.

Iida Kazuhiko
Executive Officer, General Manager Tantalum and Niobium Division,
Senior Executive Engineer, Technology Group
JX Nippon Mining & Metals Corporation

Key Strategies

- In addition to improving productivity and quality in our existing businesses, strengthen our customer-oriented business model
- Generation of items and acceleration of commercialization in new businesses for the expansion of our business foundations

Review of Fiscal 2020

In our existing businesses, sales of high-purity tantalum powder for capacitors have been sluggish since 2019 as a result of inventory adjustments by some major customers. However, this drop in demand has bottomed out as a result of working from home during the COVID-19 pandemic, leading to solid growth in fiscal 2021. Additionally, demand for high-purity tantalum powder for sputtering targets increased thanks to the strong semiconductor market. On the other hand, the market for alloy additives for aircraft engines and gas turbines in which niobium is used has experienced a significant downturn. Further, in new business development, we have been working to expand our business foundations by promoting initiatives targeting product development and the creation of synergies through close cooperation between TANIOBIS and JX Nippon Mining & Metals, as well as with the Toho Titanium Co., Ltd. Group and a range of start-ups. Through these activities, we are meeting the various demands of several customers and creating steady results ahead of market launch.

Outlook for Fiscal 2021

Given the factors of expanded demand from working from home as well as for PCs and communications infrastructure, we expect to see an upswing in tantalum powder for use in capacitors and sputtering targets for semiconductors—both mainstay products for TANIOBIS. However, the future remains uncertain for niobium, but the aircraft industry is starting to see a recovery. Under these circumstances, TANIOBIS will promote customer sales activities that integrate sales and technology to further expand its market share and to optimize the product mix and reduce costs at each site, as well as promote the stable procurement of raw materials. We are actively working towards net zero CO_2 emissions through measures such as switching over to 100% renewable energy at the Goslar plant. In new businesses as well, we will promote the early commercialization of new products under development, with a focus on minor metals and functional powders.

TOPICS

Promotion of Customer First Project

As of fiscal 2020, we have developed the Customer First Project—a customer-focused business model—that utilizes the advanced technology and outstanding production processes of TANIOBIS in order to promote customer-centric sales, development, and manufacturing. We have established technical centers at each of our manufacturing locations, and are working to discern customer needs by developing and improving products while taking their opinions on board. This approach has garnered high praise from customers because it provides a one-stop sales, research, and production service with increased convenience, and it has been effective for expanding sales. Looking forward, TANIOBIS will contribute to bringing about a IoT/AI society by meeting market expectations through ensuring a stable supply of high-quality advanced powder materials centered around tantalum and niobium.

TANIOBIS GmbH Goslar plant

Mineral Resources Business

Since acquiring equity at the Caserones Copper Mine in 2006, we have taken a central role in its development, with copper concentrate production beginning in May 2014. We have also invested in some of the world’s largest copper mines, including Los Pelambres and Escondida. The amount of copper produced (total equity base) reached about 190,000 tons in fiscal 2020.

Narui Eiichi
Executive Officer, General Manager Mineral Resources Division,
Senior Executive Engineer, Technology Group
JX Nippon Mining & Metals Corporation

Key Strategies

- Establish a Stable Operating System and Enhance Business Value in response to the acquisition of all interests of the Caserones Copper Mine
- Seek and promote new projects (exploration, development, and operation) with a prospect of supplying raw materials to our midstream and downstream businesses

Review of Fiscal 2020

For the Caserones Copper Mine, in February 2021 we acquired all of its interests held by joint investors Mitsui Mining & Smelting Co., Ltd. and Mitsui & Co., Ltd. In operations, as measures to prevent the spread of COVID-19, we expanded our cafeteria facilities to enable social distancing and rearranged operations of personnel transportation; however, the production amount decreased compared to fiscal 2019. In addition to the Caserones Copper Mine, the Los Pelambres Copper Mine and the Escondida Copper Mine in which we are investing, we have also continued with operations while ensuring COVID-19 prevention measures are in place. The facility expansion plan for the Los Pelambres Copper Mine is re-scheduled to be completed in the second half of 2022 based on the impact of the temporary suspension to prevent the spread of COVID-19.

Outlook for Fiscal 2021

While continuing with our measures to prevent the spread of COVID-19 in the Caserones Copper Mine, we will further improve our profitability by implementing action plans for key issues in operation that could increase operation level and promote cost improvements.

Regarding to the Los Pelambres Copper Mine, we will focus on the completion the expansion plan started in fiscal 2019. Also, with a prospect of starting businesses, we will move forward with the investigation and study of various minerals around the world including minor metals and silicified ore in order to achieve stable supply of raw materials based on future needs in our midstream and downstream businesses.

TOPICS

Acquisition of All Interests of the Caserones Copper Mine

In February 2021, we acquired a full interest of the Caserones Copper Mine. As a result, we have acquired 100% of the rights for high-grade and clean copper concentrates of the Caserones Copper Mine, which is becoming more valuable as a raw material for smelters because the copper grade in concentrates is decreasing and impurities are increasing worldwide. Increasing the supply of clean copper concentrates will increase the processing capacity of smelters, allowing them to process more materials to recycle. Thus, securing the high quality copper concentrates from Caserones is extremely important for our smelters, and contributes to the competitiveness of our Metals & Recycling Business.

Caserones Copper Mine

Metals & Recycling Business

Through the smelting process, we efficiently produce high-quality metal ingots such as copper and precious metals from copper concentrate and recycled materials, and ensure a stable supply of these to Japan and regions throughout Asia. Furthermore, our recent increase in the processed amounts of recycled materials is contributing to the creation of a sustainable, Recycling-oriented society. In our detoxification processing treatment of industrial waste materials, we also use incineration and melting technologies cultivated in smelting characterized by “zero emissions”: No generation of secondary waste destined for disposal to landfill. This is contributing to the prevention of environmental pollution within Japan.

Yasuda Yutaka
Director & Senior Executive Officer, General Manager, Metals & Recycling Division, Deputy General Manager, Technology Group
JX Nippon Mining & Metals Corporation

Key Strategies

- Integrated Management of Metals Business and Recycling Business
- Pursue the “best earnings feed mix” of copper concentrates and recycled materials (increase the ratio of recycled materials) to maximize business earnings

Review of Fiscal 2020

In April 2020, we launched the Metals & Recycling Division by restructuring business operations in order to integrate management of the Metals Business and the Recycling Business, both businesses are relied on the Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd as a major production base. Through this, we are working to increase margins, reduce costs, and stabilize operations.

In the Metals Business, the international sales price of sulfuric acid plunged particularly in the first half of this fiscal year, mainly due to the impact of the spread of COVID-19. In addition, tight supply and demand conditions for copper concentrates led to gradually worsening purchasing conditions. Given this, we put in place measures to improve profitability including the increased collection of high-margin raw materials, and reduced costs. In the second half of this fiscal year, monetary easing policies in various countries coupled with the recovery in the Chinese market led to increased metal prices, which bolstered an improvement in earnings.

In the Recycling Business, while the collection of recycled raw materials saw a temporary slowdown due to sluggish economic activities attributable to COVID-19, rising metal prices meant the conditions for the scrap market remained strong in the second half of the fiscal year, seeing an increase in both collection volumes and margins.

Outlook for Fiscal 2021

While continuing with safe and stable operations at Operating sites such as the Saganoseki Smelter & Refinery, we forecast that purchasing conditions for copper concentrate will continue to be sluggish. Given these conditions, we will undertake a variety of measures in order to maximize profits. Specifically, increased investment in facilities at the Saganoseki Smelter & Refinery which is working towards increased processing of recycled raw materials coupled with efforts to increase procurement of those means pursuing an increase in processing of high-margin materials and a best earnings feed mix. We will also strengthen our business and work to make SDGs a reality through initiatives such as more efficient logistics improving operational efficiency and reducing costs, and commencing the purchase of CO_2-free power aimed at achieving net zero CO_2 emissions.

TOPICS

Initiatives to Increase Collection and Treatment of Recycled Raw Materials

In order to increase volumes of recycled raw materials that we handle, we have increased the collection and treatment capacity of the Changpin Recycle Center at Nikko Metals Taiwan, one of our main overseas operating sites, by 2.4 times. In Japan, construction work began in August 2020 to establish the JX Metal Smelting Co., Ltd. Oita Recycling Logistics Center (Oita City, Oita Port, Ozai Nishi-ku), a new collection base for recycled raw materials, and operation is scheduled to start in October 2021. Through these initiatives, we will pursue an optimal mix of copper concentrates and recycled raw materials, thereby further increasing our competitiveness.

Oita Recycling Logistics Center

Titanium Business

Titanium, a light, strong metal resistant to corrosion, has wide-ranging uses, from aircraft to desalination plants, electric power plants, and other applications. Group company Toho Titanium Co., Ltd. is engaged in the smelting of titanium, and leverages related materials and technologies to manufacture such products as catalysts (for propylene polymerization) and chemicals (e.g. materials for electrodes and dielectrics in multilayer ceramic capacitors).

Yamao Yasuji
President & Representative Director, Chief Executive Officer
Toho Titanium Co., Ltd.

Key Strategies

- Strengthening revenue base by focusing investment in growth fields
- Rapidly generating revenue from the Saudi Arabia joint venture firm (ATTM)
- Generation and promotion of new businesses

Review of Fiscal 2020

For the Titanium Business, the impact of COVID-19 saw a precipitous drop in the number of airline passengers, and major curtailment in production activities coupled with inventory reductions in the supply chain led to an unprecedented drop in demand for titanium for use in aircraft, along with sluggish demand for general industry applications. Demand for semiconductor applications was strong. However, the Titanium Business continued to face a very difficult business environment. On the other hand, in the catalyst business our sales of the key propylene polymerization catalyst product were largely unchanged from the previous fiscal year, and the chemicals business also performed well due to a pickup in demand for telecommunications-related applications.

Outlook for Fiscal 2021

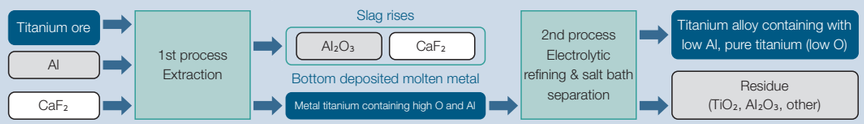
In the Titanium Business, a moderate recovery in demand for both aircraft and general industrial applications is expected, but a recovery to levels prior to COVID-19 may take several years. Long-term contracts revised with major overseas customer last year mean that we expect an increase in sales volumes, and we are planning to achieve an average 80% domestic utilization rate for titanium sponge. In the catalyst business, we expect to see continued strong demand for polypropylene, in spite of the residual impact of COVID-19. We expect the chemicals business to continue doing well on the back of strong demand for smartphones and automotive applications, as well as 5G-related demand, and the start of operation of the No. 4 nickel powder plant completed in April 2021 is expected to contribute to results in the second half of this fiscal year. Looking forward, we will pursue further business expansion in both the catalyst and chemical businesses targeting growth that exceeds market growth.

TOPICS

Achieving Net Zero CO_2 by 2050 Centered on new Titanium Smelting Technologies

Toho Titanium Co., Ltd. has been conducting joint development of new titanium smelting technologies with a U.S. company, partially supported by the NEDO Strategic Energy Conservation Technology Innovation Program. As a result, this was determined to be a very promising technology in terms of economic efficiency, energy consumption, and in reducing CO_2 emissions, and this has been shifted to pilot-scale testing as of fiscal 2021. By introducing other technologies and measures based around this technology, we hope to achieve net zero CO_2 by 2050.

Overview of Titanium Smelting Methods



Special Feature 1

Toward Achieving Net Zero CO_2 Emissions by Fiscal 2050

～The Challenge of Becoming a Leading ESG Company in the Nonferrous Metals Industry～

The world is waking up to the risk of climate change. More companies and countries are making prominent moves toward decarbonization.

The JX Nippon Mining & Metals Group has declared that we will achieve net zero CO_2 emissions by fiscal 2050. And to this end, we have embraced a group-wide challenge to demonstrate leadership in decarbonizing the nonferrous metals industry.

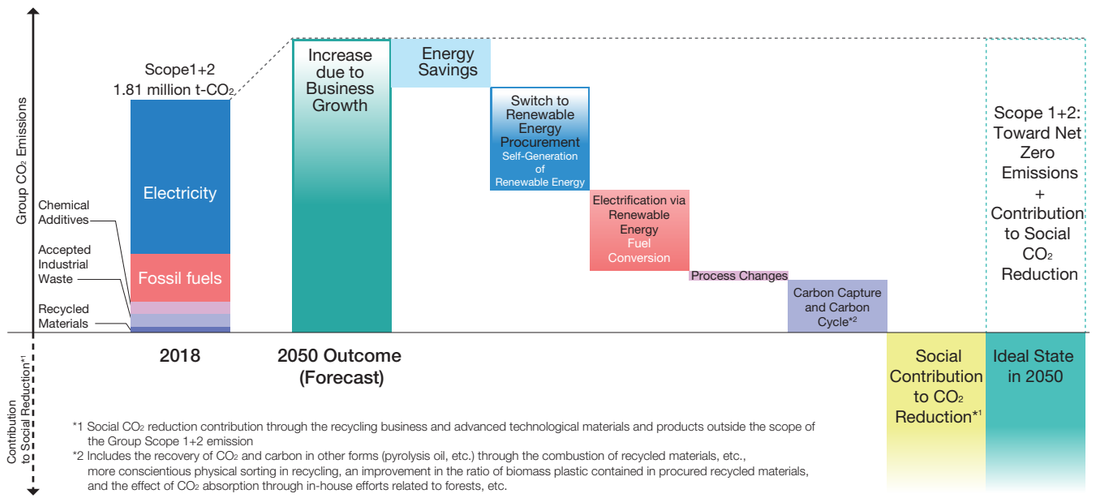
Moving Our Interim CO_2 Reduction Target Ahead by 10 Years: 50% Reduction by Fiscal 2030

In response to the worsening problem of climate change, our group was among the first to participate in the Keidanren *Challenge Zero* decarbonization project, launched in 2020. Under our Long-Term Vision, we established a target of 50% in total CO_2 emissions reductions by fiscal 2040 (compared to fiscal 2018). Our ultimate goal is net zero CO_2 emissions by fiscal 2050. However, recognizing the need to accelerate our efforts in line with social trends, in April, we moved up the timeline for our interim reduction target of 50% by 10 years to fiscal 2030. We made a formal announcement of this policy change in May 2021.

Not Just *Reduction*, but *Total Elimination* The Start of a Group-Wide Challenge

In January 2021, we launched the Carbon Free Project (CFP) with more than 60 members. The team consists mainly of individuals from our ESG Promotion Department, Facilities Engineering Department, and Procurement Department. To reach this major goal of net zero CO_2 emissions, we must focus on *zeroing out* activities, rather than merely extending past *reduction* activities. The CFP is responsible for pursuing company-wide CO_2 reduction activities by prioritizing activities over the long term. The CFP targets all energy- and non-energy-derived CO_2 emissions from our business activities, and we have formed working groups for each category to consider specific measures.

Achieving Net Zero CO_2 Emissions by Fiscal 2050 (Conceptual Diagram)



*1 Social CO_2 reduction contribution through the recycling business and advanced technological materials and products outside the scope of the Group Scope 1+2 emission

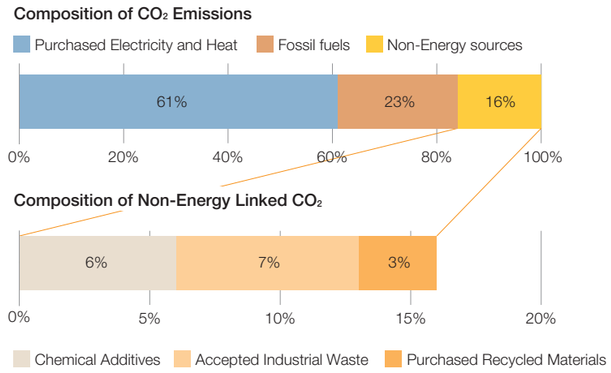
*2 Includes the recovery of CO_2 and carbon in other forms (pyrolysis oil, etc.) through the combustion of recycled materials, etc., more conscientious physical sorting in recycling, an improvement in the ratio of biomass plastic contained in procured recycled materials, and the effect of CO_2 absorption through in-house efforts related to forests, etc.

Total Group CO_2 Emissions

Approximately 80% of the total group CO_2 emissions are energy-linked emissions from electricity and fossil fuels. The remaining 20% comes from non-energy sources, including emissions from purchased recycled materials and accepted industrial waste, as well as chemical additives used in our processes.

Total CO_2 Emissions in Fiscal 2018 (base year)

1.81 million tons



Key Activities 1

Introducing CO_2-Free Electricity at All Operating Locations

In 2021, Most Major Group Locations Will Shift to CO_2-Free Electricity

Of the group's total CO_2 emissions, 61% stem from electricity used in mines, manufacturing plants, factories, and similar facilities. This is a significant amount of CO_2 emissions for which we must take action if we are to achieve net zero CO_2. Accordingly, we have adopted CO_2-free electricity* as a major initiative in fiscal 2020.

In January 2021, we completed the conversion of the Caserones Copper Mine, which accounts for approximately 20% of group electricity consumption (as of 2018), to 100% CO_2-free electricity. In addition, we have made progress in making the switch at major domestic and international locations, including the Isohara Works, the Kurami Works, and Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd. We plan to convert every group operating location to CO_2-free electricity as quickly as possible. We do acknowledge, however, that we must address certain issues in moving forward, including insufficient supplies of renewable energy and frequent systems updates.

*CO_2-free electricity: Electricity generated from methods that do not emit CO_2, rather than the generation of electricity that relies on the burning of fossil fuels or other methods that produce CO_2. CO_2-free electricity includes electricity generated by atomic power, as well as renewable energy from water, wind, and solar.

Caserones Copper Mine

Operating Locations Switching CO_2-Free Electricity Introduction Plant (Finalized)

Switchover Period	Location	Business Area
June 2020	Kasuga Mines Co., Ltd.	Mineral Resources Business
January 2021	Caserones Copper Mine	Mineral Resources Business
	Goslar Works, TANIOBIS GmbH	Tantalum and Niobium Business
April 2021	Kurami Works, JX Nippon Mining & Metals Corporation	Functional Materials Business
	Isohara Works, JX Nippon Mining & Metals Corporation	Thin Film Materials Business
May 2021	Tsuruga Plant, JX Nippon Mining & Metals Corporation	Metals & Recycling Business
June 2021	Saganoseki Smelter & Refinery, JX Metals Smelting Co., Ltd.	Metals & Recycling Business
July 2021	Tatebayashi Works, JX Metals Precision Technology Co., Ltd.	Functional Materials Business
October 2021 (Scheduled)	Hitachi Works, JX Nippon Mining & Metals Corporation	Metals & Recycling Business, Functional Materials Business, etc.
	Mito Plant, TANIOBIS Japan Co., Ltd.	Tantalum and Niobium Business

The switchovers in electricity identified above will amount to approximately 560,000 tons in CO_2 reductions (vs. Fiscal 2018).

Kurami Works, JX Nippon Mining & Metals Corporation

Saganoseki Smelter & Refinery, JX Metals Smelting Co., Ltd.

Key Activities 2 Generating Renewable Energy

Expanding the Use of Renewable Energy Through Off-Site and On-Site Electricity Development

Many countries have established high targets for renewable energy generation, increasing the number of power-generation facilities. Japan has also announced its stance to increase the ratio of renewable energy significantly. However, this volume of renewable energy will not be sufficient to achieve carbon neutrality for Japanese society as a whole.

The JX Nippon Mining & Metals Group is expanding beyond the procurement of CO_2-free electricity, looking to generate and use renewable energy on our own. We have already adopted hydroelectric, binary, and solar power generation facilities at operating locations in Japan and overseas. In the future, we plan to leverage PPA*1 to generate electricity on-site within our facilities. We also intend to develop off-site electricity through self-consignment*2, sending electricity generated from one group location to other locations. In these and other ways, we will expand our use of renewable energy.

Solar panels at the Kakegawa Works of JX Metals Precision Technology Co., Ltd. (Shizuoka Prefecture)

*1 PPA: Power Purchase Agreement. A system whereby a company or other facility owner leases space on its premises or roof for an electric power company to install a solar power generation system. The facility owner uses and pays for the power generated.
*2 Self-consigned transmission: A system in which electricity generated at a company's own power plant in a remote location is transmitted to other JX Nippon Mining & Metals Group facilities through the power transmission and distribution network.

Renewable Energy Facilities and Total Electricity Generated (Fiscal 2020)

(Thousands of kWh)

Kakinosawa Power Plant, JX Nippon Mining & Metals Corporation	Hydroelectric	27,067
Kakegawa Works of JX Metals Precision Technology Co., Ltd.	Solar	683
Shimoda Hot Springs Co., Ltd.	Binary	583
Nikko Metals Taiwan Co., Ltd.	Solar	234

Key Activities 3 Activities to Eliminate Energy Loss

Taking on the Challenge of Zero Energy Loss Through New Approaches to Energy Conservation Activities

The JX Nippon Mining & Metals Group operates in an industry that consumes enormous amounts of electricity. Although we pursue energy-saving activities at every stage of our business, we understand that we must engage in zero energy loss activities from new perspectives, if we are to achieve net zero CO_2. For example, we have invited ideas from the CFP and other group employees to help us achieve zero energy loss. Ideas have included updating facilities beyond the perspective of cost reduction to include CO_2 reduction and conducting bottom-to-top reviews of our facility operations.

TOPICS

Proof-of-Concept for Visualizing Fixed CO_2 in Idle Forests

The ENEOS Group launched a proof-of-concept to visualize fixed CO_2 in idle forests around former mine sites owned by JX Mining & Metals Corporation. The project, designed to promote CO_2 absorption and fixation in forests, is being conducted in collaboration with forest systems development company woodinfo. The project utilizes measurement technology and analysis data gathered via 3D lasers and drones to monitor and provide visibility to CO_2 fixation. We are participating in this project as part of our efforts to convert our idle and closed mining areas throughout Japan into ESG assets.

Key Activities 4 Developing Fuel Conversion and Process Technologies for Decarbonization

Aiming to Decarbonize Processes Through Technological Development

The business processes of the JX Nippon Mining & Metals Group use heavy oil and other energy sources besides electricity. We also use coke as a reducing agent. We will take measures to reduce CO_2 emissions from these energy sources and materials. One such measure is fuel conversion. In the industrial world, technologies for new fuels such as hydrogen and ammonia are being developed for decarbonization. We intend to study the full-scale use of such fuels in our businesses.

CO_2 emissions from the metal smelting process, which is a key part of the group value chain, account for a relatively large portion of our total emissions. To decarbonize the smelting and refining process, the CFP and the Advanced Technology & Strategy Department have begun to work together in drawing a development roadmap.

- **Toward the Practical Application of a Titanium Smelting Process With Virtually Zero CO_2 Emissions**

Toho Titanium Co., Ltd., which is in charge of the Titanium Business, is taking on the challenge of developing a new titanium smelting method that emits virtually zero CO_2. This method is simpler than the current Kroll process and emits no CO_2 directly from the manufacturing process. Not only that, but the new method also reduces power consumption significantly, and is expected to decrease CO_2 emissions from electricity generation by a considerable margin. Toho Titanium Co., Ltd. will conduct a pilot test at its Chigasaki Plant beginning in fiscal 2021, aiming to commercialize the technology by fiscal 2025. Leveraging this technology and other measures, the company will seek stronger cooperation among supply chain partners to reduce CO_2 emissions, aspiring to net zero CO_2 emissions by 2050.

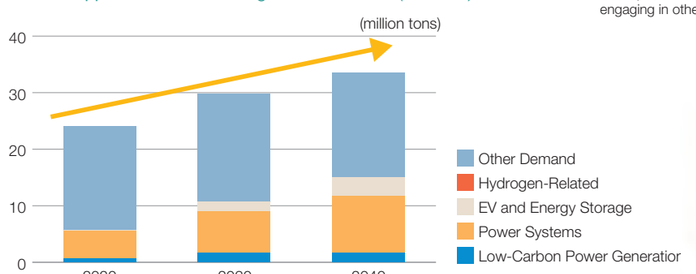
Toward Sustainable Growth as a Company Supporting Carbon-Neutral Societies

The JX Nippon Mining & Metals Group believes that we have an important mission to not only eliminate CO_2 emissions through our business activities, but also contribute to the creation of carbon-neutral societies through our products and services. We have supplied copper to societies since our inception. Copper is a vital material that acts as the blood vessels for energy in supporting carbon-neutral societies. This is due to the particularly excellent electrical conductivity of copper as compared to other metals, as well as the fact that copper can be recycled without a degradation in quality. We expect demand for copper materials to increase as renewable energy sources and electric vehicles become more widespread. In addition, the semiconductor component materials and various high-performance alloy materials produced by our group are essential raw materials for electronic devices and batteries used to control, store, and generate renewable energy. The innovative electronic devices developed using our advanced materials are expected to make a significant contribution to the progress of decarbonization through the digital transformation of society.

At the same time, it is important to stabilize the supply of various materials experiencing rising demand to avoid supply constraints and barriers to decarbonization. In this context, the resource and recycling businesses of the group are very important. The JX Nippon Mining & Metals Group will continue to play a role in the stable supply of materials, finding greater efficiencies in our production processes, making greater gains in energy-saving performance, and expanding the use of recycled materials.

⇒See Special Feature 2 (P.33) for details on how we are strengthening recycling and engaging in other initiatives.

Global Copper Demand Assuming Decarbonization (Estimate)



(Source) *The Role of Critical Minerals in Clean Energy Transitions, (SDS scenario)*; IEA

Examples of Products Supporting Carbon-Neutral Societies: High strength rolled copper foil for special Li-ion batteries

VOICE

Comments From the Leader of the Carbon Free Project (CFP)

Suwabe Takeshi
Executive Officer, General Manager of the ESG Promotion Department, and General Manager of the Planning & Coordination Department
JX Nippon Mining & Metals Corporation

Among the many initiatives in ESG management, addressing climate change, particularly concrete actions toward decarbonization, has become the most important issue. In January 2021, we launched a company-wide project to achieve net zero CO_2 emissions by 2050.

We believe the key to our activities is whether we can work toward net zero on a sustained basis over the long term. For this reason, we began by holding seminars with experts to create a deeper awareness of the necessity for decarbonization. We asked the attendees to work with their departments in formulating a roadmap to zero emissions across a wide range of areas. These areas included energy conservation, CO_2-free power procurement, in-house power generation, fuel conversion, and process innovation. We also discussed how to proceed over the long term based on these roadmaps. To press forward in these challenges, including the adoption of new ideas, we set up an ESG investment framework, defining environmental improvements in terms of monetary value as well. In parallel with these activities, in only the first six months of this project, we already announced a policy to switch to CO_2-free electricity at all operating locations. This policy demonstrates the seriousness with which we are approaching decarbonization as a company. We also announced that we moved up our target for achieving a 50% reduction in total CO_2 emissions by 10 years, from 2040 to 2030.

Moving forward, we will consider how to harmonize our project with other ESG issues. We are a nonferrous metals manufacturer with our own vertical supply chain. This means we are in a position to solve issues in a variety of areas such as the creation of recycling-oriented societies and coexistence with local communities, while still maintaining the line toward decarbonization. We are already working to encourage recycling, and we intend to contribute to local communities through the generation of renewable energy.

The year 2050 may sound far away. And it is true that many initiatives must wait for technological progress and infrastructure development. Nevertheless, we are determined to face the issues of climate change and decarbonization head on. We will accelerate our activities toward net zero emissions through the steps we can take at present, while also adopting and creating new technologies.

Special Feature 2

A Vision for Growth in the Circular Economy

～The Role of the JX Nippon Mining & Metals Group in Building a Recycling-Oriented Society～

The risk of resource depletion has become as serious a social issue as climate change.
As an organization closely connected to these resources, the JX Nippon Mining & Metals Group has set contributing to the realization of a recycling-oriented society as one of its key priorities.
With a clear policy of contributing to resource recycling leveraging our technological capabilities, we have created a vision for our growth in a recycling-oriented society.

A Necessary Shift Toward a Circular Economy

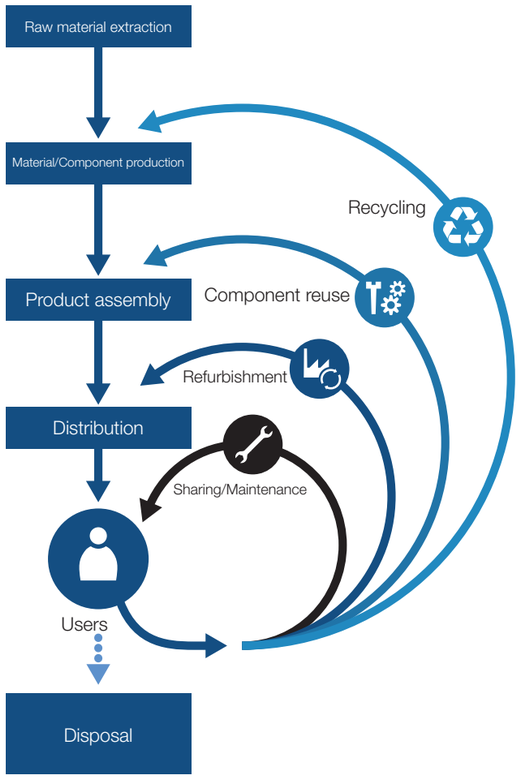
Unlike the traditional linear economic system of “take, make, and waste” for mined resources, the circular economy works to build an ongoing system of maximal use of mined resources, without discarding them, though re-circulation on a variety of levels. This can include sharing, reusing, and recycling.

In recent years, demand has risen for mineral resources alongside development of emerging economies. In the next 10 years, with the spread of electric vehicles and the advent of the data-driven society, the demand for copper and rare metals is expected to increase rapidly, causing great concern about the supply of resources. This has led to calls for a circular economy given the recognition that single use and disposal of the world’s limited resources will impede society’s future development.

Leveraging Strengths in Material Recycling Technology to Pursue Resource Efficiency

At the Group, we believe that the mission of players involved in the materials industry is to minimize resource final disposal through an ongoing cycle while maintaining the maximum value of these resources. In order to realize a circular economy system as shown in the diagram on the right, the Group will begin by putting greater focus on business and technology development in material recycling, the last bastion of resource circulation and an area where we have been making great effort for many years. This will also reduce waste in resources and energy in the supply chain by improving the yield of mining and smelting production processes. In addition, through the supply of advanced materials with high functionality and quality, we will contribute to greater durability and reusability of final products and components, as well as to the spread of digital infrastructure supporting recycling-oriented businesses.

Concept: The Circular Economy



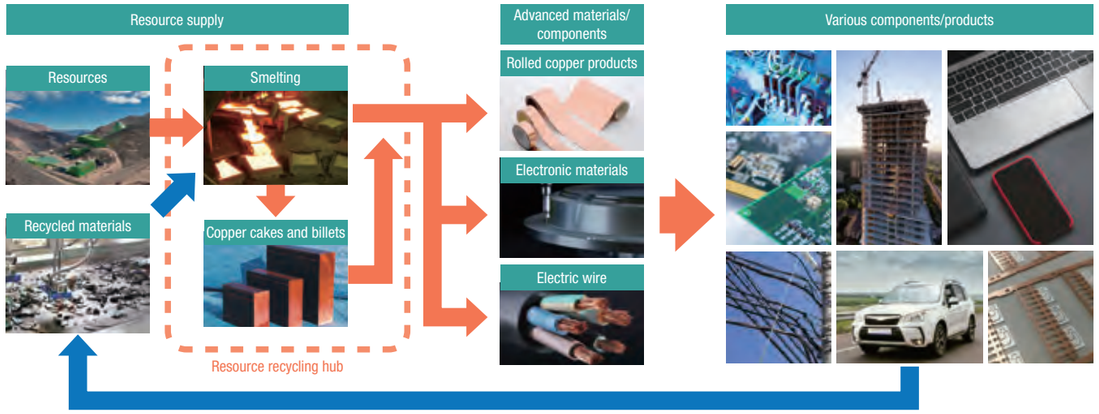
The smallest loop represents the cycle of sharing and maintenance among consumers. If these are difficult to achieve, then resources are circulated to the next larger loop, and so on until the manufacturer refurbishes the product, recovers and reuses components, or reuses these as materials. The “circular economy” refers to an economic system that maximizes the use of limited resources by ensuring this kind of multi-stage loop. The above diagram only covers worldwide circulation for industrially produced materials constrained to our current business domains (technosphere).

Priority Activity 1 **Enhancing Recycled Raw Materials Ratios in Copper Smelting**

Developing Technology for “Hybrid Smelting” to Significantly Increase the Ratio of Recycled Raw Materials

Demand for copper and other metals is expected to continue to grow in response to advancement in the information society and the trend toward decarbonization, but despite that, the development environment for copper natural resources continues to deteriorate, including a decline in the average ore grade. Meanwhile, demand for nonferrous metals is expected to continue growing as renewable energy and electric vehicles become more prevalent. Against this backdrop, the Group has set a goal of significantly increasing the ratio of recycled materials in copper smelting to 50% of total by further improving the highly efficient material recycling technology that we have cultivated over the years, and in order to make significant contributions toward the realization of stable materials supply and of a resource recycling-oriented society.

The Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd. uses the flash smelting furnace method for copper smelting. In this method, copper concentrate and oxygen-enriched air are blown into the furnace, and the heat from oxidation of the sulfur contained in the copper concentrate breaks down the entire material and separates impurities, producing copper anode. Since this requires nearly no external heating, it allows the creation of high quality refined copper with little energy consumption. In addition, since there is plenty of generated heat left over in this process, recycled materials can be fed into this process alongside copper concentrate and smelted together. By taking advantages of the particularities in this smelting method, we recover copper, precious metals, and rare metals. Our target is to further evolve this method of simultaneous smelting and recycling to achieve a “hybrid smelting” method in which the ratio of recycled materials is significantly increased. As of the end of fiscal 2020, the ratio of recycled materials was approximately 12% (by input weight), and we aim to increase this ratio in stages to 50% by 2040. In order to develop this technology, the Group established the Saganoseki Branch of the Technology Development Center in October 2020, and integrated the Smelting Technology Department and the Recycling Technology Department in April 2021 to establish a full-scale technology development system for hybrid smelting. In 2021, in order to strengthen our collection and treatment capabilities for recycled materials, we also expanded the Changpin Recycle Center in Taiwan and established the Oita Recycling Logistics Center of JX Metals Smelting Co., Ltd., located in the city of Oita, where JX Metals Smelting has its Saganoseki Smelter & Refinery. We will take on these goals in cooperation with the various Group companies handling the pre-treatment processes for recycling.



Quantitative Understanding of CO_2 Generated Through Life Cycle Assessments

In parallel with developing recycling technology, the Group is also conducting life cycle assessments (“LCAs”) to quantitatively understand the amount of CO_2 generated in the copper production process. In LCAs, we analyze not only the amount of CO_2 generated within the Group, but also those generated by emissions from the supply chain, including in the production of various raw materials purchased and in outsourced logistics. This allows us to comprehensively analyze and assess CO_2 generation for the copper production process using primary and secondary (recycled) raw materials.

Taking advantage of our business model that is vertically integrated from upstream to downstream operations, the Group is currently setting up an appropriate LCA assessment process and constructing highly reliable LCA data. As we leverage the results of these LCA analyses, we will take a macro view and contribute to cutting CO_2 emissions, resource recycling, and a stable supply of materials in society as a whole.

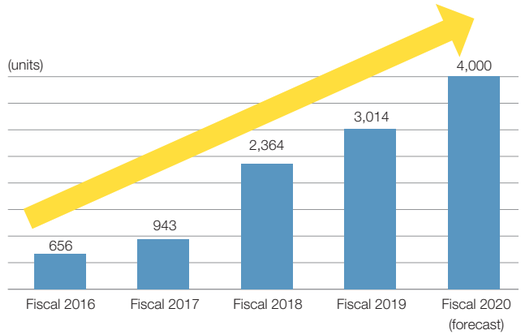
Priority Activity 2 **Establishing Closed-Loop Recycling Technology for LiBs**

A Race to Develop LiB Recycling Technology in Preparation for an Era of Mass Disposal of EV Batteries

The world's leading countries show a striking trend in that they are encouraging widespread use of electric vehicles (EVs) to combat global warming. This has led to concerns that rare metals and other resources required for the lithium-ion batteries ("LiBs") powering these EVs will face depletion and soar in price. Meanwhile, LiBs reaching end of life (EoL) are expected to be disposed of in mass quantities, necessitating a recycling system that can recover resources safely and efficiently. The EU, which is promoting the circular economy as part of core policy programs, has come up with a plan to strengthen EoL LiB recycling by establishing regulations mandating recovery and high recovery rate recycling of EoL LiBs and the minor metals they contain; the EU's plan is to apply this Batteries Regulation (as proposed) beginning in 2022.

We are one of the world's pioneers in launching projects for recovering rare metals from recycling LiBs, and have been operating demonstration trials at the Tsuruga Plant since 2009. As of 2020, we introduced bench-scale equipment (ongoing small-scale testing equipment) at Hitachi Works' Technology Development Center to establish the technology for recovering high-purity metallic salts from EoL automotive LiBs, with the aim of realizing "closed-loop recycling" where we recover resources from these LiBs and use them once again as LiB raw materials. To this end, we have introduced new processes based on this bench-scale equipment at the Tsuruga Plant, and launched verification testing for nickel sulfate recovery in the first half of 2021.

EoI LiBs Recovered Over Time in Japan



Source: "The status of disposed and recycled of new energy vehicle" (August 2020, Japan Automobile Manufacturers Association)

Bench-scale equipment at Hitachi Works

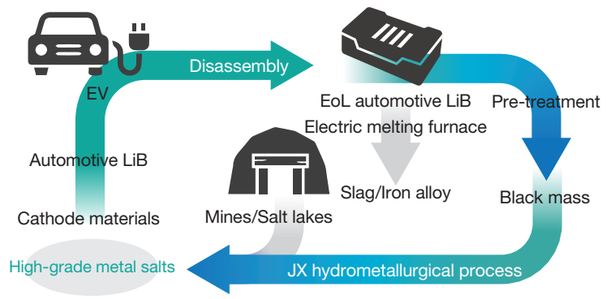
Demonstration testing equipment at Tsuruga Plant

Recycling Focused on Resource Value, Not Measurable by Purely Economic Considerations

Two considerations exist for waste EoL automotive LiBs: minor metal resource utilization and toxicity. Until now, treatment for these waste LiBs has primarily targeted detoxification at low cost, and even when rare metals are recovered from LiBs, they are mainly reused as alloys in so-called "downcycling." However, if we consider the oncoming era of mass automotive LiB disposal, expanding demand for LiBs with the spread of EVs, and the ensuing tight supply of rare metals such as nickel, cobalt, and lithium, we must seek to achieve "closed-loop recycling" where the rare metals in LiBs are used again as raw materials for batteries. For this reason, we have established a process to recover high-purity metallic salts from LiBs based on the unique hydrometallurgical technology we have cultivated. In addition, in order to recover the best raw materials (black mass) in our hydrometallurgical recycling process, we established a new test furnace at Hitachi Works in 2020 and are currently developing optimal pre-treatment technology.

In May 2021, we established a new company, JX Metals Circular Solutions Co., Ltd., to accelerate the development of these technologies. In August 2021, we established the Battery Material & Recycling Promotion Office and integrated the Battery Materials Group within the Technology Development Center to accelerate commercialization by consolidating internal battery-related resources. This has also resulted in a new structure pursuing synergies, such as improving the quality of recycled materials by leveraging our materials development technology and developing technologies with a view to the entire supply chain. In addition, we have established JX Metals Circular Solutions Europe GmbH in Germany to conduct verification testing with the purpose of achieving the commercialization of EoL automotive LiB recycling as soon as possible, in cooperation with automakers and other parties, and to promote comprehensive efforts including materials development.

Conceptual Diagram: LiB Closed-Loop Recycling



An optimal combination of pre-treatment technology and hydrometallurgical direct recovery of metal salts enables resource recycling from battery to battery. Compared to smelting from ores, this process uses less energy to produce raw battery materials, safeguarding resources and contributing to CO_2 reduction.

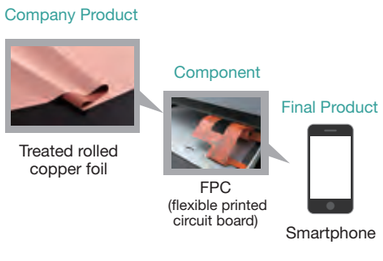
Contributing to the Circular Economy through Product Functionality

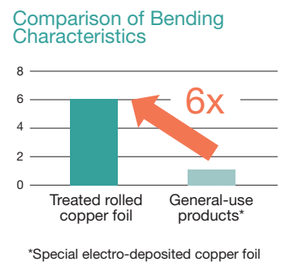
The use of information technologies like AI and IoT is essential for solving global issues, and nonferrous materials like copper and rare metals are becoming increasingly important. As a result, the Group faces strong calls to enhance its production efficiency and recycling of resources, as well as to contribute to enhanced functionality and longer lifespans for products such as electronic devices by making materials more functional.

For example, if the lifespan of electronic components used in information technology devices, automobiles, and other products can be further extended, we can increase the potential for their long-term use through maintenance, higher utilization rates through sharing, and reuse of components through remanufacturing. In this way, the Group's highly durable and highly functional electronic components and materials can contribute to extending the lifespans of these components and final products, as well as to resource conservation. The Group will also continue its efforts as a leader in the development and production of materials that fit into the circular economy.

As one of our measures to promote these efforts, the Group is also promoting industry-academia collaboration and open innovation with external research institutions. In April 2021, we established the JX Nippon Mining & Metals Joint Research Chair for Circular Economy Promotion with Osaka University to study production processes and processing technologies that will contribute to the formation of a circular economy.

- Example Contributions from the Group's Main Products
  - Functional Materials (e.g. Treated Rolled Copper Foil)
    Our highly functional copper products enable smaller and more energy-efficient electronic devices, such as smartphones, through greater design flexibility, and contribute to resource and energy conservation by improving yields in supplier manufacturing processes.
  - Thin Film Materials (e.g. Sputtering Targets)
    Our supply of high-quality materials contributes to improving the production yield for our customers, and to shrinking the physical and resource footprint of electronic devices.
  - Metal Powders for 3D Printers
    We contribute to the reduction of material consumption during manufacturing.





*Special electro-deposited copper foil

Message from the General Manager of the Technology Group

Sugawara Shizuo
Director, Member of the Board, and Deputy Chief Executive Officer
Assistant to the President (Technology, General)
General Manager, Technology Group
JX Nippon Mining & Metals Corporation

In order to build a sustainable society, it is important to achieve both decarbonization and resource recycling. Since our Group is engaged in the entire supply chain for nonferrous metals, from resources and smelting to electronic material products and recycling, our aim is to build a more appealing supply chain for the global environment and society as a whole by utilizing viewpoints like LCA and material flow analysis. We are also working diligently to develop technologies to achieve this goal, and will accelerate our efforts with a view to contributing to the SDGs. Amid the expansion of treatment volume of recycled materials, we have already developed an automatic sorting technology leveraging AI image analysis technology as one technical solution to the problem of pre-sorting items to separate resins from metals. In addition, we have largely established processes for treatment in recycling EoL LiBs for EVs and are now in the process of examining various issues ahead of mass production. On the other hand, the treatment process for recycled materials requires the use of fossil fuels and the incineration of resins contained in scrap. We also need to take on the challenge of establishing recovery technologies and methods for controlling the CO_2 that is generated in this process.

One other particularity about the Group is that we have already earned strong assessments in the market for our advanced electronic materials, which contribute to the data-driven society. As mentioned previously, copper and other nonferrous materials will continue to play an important role in the spread of EVs and renewable energy. As an example, semiconductors are an essential element for control of EVs and renewable energy. In addition, the expansion of businesses oriented toward the circular economy, such as advanced energy management and sharing businesses, will require high-speed information communication over networks, which will not only increase the demand for communication devices, but will also make semiconductors for information processing essential. By supplying materials to this field of advanced electronic materials, our Group will contribute to the formation of a sustainable society. We will also proactively aspire to the development of technologies, such as artificial photosynthesis, that contribute to society with the goal of achieving a carbon-neutral society.

The Group will work as one to become a leader in the decarbonization of the nonferrous metals industry.

Materiality and ESG Promotion System

The Group seeks to help society develop sustainably through the implementation of its Code of Conduct. We consider ESG as one of the most important management tasks to provide these contributions, and as such, we have established an organizational structure to address materialities on a Group-wide basis.

Materialities (Priority Issues) and KPIs (Key Performance Indicators)

Materialities are important social issues that the Group must take priority steps to address in order to realize our 2040 Long-Term Vision. As a result of reviews in fiscal 2020 given social issues faced worldwide, as well as given the goals set in the SDGs and the Group's business environment, we have identified six materialities and set KPIs for each. The ESG Committee has been in charge of administrating this system, measuring and assessing levels of achievement for these KPIs. For fiscal 2021 and fiscal 2020, we have continued to operate under the same KPIs. Please see the flowchart to the right for information regarding how we have established our current materialities.

	Materialities	Initiatives	Fiscal 2020 KPIs	Related SDGs
E	Contributing to Environmental Conservation P39	• Contribute to global environmental conservation by creating a carbon-free and recycling-oriented society.	Total in-house CO_2 emissions: Promoting initiatives to achieve net zero CO_2 emissions in fiscal 2050 and 50% reduction in fiscal 2040 (vs. fiscal 2018)*	12, 13
			Increase Percentage of Recycled Raw Materials: expand the breadth of recycled materials to be treated	
			Landfill disposal rate (less than 1% in fiscal 2020)	
	Provide Advanced Materials That Support Lives and Lifestyles P43	• Advance development of new technologies and contribute to an IoT/AI society	Develop advanced materials needed by the IoT/AI society	7, 8, 9
			Build a framework to support technology-based management	
S	Create Attractive Workplaces P53	• Create a healthy, safe, and peaceful working environment for all employees. • Create an environment in which diverse employees feel fulfilled and fully express their talents.	Reduce serious occupational accidents: Less than 0.7 accidents (four days or more of lost work time) per 1,000 workers in fiscal 2020	3, 8, 10
			Increase annual leave utilization rate: 80% or more in fiscal 2020	
			Implement initiatives to revitalize people and organizations	
			Initiatives for health promotion: cancer screenings for 70% of employees or more in fiscal 2020	
			Maintain and improve hiring rate for disabled persons: 2.3% or more in fiscal 2020	
	Respect Human Rights P61	• Conduct business activities that respect the human rights of all throughout the supply chain, including local community residents, customers, employees, and business partners.	Percentage of employees taking human rights training (100% in fiscal 2020)	5, 10
			Conduct survey of human rights in supply chains	
	Coexistence and Co-Prosperity With Local Communities P65	• Foster relationships of trust with local communities through community-based social contribution activities and communications in every business location in Japan and abroad.	Continue dialogue with local communities	11, 15
G	Strengthen Governance P69	• Ensure sound, transparent business management via thorough compliance and risk management activities.	Steady operation of group-wide risk management	—
			Compliance training tailored to business characteristics and social movements, etc.	

* We revised the long-term targets in fiscal 2021, moving our 50% reduction target forward to fiscal 2030.

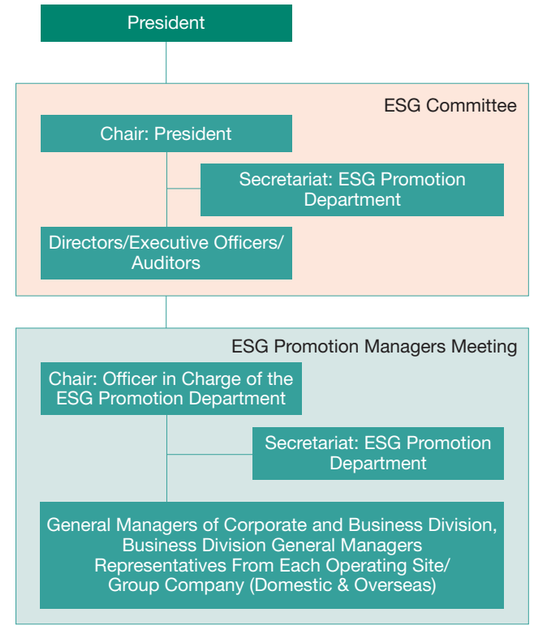
Materiality Identification Process

STEP1 Evaluate Group business activities → STEP2 Identify stakeholder expectations and requests → STEP3 Prioritize issues to be addressed → STEP4 Define materialities and establish KPIs

ESG Promotion System

Though the Group has taken a variety of actions over the years toward social contribution and environmental conservation, it has become necessary to strengthen organizational response to global ESG trends and take actions toward ESG management from a Group-wide perspective. Therefore, in October 2020, we established the ESG Promotion Department to oversee ESG initiatives, and created related committees to assist.

The ESG Committee serves as an advisory body to the president, and is responsible for basic policies and activity plans related to ESG initiatives, as well as monitoring of these initiatives. The ESG Committee is chaired by the president of the Company, with members from the Executive Council. This committee meets twice a year in principle.



Key Discussions at the ESG Committee and ESG Promotion Managers Meetings (Fiscal 2020)

- Establishment of priority ESG issues
  (1) Addressing climate change
  (2) Contributing to a recycling-oriented society
  (3) Complying with international norms and initiatives
- Reporting activity policies and statuses per priority issue

Permeating ESG Management

In order to promote the penetration of ESG management, we use the Group's Intranet and internal newsletters for messaging on ESG information, and we hold internal training and e-learning programs to deepen understanding about the importance of ESG management and the Company's activities.

In addition, we distribute the Sustainability Report each year and conduct questionnaires available via paper form and online to survey employees about penetration of ESG and CSR mindsets and status of their involvement with practicing ESG and CSR. In fiscal 2020, 5,307 people of 6,034 eligible employees responded to the survey, a response rate of 88%.

Q: Do you understand and agree with the JX Nippon Mining & Metals Group Code of Conduct?
Yes ···96.4% No···2.1% No answer ···1.5%

Q: Do you think that the JX Nippon Mining & Metals Group Code of Conduct is well understood in your organization and workplace?
Yes ···78% No ···21.1% No answer ···0.9%

Q: When you are not sure about a work-related decision, do you go back to the JX Nippon Mining & Metals Group Code of Conduct to find hints about how to proceed?
Yes ···82.6% No ···16.5% No answer ···1.0%

* Respondents have five options for answering questions, with affirmative answers categorized as "Yes" and negative answers as "No."

Materiality 1

Contributing to Environmental Conservation

The Group maintains a keen awareness of the impact our business activities have on the environment, and our basic policy is to contribute to conservation of the environmental on a global scale by promoting the development of technologies that enhance the productivity of resources and materials.
In addition, we have established in our Basic Environmental Policy that we will take action toward the formation of a decarbonized and recycling-oriented society, and we are working to reduce our environmental impact with clear goal management. As we execute business, we seek to reduce our environmental impact at every stage of the supply chain.

Major Initiatives

Environmental Management	Forming a Decarbonized Society	Forming a Recycling-Oriented Society	Initiatives for Environmental Conservation
▶ P40	▶ P29	▶ P33	▶ P41

(Photo) Oshima cherry blossoms at the Hitachi Mine, where greenery was restored to a mountain devastated by smoke pollution

KPIs and Progress

Assessment : ☺ Achieved/Steady Progress ☹ Not Achieved

KPI	Fiscal 2020 Results/Progress	Assessment
Total In-house CO_2 Emissions: Promoting initiatives to achieve net zero CO_2 emissions in fiscal 2050 and 50% reduction in fiscal 2040 (vs. fiscal 2018)	To achieve these targets, we launched the Carbon Free Project (CFP) across the entire Group, implementing and starting a variety of initiatives, including the introduction of CO_2-free electricity at each of our sites. In addition, based on these activities, we have set a new target of 50% CO_2 emissions reduction in fiscal 2030, ten years ahead of schedule in our current interim target set in fiscal 2021. Special Feature 1 ▶ P29	☺
Increase Percentage of Recycled Raw Materials: Expand the Breadth of Recycled Materials to be Treated	With a target to substantially increase the ratio of recycled materials used in copper smelting to 50%, we have worked to improve our internal technology development system, expanding our collection centers and building new distribution sites for greater treatment of recycled materials. Special Feature 2 ▶ P33	☺
Landfill Disposal Rate: Less than 1% in Fiscal 2020	In addition to complying with various environmental regulations, we have set a goal of keeping our landfill disposal rate at no more than 1.0% in order to cut down on waste with the aim of minimizing our impact on the environment. Our landfill disposal rate in fiscal 2020 was 0.51%. ESG Data Book (Waste Materials and By-Products) ▶ P90	☺

Environmental Management

JX Nippon Mining & Metals Group Basic Environmental Policy

As a comprehensive manufacturer of nonferrous metals and advanced materials, the JX Nippon Mining & Metals Group is rising to the challenge of innovation in the productivity of resources and materials. Committed to compliance with environmental regulations, we carry out the following initiatives in order to proactively strive for environmental conservation on a global scale, including measures against global warming, and contribute to building a sustainable society.

1. We will contribute to achieving a decarbonized society by promoting technological innovation and energy transition and aiming for zero greenhouse gas emissions.
2. We will supply environmentally-friendly advanced materials to support the growth and advancement of society.
3. We will promote resource recycling and aim for zero emissions in all our business activities.
4. We will thoroughly raise each employee's awareness of environmental conservation through environmental education, leading to business activities with less environmental impact.
5. We will share information on environmental conservation activities with stakeholders and seek to operate in harmony with society.

Compliance with Environmental Laws and Regulations

Through steady operation of environmental management systems, the Group works to ensure compliance with environmental laws and regulations. The Environment & Safety Department at the Head Office monitors and supervises the state of compliance and reports to the ESG Committee through the Safety and Environment Committee. At their annual meeting, environmental management supervisors work to strengthen our compliance system by providing information on legal and regulatory trends and reporting on the status of compliance at each operating site. We additionally reinforce employees' knowledge of laws and regulations by holding rank-specific education and training regularly at the head office and operating sites.

In fiscal 2020, there were no adverse dispositions from regulatory authorities (including license revocation, orders to cease operations, orders to cease use of facilities, orders for improvement, fines, etc.) for violations of environmental laws and regulations.

Environmental & Safety Auditing

Individual operating sites implement internal environmental audits at least once a year. In addition, they periodically undergo environmental and safety audits by the Environment & Safety Departments of the Head Office and of JX Metals Smelting Co., Ltd. Audits were conducted at 17 sites in fiscal 2020.

Activities in the areas of health and safety and environmental conservation are planned, promoted, and reviewed by the Safety and Environment Committee, an organization under the ESG Committee. The Safety and Environment Committee meets once every six months.

Establishing an Environmental Management System

The JX Nippon Mining & Metals Group has established environmental management systems in line with ISO 14001 standards for ensuring achievement of the Action Plan for Environmental Protection, which was drawn up to reflect the Basic Environmental Policy. A multilevel organizational structure has been created, including various committees and subcommittees, in which everyone, from senior management headed by the president to employees at operating sites and affiliated companies, works together to promote environmental conservation and mitigate environmental risk. No environmental accidents occurred in the Group in fiscal 2020.

Operating Sites That Have Obtained ISO 14001 Certification
(as of March 31, 2021)
40 Operating Sites
(Japan: 28, overseas: 12)

Promoting CSR Purchasing

The Group has set a Green Purchasing Policy, aimed at reducing environmental and other social impacts when procuring materials and equipment. Based on this policy, we have drawn up Green Purchasing Guidelines setting out specific requirements for choosing suppliers. This Guideline contains "mandatory conditions (minimum requirements)" for mandatory compliance, and "preferred conditions (preferences)" that we ask our business partners to consider. These conditions are applied to all of our suppliers. Supplier compliance with these guidelines is checked in our CSR Procurement Questionnaire survey.

Initiatives for Environmental Conservation

The JX Nippon Mining & Metals Group is strengthening its efforts toward decarbonization, like halving its own total CO_2 emissions by fiscal 2030 and achieving net zero CO_2 emissions by fiscal 2050. In addition, we are expanding recycling and other businesses contributing to a resource recycling-oriented society. Beyond that, we are continuously taking actions to preserve the environment, including nature conservation.

Initiatives for Decarbonization (Special Feature 1) ▶ P29

Initiatives for Resource Recycling (Special Feature 2) ▶ P33

Conservation of Water Resources

In the Group's business activities, we use large quantities of water in our copper mining operations, as well as for cooling water (mainly seawater) used in smelters. We recognize that water resources are not only essential for our Group's business activities, but also important resources for the local communities where our production sites are located. With this in mind, we are doing our best to make sure that these sites make effective use of water resources by properly monitoring water consumption and exploring methods for reduced use or reuse.

At the Caserones Copper Mine, a mine where we have operations, we have set limits on water use that are stricter than those set by the local authorities, and we monitor the balance of water intake and discharge. In areas downstream from the mine, we also desalinate seawater, providing water supplies used by local residents for agriculture and general home use.

Conservation of Biodiversity

In the Group's business activities, we recognize that we need to provide due care in regard to biodiversity, especially in our mining operations, an area strongly linked to biodiversity. Here, we are carrying out a variety of initiatives both in Japan and overseas.

At the Caserones Copper Mine, 48,200 seedlings from 15 native flora species are being planted in an area spanning 1.43 square kilometers to protect biodiversity. The areas where these are being planted are Ramadilla on the mine site and around the off-site areas of Maitencillo and Amolanas. In addition to reforestation, we are monitoring the development of plants native to the area and conducting research on the impact of climate and other factors on the propagation and distribution of plants native to the high altitudes around the Caserones Copper Mine.

In Japan, we are continuously engaged in forest maintenance activities, such as tree planting and clearing, focusing on closed mine sites, to maintain and improve the natural environment and conserve biodiversity.

Plants native to the Caserones Copper Mine area

Management of Closed Mines

From its founding in 1905, the JX Nippon Mining & Metals Group has been engaged in mining operations across Japan. By ensuring a steady supply of nonferrous metals and other resources, we contributed to Japan's economic growth. Today, however, operations have ceased in nearly all mines as their mineral resources have dried up. Still, in closed mines we provide acid mine drainage (AMD) treatment and work to maintain and restore the natural environment.

Under the Mine Safety Act, AMD treatment is an ongoing obligation at 12 of the 39 closed mines managed by the Company. JX Nippon Mining Ecomanagement oversees the process. The work mainly consists of detoxifying the highly acidic mine drainage generated from the mines and tailings dams, which contain heavy metals, and maintaining and preserving the tailings dams and galleries of the mining sites. AMD occurs when rainwater or other water comes into contact with materials such as ores remaining after the mine is closed or the rubble and slag of tailings dams. Therefore, as AMD is generated continuously, treatment facilities have to operate 365 days a year. This is one way we work to protect the natural environment by managing closed mines.

Closed mines where AMD treatment is carried out

Formulating Mine Closure Plans

The Group believes that it is important to minimize the impact on the environment and society in the surrounding areas when closing a mine. We have formulated a mine closure plan for the Caserones Copper Mine through dialogue with the relevant authorities, local communities, and other stakeholders, and have made financial and other preparations to implement the necessary measures, thereby ensuring appropriate responses in the event of its closure.

Proper Management of Chemical Substances

The Group has voluntarily established chemical substance management standards. We strive to mitigate the harmfulness of these substances by defining sets of substances that shall be either prohibited from use or eliminated (e.g., many chlorinated organic compounds, mercury compounds, and lead compounds) and sets of substances to be monitored (e.g., phthalate esters and volatile organic compounds such as toluene and xylene), and controlling their use. In addition, the Green Procurement Guidelines clearly identify substances that must not be included in manufacturing processes, materials, or equipment, and we ensure our suppliers are aware of these. Furthermore, we strive to provide safety information to our customers and all other product stakeholders.

Detoxification Treatment of Equipment Containing PCBs*

The Group contributes to environmental conservation by detoxifying hazardous waste through our treatment businesses for low-concentration PCBs and asbestos. In 2014, JX Nippon Tomakomai Chemical Co., Ltd. became the first firm in Hokkaido to receive certification from the Minister of the Environment as a detoxification facility for treating low-concentration PCB waste. In addition, JX Nippon Environmental Services Co., Ltd. is engaged in the melting and detoxification of asbestos. The company treated approximately 3,254 tons of waste asbestos in fiscal 2020.

We are also proceeding with treatment of Group-owned equipment with high-concentration PCBs at the Japan Environmental Storage & Safety Corporation (JESCO). We have completed treatment at sites outside the Tokyo metropolitan area, and plan to complete treatment at the remaining sites by the disposal deadline. In addition, we are planning disposal of equipment with low-concentration PCBs using private disposal companies such as JX Nippon Tomakomai Chemical Co., Ltd.; this disposal is scheduled to be completed by fiscal 2024, two years before the disposal deadline.

*Polychlorinated biphenyls, or PCBs, were often found in insulating oils for transformers and capacitors, as well as in pressure-sensitive photocopiers, due to their excellent electrical insulating properties, but their toxicity has now led to a ban on their new manufacture and import.

Rotary kiln incinerator at JX Nippon Tomakomai Chemical Co., Ltd.

Materiality 2

Provide Advanced Materials That Support Lives and Lifestyles

The excellent properties of the major base metal of copper and a variety of minor and precious metals have supported the evolution of electronic devices. The JX Nippon Mining & Metals Group continues to pursue technical rationality and efficiency, as well as make improvements in product quality and properties of these materials, so we can rapidly offer society products and technologies supporting the coming data society and IoT/AI society. We have also formed a Technology Council as an advisory body to the president, which discusses future directions for technology from the standpoint of business administration.

Major Initiatives

Developing Advanced Materials ▶ P44

Building a Development Framework and Fostering Development Personnel ▶ P46

Open Innovation ▶ P49

KPIs and Progress

Assessment : ☺ Achieved/Steady Progress ☹ Not Achieved

KPI	Fiscal 2020 Results/Progress	Assessment
Develop advanced materials needed by the IoT/AI society	In addition to announcing new products such as titanium copper, Corson alloys, and treated rolled copper foil for lithium-ion batteries, we have promoted open innovation through collaboration with companies and universities to develop advanced materials needed by the IoT/AI society. Developing Advanced Materials ▶ P44 / Open Innovation ▶ P49	☺
Build a framework to support technology-based management	With the goal of continuously generating innovative technologies and products for technology-based management, we have built a framework for development and worked to foster development personnel to generate new innovations. Building a Development Framework and Fostering Development Personnel ▶ P46	☺

Developing Advanced Materials

Our Research and Development Policy and Core Technologies

In order to contribute to this materiality, we relentlessly pursue innovation by advancing and utilizing core technologies accumulated to date, and through co-creation with outside resources.

High Purity

We have a variety of melting technologies for different applications. We make wide use of these technologies for purposes ranging from high-level purification of raw materials for our own products to production of miscellaneous high-purity metals we offer to the market.

Composition and Structure Control

Based on the manufacturing expertise and simulation technology we have developed over the years, we study alloy composition and crystal state. We then combine these elements through our own processing and heat treatment techniques to achieve the characteristics required.

Powder Control

We have powder production technologies suited to different materials. We can meet customer needs for high-function powders, including special functions made possible by surface treatment and particle size control through granulation.

Precision Rolling and Machining

We established technology to mass-produce the world's thinnest treated rolled copper foil at just 5 μm thick. Additionally, we offer not only materials but a wide range of machining services with our high-precision press technology.

Surface Control

We perform final machining that yields the required properties, from etching-roughed surfaces to mirror finishes, helping to bring out new value from materials.

Analysis, Evaluation, and Examination

We have the latest analysis equipment and work to develop analysis technology. We also value traditional analysis technology, such as dry assay analysis of gold and silver.

Separation, Extraction, and Refining

We have technologies to offer a stable supply of 4N (99.99% pure) electrolytic copper, precious metals, minor metals, sulfuric acid, etc., and technologies to efficiently recover minor metals from recycled materials.

Advanced Materials that Support Lives and Lifestyles: New Group Products

In fiscal 2020, the Group newly implemented the development of advanced materials.

- **C1995 Ultra High Strength Titanium Copper Alloy**

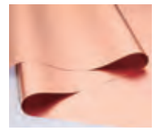
Ultra high strength titanium copper with tensile strength of 1,500 MPa, the highest level of any copper alloy. This material is used in spring materials for smartphone camera modules, which require high strength.

- **NKC8738 Corson Alloy Offering Both High Strength and High Conductivity**

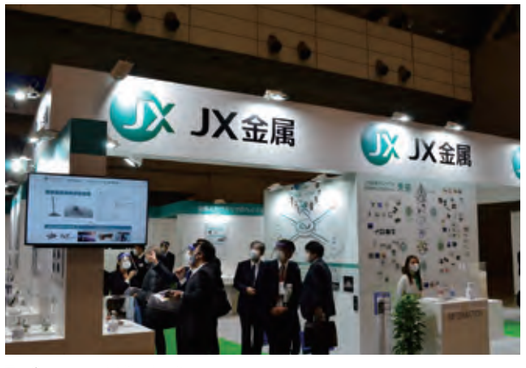
A high-performance copper alloy for CPU sockets that combines 1,000 MPa tensile strength—the highest level of any Corson alloy—with high conductivity (40% IACS).

- **Rolled Copper Foil for Lithium-ion Batteries with High Thermal Resistance**

This new Group product is capable of withstanding high-temperature treatment during battery manufacturing, contributing to improved output of lithium ion batteries used in electronic devices such as drones and wearables.



These were exhibited at the 7th Highly-functional Metal Expo Tokyo, held at Makuhari Messe in Chiba Prefecture in December 2020. This exhibition served as a vehicle for promoting their function in supporting daily lives and a sustainable society.



The Company exhibition booth

Installing Equipment Increasing Production of Treated Rolled Copper Foil, High-Performance Copper Alloys, and Sputtering Targets for Semiconductors

Treated rolled copper foil, high-performance copper alloys (Corson alloys, titanium copper alloys), and sputtering targets for semiconductors are all core products in the area of advanced materials, which we have positioned as our focus business. Demand is expanding for these advanced materials, indispensable for improving performance in leading-edge electronic devices such as smartphones and PCs, and we believe this trend will only gain momentum with the future evolution toward IoT and AI.

In order to respond to this growing demand, we have implemented equipment to increase production capacity by approximately 30% compared to fiscal 2017. This implementation is applicable to the entire process from melting and casting to rolling mills, annealing furnaces, and surface treatment for treated rolled copper foil and high-performance copper alloys. For sputtering targets for semiconductors, this implementation is centered on our processes for targets used with copper and copper alloys.

We will continue to flexibly increase our capacity, and supply advanced functional materials indispensable to the realization and development of the data society.

Rolling mills for treated rolled copper foil and high-performance copper alloys (Kurami Works)

Received the 94th Watanabe Award from The Mining and Materials Processing Institute of Japan

Three members from JX Nippon Mining & Metals–Yasuda Yutaka, Chida Hiroshi, and Motomura Tatsuya –received the 94th Watanabe Award from The Mining and Materials Processing Institute of Japan for their achievements in flash smelting furnace renewal and productivity improvement at the Company's Saganoseki Smelter & Refinery. The Watanabe Award was established in 1927 by a foundation commemorating Dr. Watanabe Wataru, the third president of The Mining and Materials Processing Institute of Japan. This prestigious award is given to organizations or individuals who have made significant contributions to the advancement of technology related to natural resources and materials.

The 94th Watanabe Award recognized the completion of renewal work in an unprecedentedly short period of time, while in parallel executing treatment capability improvements achieving a 10% boost, as a result of exploration and implementation of numerous measures over a period of five years at the second flash smelting furnace of the Saganoseki Smelter & Refinery, which was in need of renewal.

Senior Executive Officer Yasuda Yutaka, accepting the award on behalf of the team

Received Intel's 2020 PQS Award

With the Preferred Quality Supplier (PQS) Award, Intel recognizes high-performing suppliers, with a requisite of scoring 80% or higher in performance assessments throughout the year to qualify for the award. Suppliers must also meet 80% or more of their improvement plan and demonstrate outstanding quality and business systems. JX Nippon Mining & Metals was awarded the 2020 PQS Award for consistently exceeding Intel's expectations through our commitment to continuous quality improvement.

Dr. Randhir Thakur, Chief Supply Chain Officer at Intel said, "JX Nippon Mining & Metals provided standout service in a critical area of the Intel supply chain and met or exceeded their annual improvement goals. Winning this award represents years of hard work, continuous improvement and truly exceptional performance."

Awarded Supplier of the Year for 2020 by Vishay Intertechnology, Inc.

Vishay Intertechnology, a U.S.-based electronic components manufacturer and a customer of our tantalum products, awarded us with Supplier of the Year for 2020. The award was presented to the TANIOBIS Map Ta Phut Plant.

Building a Development Framework and Fostering Development Personnel

Organizations and Personnel for Becoming a Technology-Based Company

The Group is working to build a framework for the continuous generation of innovative technologies and products, such as decarbonization technologies, by promoting DX support in the areas of production and development, developing platforms for the creation of new development ideas, and strengthening development process management.
In addition, we are fostering personnel responsible for technology development and technology-based business development.

Supporting Digital Transformation (DX)

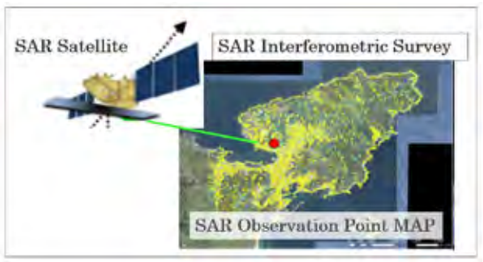
In light of changes in society, the market, and the competitive environment, we are working to advance our support for DX using digital technologies such as IoT, AI, and cloud computing in order to improve productivity, product quality, and customer service, as well as to increase operational efficiency.

For initiatives at production sites, we have already introduced image processing and other IoT and AI-based technologies to automate processes, including image identification and automatic picking and sorting of copper wire scrap in the metal recycling process, and automatic creation of ore blending plans using mathematical programming in the smelting process. In addition, we are also engaged in verification tests of highly promising elemental technologies, such as technology for optimization calculations using quantum annealing computers, and topographical change and landslide monitoring using satellite-based SAR*1 survey technology. Some of these technologies have already been practically implemented.

Furthermore, in fiscal 2022, we will migrate our internal infrastructure and network to operate based on Zero Trust Network*2 architecture, utilizing the latest cloud technology, to strengthen our cyber security measures and improve the efficiency of information sharing and communication methods within the Group. We will also update our legacy systems, including for accounting and production management, to tackle risks posted by the many "2025 Digital Cliff" problems presented by aging systems and blackbox design.

In order to implement these measures, in April 2019, we established the role of Digital Innovation Manager, responsible for introducing IoT and AI to production sites, as well as the role of IT Strategic Planning Manager, responsible for traditional tasks within the IT Department under the Technology Group's General Manager. From October 2021, we plan to further strengthen our structures by establishing the new role of Infrastructure Manager, who will be in charge of standardizing IT across the Group using cloud computing and other technologies. In addition, we will promote DX-related training for new employees and field employees, as well as collaboration with universities and other external organizations to cultivate digital human resources (see page 48).

*1 SAR: Synthetic Aperture Radar. A technology for obtaining observation data with the same high accuracy as that obtained by a hypothetically large antenna by synthesizing data observed by satellites and other devices via radar as they fly over an object, transmitting radio waves onto the object and analyzing the reflected waves.
*2 Zero Trust Network: An architecture approach for strengthening security through more rigorous authentication control for devices and people connecting to a network, regardless of whether they are internal or external. This approach is designed to address use of cloud computing and the diversification of work styles and locations. Unlike the conventional concept of defending the boundary between the Internet and internal networks, this new concept is based on the premise of no trust (zero trust) of devices and users connecting to the network.



Strengthening Internal Processes for New Business and Technology Development

We have introduced the Stage-Gate process as our management system for business development. In addition, we practice Idea Seed Bank (ISB) and NEXUS activities as platforms for generating topics and ideas. These efforts are handled by the Advanced Technology & Strategy Department, a department dedicated to the planning and formulation of Group-wide technology strategies.

• Introduction of the Stage-Gate Process

We have introduced the Stage-Gate process for topic and idea generation. This process divides the development process into multiple stages, and examines the new ideas generated on our platforms, as well as information and technologies obtained through open innovation and industry-academia collaboration. We use Stage-Gate for applications from discovery of medium- to long-term topics to commercialization for new products and technologies. In the future, we aim to build effectiveness for the Stage-Gate process's functionality in order to continuously generate innovative technologies and products, such as decarbonization technologies.

• Development of Platforms for Generating New Business Ideas

The Idea Seed Bank, one of the Advanced Technology & Strategy Department's initiatives, is a platform to encourage employees to generate and cultivate ideas. It provides support for the conception of ideas, support for internal reviews, and discussions among members. It also offers a forum for employees from different departments and sites can interact with each other, providing them stimulus to give shape to their own ideas. At present, the project covers our Technology Group, Functional Materials Business, and Thin Film Materials Business, but we plan to expand the project to all divisions by fiscal 2022.

In the NEXUS activities, we examine business opportunities at the intersection of social issues and the value we bring with the technologies held throughout our Group that are relevant to advanced technologies. These activities have the purpose of selecting medium- to long-term development topics and forming development topics.

Establishment of the JX Nippon Research Institute for Technology & Strategy Think Tank

As the Group moves forward with its efforts to transform itself into a technology-based company, it is becoming increasingly important to analyze markets and formulate long-term technology strategies, as the technology domain is weighted more in management decisions. In April 2021, we established a new company, JX Nippon Research Institute for Technology & Strategy Co., Ltd. The Institute was created as a result of partial function transfer from the Advanced Technology & Strategy Department and the Research Department, and combination with some functions from ENEOS Research Institute, Ltd.

JX Nippon Research Institute for Technology & Strategy Co., Ltd. will serve as a gathering of specialists with extensive knowledge on nonferrous metals to assist in strategic planning, market research, and analysis of both Group internal and external technology trends related to nonferrous metals. This company will also actively participate in industry-government-academia discussions on issues like the circular economy and securing rare metal resources, and it will also provide a corporate messaging function. In order to achieve the goals from its establishment, JX Nippon Research Institute for Technology and Strategy Co., Ltd. will introduce a flexible employment system that is not bound by the existing personnel system of the JX Nippon Mining & Metals Group, with plans to secure and utilize highly capable personnel, including those past the mandatory retirement age.

Research Topics at JX Nippon Research Institute for Technology and Strategy Co., Ltd. (Partial)

- The impact of carbon neutrality on the supply and demand of copper and other materials
- The impact of the supply and demand structure of China's smelting industry on Japan's copper production industry
- The role of nonferrous metals businesses given LCA regulations
- The future of the semiconductor industry

VOICE

Comments from the Advanced Technology & Strategy Department

In a future changing more rapidly and where we face greater uncertainty, the Advanced Technology & Strategy Department is responsible for activities that will enable the Company to create value on a long-term and sustainable basis. All of our activities, such as the NEXUS program to identify potential needs over the medium- and long-term, the Stage-Gate process to manage uncertainty in topics, open innovation to respond to rapid change, and ISB and cross-organizational study groups to foster a culture of innovation, are for the purpose of and closely linked to the creation of new social and economic value through innovation. These activities are available to us thanks to support from existing businesses, and I am very grateful for and feel fulfilled in this environment where we can work.

Recently, we often hear the term "ambidexterity" as it pertains to how company management takes on the challenge of innovation. Here, I think mutual respect is the key. With this in mind, I would like to contribute to the achievement of our Long-Term Vision while ensuring that we communicate well both internally and externally until we get there.

Shinjo Tadayuki
Advanced Technology & Strategy Department, Technology Group
JX Nippon Mining & Metals Corporation

Program for Cultivating Digital Innovation Human Resources

As part of our efforts to develop human resources who will help drive us toward becoming a technology-based company, we are implementing an internal program to cultivate personnel who can use digital data and advanced technologies to transform their own work (digital innovation human resources). This cultivation program can be broadly divided into two categories: fundamental training in data science and various initiatives to implement digital innovation using data more closely tied to the field.

• Main Initiatives in Fundamental Training (Fiscal 2020)

- Data Science Training - Introduction: 49 new employees joined this course. Content includes visualization of data using business intelligence (BI) tools.
- Data Science Training - Fundamentals: 70 employees Group-wide joined this course. Content includes exercises on machine learning using Visual Mining Studio (VMS). (An e-learning program is scheduled to be launched in fiscal 2021)

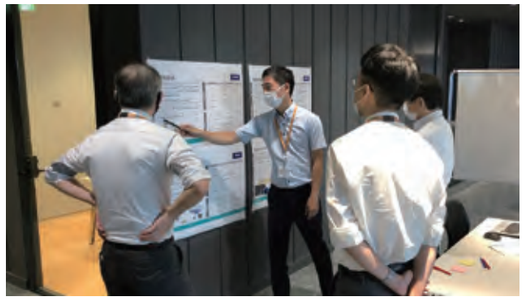
• Main Initiatives for Practical Application

- Improvement of processes through data mining at each site under the guidance of external consultants
- Accepting intern students majoring in Information Science
- Collaboration with the Faculty of Data Science at Shiga University (providing actual operation data, exploring process improvements, personnel exchange)

Discussion at a seminar led by Professor Kawamoto Kaoru of Shiga University (Photo courtesy of Shiga University)

Internal Training Held by the Advanced Technology & Strategy Department

In addition to human resource development through ISB, our Advanced Technology & Strategy Department holds cross-organizational study groups to help each individual member of the Group understand the Company and products outside of their responsibility, and to promote cooperation between divisions beyond their own. At these cross-organizational study groups, all employees learn about each division's business lines, products, and services. Through active Q&A and discussion, each employee gains a better understanding of the Group, which in turn leads to wider communication with external stakeholders. Through these efforts, we are developing human resources who can play an active role in finding potential co-creation partners, exploring new development themes, and further expanding existing businesses.



A discussion at a workshop held by the Advanced Technology & Strategy Department

TOPICS

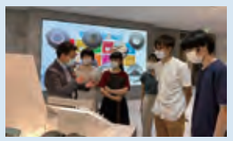
Efforts to Cultivate the Next Generation

In order to keep stability in securing and supplying irreplaceable nonferrous metal resources and materials, it is essential to develop human resources who can take on future challenges. Our Group provides young people, mainly from elementary school to high school, with opportunities to gain experience and hands-on practice in a variety of areas, and to learn about nonferrous metals.

• Providing Study Tours and Experience Programs

We conducted a social studies field trip program for elementary school students in Tokyo's Minato Ward, and provided high school students from the University of Tokyo Global Science Campus with an experience program.

▶ P52



• Providing and Publishing Educational Content

We also help produce the Gakken learning through the manga series *Secrets of Copper* to local communities, and provide content on our website that allows people to learn about copper in the form of quizzes and games.

Webpage: What's Going on With Copper-kun?

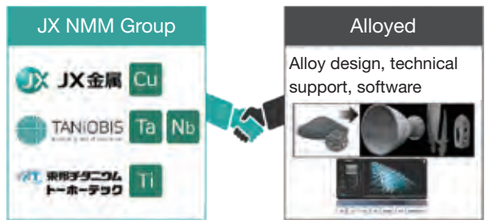
Open Innovation

Promoting Open Innovation Through Group Internal and External Collaboration

Research and development at the Company is handled by two parties: the Technology Development Center, which serves as the “corporate lab” in charge of promoting next-generation research and development, and development units at each division, which conduct development closely related to their respective businesses.
We are also promoting co-creation in a variety of formats, including collaboration with unique technologies held by Group companies, joint research with universities and other research institutions, and partnerships with external companies. These activities have the aim of building a system capable of generating new technologies and value.

Collaboration in Development of Metal Powders for 3D Printers

Since 2019, we have invested in Alloyed (formerly OxMet Technologies), which is engaged in the business of designing alloys for metal 3D printers and developing proprietary software for 3D printer equipment. We have been promoting collaboration in the development and application of metal powders for 3D printers as well as in the development of new copper alloys for precision rolling. In this collaboration, we are working to develop medical implant materials, ultra-high melting point materials for aerospace applications, and pure copper and copper alloy materials for various applications, utilizing high-quality raw materials produced by our Group, including copper, tantalum, and niobium. We are also dispatching our engineers to Alloyed to learn the latest computational metallurgy technology and improve Alloyed’s computational accuracy utilizing our knowledge.



Collaboration in Power Semiconductor Device Materials

In June 2020, we began collaboration with Novel Crystal Technology, Inc. to commercialize gallium oxide crystals, which are expected to be used in the next generation of power semiconductor devices. Power semiconductor devices are used in the control and supply of electrical energy. Today, silicon is the primary material used for these devices. However, the material properties of silicon make it difficult to achieve further reductions in power loss, and therefore next-generation materials are expected to replace silicon in high current and high voltage application areas.

Gallium oxide was recently discovered to be a viable material useful in power semiconductor devices by a research group that includes the founder of Novel Crystal Technology. This is seen as potentially superior to its next-generation material peer, silicon carbide, for low-cost manufacturing of high-quality, large-size single crystal substrates. Going forward, we will continue to develop elemental technologies with the aim of commercializing gallium oxide crystals by combining this with our own technologies for handling metal oxides and high purity.

Gallium oxide 100mm epitaxial wafer/ substrate (available for sale)

Research Chair With the Graduate School of Engineering, Osaka University for the Promotion of the Circular Economy

In April 2021, we established the JX Nippon Mining & Metals Joint Research Chair for Circular Economy Promotion with the Graduate School of Engineering, Osaka University. This joint research course has two major themes, and through this industry-academia collaboration, we will continue to develop technologies and businesses that contribute to the circular economy.

Joint Research Course Themes

(1) Research and development and social implementation of smelting and recycling with consideration of the entire material flow for nonferrous metals
(2) Research and development and social implementation of technologies for reducing manufacturing energy consumption, evolving technologies for evaluating bonding, adhesion, corrosion resistance, and reliability, numerical analysis methods, and creating new materials

Activities of the Endowed Research Unit for Nonferrous Metal Resource Recovery Engineering (JX Metals Endowed Unit, the University of Tokyo)

Despite growing needs for a stable supply of nonferrous materials in recent years, the pool of researchers and engineers in Japan working in fields related to smelting, refining, and recycling nonferrous metals has been on the decline. In response to this situation, JX Nippon Mining & Metals, in collaboration with the Institute of Industrial Science at The University of Tokyo, launched the Endowed Research Unit for Nonferrous Metal Resource Recovery Engineering (JX Metals Endowed Unit) in 2012. The purpose of this organization is to develop new environmentally friendly recycling technologies for base metals and minor metals while also developing the human resources responsible for the work in this field.

Phase 2, starting in January 2017, continues the Phase 1 activities while also emphasizing public relations to highlight the importance and future potential of the nonferrous metals field to the general public. Central to this appeal are young people of high school age and below, as we seek to secure human resources who will lead the next generation. Although we were not able to conduct face-to-face activities, like on-site classes, in fiscal 2020 due to the COVID-19 pandemic, we were able to expand the scope of our activities, including to those living in distant locations (e.g. outside Japan) and those not in technical fields by streaming workshops and symposiums over online meeting systems.

■ Members (Fiscal 2020) *Positions/Affiliations listed are as of fiscal 2020

Okabe Toru H., Project Professor
Vice President, The University of Tokyo;
Director and Professor, Integrated Research Center for Sustainable Energy and Materials, Institute of Industrial Science, The University of Tokyo
Principal research theme
Development of efficient recycling technologies for rare metals

Tokoro Chiharu, Project Professor
Professor, Faculty of Science and Engineering, Waseda University
Principal research theme
Development of advanced resource separation and concentration technology
Development of separation and concentration technologies to utilize waste and refractory ores as resources

Kurokawa Harumasa, Project Professor
Principal research theme
Developing non-ferrous metal production processes

■ Major Activities in Fiscal 2020

Jul 2020 The 91st Rare Metal Workshop
Lecture by former president Oi Shigeru on the nonferrous metal resources and materials industry and the SDGs/ ESG
Nov 2020 Symposium on the SDGs in the materials field, held at Shibuya QWS and streamed online
Jan 2021 The 8th Precious Metals Symposium
The frontier of extraction and recycling technologies for precious metals

Material Innovation Center Completed in Collaboration with Tohoku University

Through an organizational collaboration and cooperation agreement formed with Tohoku University in 2018, the company has been promoting research and development, professional development in the field of nonferrous metals, covering interconnected advanced technologies (ICAT), and more. This collaboration is designed to contribute to the development of society as a whole. As part of this project, we decided to build a research building on the new Tohoku University Aobayama campus and donate it to the university. On July 31, 2020, the Material Innovation Center was completed, and handed over to Tohoku University on schedule. On August 21, Tohoku University presented us with a letter of appreciation in recognition of our donation. The center launched full-scale operations in September 2020, with the aim of developing into an international hub for open innovation by bringing together Tohoku University researchers, university-based venture companies from across the globe, research institutes, and more.

The Material Innovation Center

Establishment of a Joint Research Chair with the Graduate School of Advanced Integrated Studies in Human Survivability (Shishu-Kan) at Kyoto University

Based on the Comprehensive Collaborative Research Promotion Agreement for Achievement of the SDGs signed in 2019, the Company and Shishu-Kan established the Joint Chair of Global Social Resilience for the Achievement of the SDGs in May 2020. Led by faculty members Hashimoto Michio and Shimizu Mika, Program-Specific Professor and Program-Specific Associate Professor of the Shishu-Kan, and with central focus on the keyword “SDGs,” this program aims to identify, extract, and research issues in all domains and provide solutions to global issues related to the SDGs. Its first event, an online lecture held on May 11, 2020, covered the program’s two faculty members’ research fields and content, with participation from Company directors and employees. This lecture serves as the starting point for our work to advance the following three core activities.

A meeting of the Metals Business Study Group

Activity (Supervising Faculty)	Activity Details
(1) Metals Business Study Group (Professor Hashimoto)	Company employees and Shishu-Kan students work together to study and plan solutions to various issues facing our business
(2) Resilience Workshop (Professor Shimizu)	Workshops for Company employees on various resilience topics
(3) SDGs Future Vision Study Group (Shishu-Kan professors)	Lectures by Shishu-Kan faculty members and research presentations and discussions by students in each of Shishu-Kan’s eight academic fields.

Column

A Hub for Exchange, Planting the Seeds for New Business Creation

SQUARE LAB

In order to pursue the further potential of non-ferrous metals, materials that underpin society, we are advancing a strategy of open innovation for the creation of new businesses.
The key to accelerating open innovation is to have a hub of idea exchange where we can plant the seeds of new value creation.
SQUARE LAB was opened in June 2020 in the JX Nippon Mining & Metals head office, a space for co-creation between internal and external stakeholders. It consists of the *Gallery* showroom, where people can interact with our core technologies and future vision, and the *Arena* event space, for group discussions and workshops.

At SQUARE LAB, we organize events on various themes transcending organizational boundaries.
The ideas (seeds) generated there are cultivated to sprout into new businesses.

Program Examples

- Events engaging startups
- Events with specific themes: decarbonization, smart cities, etc.
- Exchanges with other companies to explore co-creation
- Events to stimulate innovation mindsets among employees
- Events bringing domestic and international sites together

Special Opening Event on Innovation

On October 1, 2020, to celebrate the opening of the SQUARE LAB, we held an opening event with business designer Hamaguchi Hideshi. In his keynote address, “How do we create innovation?” Mr. Hamaguchi shared his logic for creating new value without being bound by bias. Our Group offices from across Japan sent in a number of questions during the talk session, which was broadcasted online to each of them. These questions led to a number of passionate discussions on the possibilities of innovation at JX Nippon Mining & Metals. More than 300 people attended this event, including those joining online.

Stimulating innovation mindsets among employees

Workshop Event on Future Cities and Material Innovation

On February 18, 2021, we held an online lecture and workshop connecting SQUARE LAB with Ainoura Midori, London-based architect and founding member of PLP Architecture. Participants learned about advanced topics like smart cities and the circular economy–where Ms. Ainoura is engaged in her work in London–and exchanged opinions with participants from other companies as well. By taking a bird’s eye view of the Company’s business from cities as a broader perspective, they were able to gain new insights and develop new ideas.

Developing multifaceted conceptualization skills

Image Credit: PLP Architecture
Project Name: TREE HOUSE, Rotterdam, Netherlands

Univ. of Tokyo Global Science Campus Students Invited to Head Office Tour

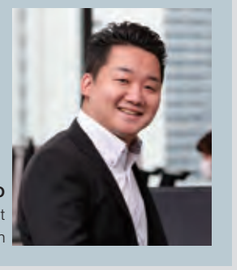
On September 13, 2020, we invited nine students to tour our head office from the University of Tokyo Global Science Campus (UTokyoGSC), an educational program for high school students run by the University of Tokyo. After visiting the *Gallery* showroom, visitors had a chance to interact with our employees and discuss the fun and appeal of manufacturing in topics including the world we want to create with 6G communication technologies and how we will realize that world with metal materials.

Utilized as a forum for education and exchange

VOICE

Comments From Tours for Experienced Mid-Career Hires

I joined the company as a mid-career hire in April 2021 and participated in a SQUARE LAB tour and exchange session for new employees like myself. The tour offered us opportunities to directly interact with and learn about the Company’s technologies through actual product and technology demonstrations, as well as videos about the manufacturing process. Being able to directly hear and talk about our technologies and products has been a very valuable experience for me in my work. Even though I had my concerns about joining the Company during the COVID-19 pandemic, social events have helped me build ties across the organization with colleagues, including career track hires who joined at the same time as me as well as employees in other departments. These ties have helped me carry out my work without feeling isolated.



Ogino Takahiro
Environment & Safety Department
JX Nippon Mining & Metals Corporation

Materiality 3

Create Attractive Workplaces

Dynamic workplaces where employees can demonstrate their unique capabilities and be healthy in mind and body are essential for any enterprise seeking sustained growth. The JX Nippon Mining & Metals Group strives to create workplaces that are attractive from many perspectives. Examples include our work to ensure occupational health and safety, provide an appropriate personnel evaluation system, and offer human resources training.

Major Initiatives

Foster a Culture of Safety ▶ P54

Promote Diversity ▶ P57

Develop Human Resources and Promote Health ▶ P59

KPIs and Progress

Assessment : ☺ Achieved/Steady Progress ☹ Not Achieved

KPI	Fiscal 2020 Results/Progress	Assessment
Reduce serious occupational accidents: Less than 0.7 accidents (four days or more of lost work time) per 1,000 workers in fiscal 2020	The occupational injury rate per 1,000 Employees in fiscal 2020 was 1.1. With solemn consideration for the accidents that have occurred, we constantly strive to improve our health and safety management system and prevent occupational accidents by improving the effectiveness of our risk assessments and enhancing the ability of employees to investigate the causes of accidents. Foster a Culture of Safety ▶ P54 / ESG Data Book (Occupational Health and Safety) ▶ P91	☹
Increase annual leave utilization rate: 80% or more in fiscal 2020	Despite our efforts to create a work environment that encourages employees to take vacation days and to provide more days where employees are encouraged to take leave, the rate of paid leave taken was 73% due to migrating to a flexible work system and restrictions on going out arising from the spread of COVID-19. Moving forward, we will take actions to encourage employees to take more vacation. Promote Diversity ▶ P57	☹
Implement initiatives to revitalize people and organizations	We implemented a variety of measures for Activity-Based Working (ABW) and vitalizing communications in conjunction with the relocation of our head office. In addition, we took action to build an environment in which diverse human resources can play an active role through securing and utilizing highly specialized and senior citizen talent. In addition, we further enhanced existing education systems by introducing career design training. Develop Human Resources and Promote Health ▶ P59 / ESG Data Book (Human Resources Development) ▶ P92	☺
Initiatives for health promotion: Cancer screenings for 70% of employees or more in fiscal 2020	Employees conducted screenings at a rate of 54.7% due to restrictions on intake imposed by medical institutions to combat the spread of COVID-19. In fiscal 2021, we began granting special leave for employees to take physical examinations and cancer screenings, and we will continue to work on building a better environment encouraging these processes. Develop Human Resources and Promote Health ▶ P59	☹
Maintain and improve hiring rate for disabled persons: 2.3% or more in fiscal 2020	In the belief that diversity in human resources will lead to corporate growth, we are actively recruiting a diverse workforce, including senior citizens, people with disabilities, women, and mid-career hires. In fiscal 2020, employees with disabilities comprised 2.19% of our total number of employees. We will continue to explore a variety of measures in this area going forward. Promote Diversity ▶ P57 / ESG Data Book (Diversity) ▶ P94	☹

Foster a Culture of Safety

JX Nippon Mining & Metals Basic Policy on Health and Safety

We place the highest priority on ensuring the health and safety of people working in all areas of business operations at the JX Nippon Mining & Metals Group and create attractive workplaces by providing safe, secure, and healthy working environments.

1. We will comply with all laws and regulations relating to health and safety, establish voluntary standards required to achieve compliance, and rigorously manage and adhere to such standards.
2. We will strive to continuously improve and enhance industrial health and safety management systems and achieve health and safety goals.
3. We will actively provide information and education in order to develop human resources that think and act spontaneously, and raise health and safety awareness throughout the organization.
4. We will identify hazards in all areas of business operations, work to eliminate such hazards and reduce risk, steadily achieve annual accident reduction targets, and ultimately aim to ensure no accidents ever occur.
5. We will work to maintain and improve employees' mental and physical health by ensuring good communication and comfortable working environments and taking steps to maintain health and prevent sickness.

Organization for Occupational Health and Safety Management

The Group maintains health and safety committees and other bodies at operating sites and Group companies in keeping with the Industrial Safety and Health Act. We have also established a system to have discussions with workers, including those from subcontractors stationed permanently, within the framework of our management system. At our head office, the Central Health and Safety Committee meets once a year, attended by representatives (key safety managers and labor union branch committee chairs) from the divisions and operating sites. The Central Health and Safety Standing Committee meets five times a year, attended by standing committee members of the former (safety managers at each division and the three officers from the Central Labor Union). Members manage health and safety measures, discuss health and safety policies, and consult on measures to prevent recurrence of accidents. Joint labor/management health and safety visitations are conducted once a year and Group safety supervisors' meetings twice a year to exchange health and safety information. Also, workshops are held once a year for safety staff while safety lectures by outside experts likewise are held once a year for executives. In fiscal 2020, meetings were held online if possible due to the spread of COVID-19, while some were suspended.

Environment and safety audits are conducted periodically by a team under direct supervision of the president at operating sites directly run by the Company (including Group companies within the sites) and major domestic Group companies. Issues discovered in the audits are reported to the president, and also notified to the respective operating sites. The team requests improvements from these sites and follows up by monitoring progress. Audits were conducted at 11 sites in fiscal 2020, but due to the spread of COVID-19, on-site audits were only completed at three of these locations, while all locations underwent document audits through online channels. No major issues were identified. For those locations only undergoing document audits, on-site audits are to be postponed to fiscal 2021.

We had acquired OHSAS 18001 certification at 11 of our domestic operating sites and two overseas operating sites. However, in order to address the abolition of OHSAS and the enforcement of ISO 45001 (March 2021), we are revising and creating new management documents including OHS manuals, and are systematically converting and acquiring new certifications, aiming to further improve health and safety levels. As of March 2021, six domestic operating sites (35% of the total number to be certified) and five overseas operating sites have already obtained certification by their own volition. In fiscal 2021, we will continue to promote acquiring certifications in line with our plans.

Operating Sites That Have Obtained ISO 45001 Certification (Fiscal 2020) *1 *2

Domestic

- Hitachi Works (including the Technology Development Center and affiliated companies on the premises)
- Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd. (including affiliated companies on the premises)
- Nasu Works and Kakegawa Works of JX Metals Precision Technology Co., Ltd.
- JX Nippon Mikkaichi Recycle Co., Ltd.
- Chigasaki Plant of Toho Titanium Co., Ltd.

Overseas

- JX Nippon Mining & Metals Philippines, Inc.
- Nikko Metals Taiwan Co., Ltd. (Longtan)
- TANIOBIS GmbH
- TANIOBIS Co., Ltd.
- TANIOBIS Smelting GmbH & Co. KG

*1 Domestic operating sites listed here are those certified under JIS Q 45100 (a JIS standard that adds Japan's own requirements to the requirements of the international standard ISO 45001).

*2 ISO 45001 covers all people working in the workplace, including Subcontractors. Also, through obtaining ISO 45001 and constructing our health and safety management system accordingly, we show our commitment to protecting workers from retaliation when they report incidents, hazards, risks, etc.

Management Policy on Health and Safety for 2020

The Group formulates the Management Policy on Health and Safety each fiscal year. The goals and key policy measures are set based on analysis of health and safety performance in the previous year. The policy is discussed and approved by the Central Health and Safety Committee and then promulgated across the Group.

Goals
1. Accidents with lost work days or worse: Zero
2. Explosions and fires: Zero
3. Occupational diseases: Zero
4. Rate of lost work days due to ordinary illnesses: Reduction by 10% or more from the average in the past three years

Key Measures
- Promoting inherent safety
- Expanding health and safety education
- Strengthening safety management in construction
- Maintaining and promoting mental and physical health

Key Safety Activities
Systematically promoting improvements with a primary focus on inherent safety in order to prevent serious accidents from occurring.

Activities in 2020 to Ensure Safety (Domestic Operating Sites)

• Risk assessments

Each of the Group's operating sites carries out its own risk assessment activities based on our management system. Risks at operating sites are managed by implementing PDCA cycles, consisting of hazard identification, devising accident scenarios, risk assessments, necessary measures to mitigate risk (beginning by considering tangible measures first, and then intangible measures only if tangible measures are unapplicable), and evaluation of the effectiveness of those measures.

In fiscal 2020, we had planned to provide status checks, skills improvement education, and on-site follow-ups with regard to risk assessments, but due to the spread of COVID-19, we were unable to provide on-site guidance. Therefore, we conducted spot checks on documents and provided guidance as part of our environment and safety audits.

Improving the level of our risk assessments is an issue that we will continue to work on in the future, and we have also started to visualize the progress of risk mitigation, including the management of residual risks.

• Preventing accidents involving collisions between heavy machinery and people

One of the most important safety issues for our Group is to prevent accidents involving collisions between heavy machinery and people. In order to prevent these collisions, which can easily lead to serious accidents, we not only introduced RFID in fiscal 2018, but, in fiscal 2020, we conducted demonstration tests and launched operation of a human detection system using intelligent cameras at Kurami Works. This system is designed to alert a forklift operator when a worker approaches the machine, and is part of our measures to implement IoT and AI.

Cameras installed on forklifts

• Work environment measurements

The Group measures and evaluates work environments in order to prevent health problems among workers, regardless of whether the workplace is an outsourcing site or not, and improves the work environment based on the results of these.

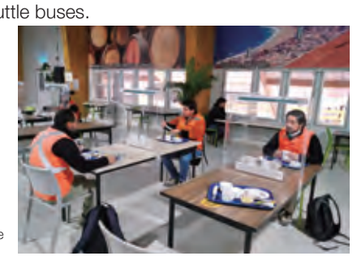
The results of work environment measurements and the establishment of measures based on their evaluations, the results of the risk assessments listed on the left, and other information are investigated and discussed by health and safety committees in accordance with the Industrial Safety and Health Act, with an overview of the proceedings provided to related workers in writing.

Activities in 2020 to Ensure Safety (Overseas Operating Sites)

At overseas Group companies, priority issues are set for each of the responsible divisions, and activities are implemented accordingly.

• Mineral Resources Division

In order to improve safety performance, we are continuing our efforts to ensure compliance with safety standards and to improve safety in terms of technology and awareness. We also provide services for workers at the Caserones Copper Mine, such as an accommodation camp, cafeteria, gym (currently closed due to the spread of COVID-19), and a shop. Furthermore, we are taking thorough measures to prevent the spread of COVID-19, including checking body temperature before entering the premises, antigen tests before starting work on-site, cleaning premise facilities, and ensuring social distancing in the cafeteria and on shuttle buses.



Partitions installed to stop infection from droplets at the Caserones Copper Mine

• Functional Materials Division

Based on our safety activities in Japan, we are actively promoting safety activities elsewhere in accordance with the laws and frameworks of each country. Specifically, we are promoting risk assessments focused on hazards, and we have established a Safety Education Center tailored to the actual situation in the relevant area. These centers are based on our Safety Education Center in Japan and are used for safety education.

Experiential risk training equipment (demonstrating puncturing safety shoes)
(Nippon Mining & Metals (Suzhou) Co., Ltd.)

• Thin Film Materials Division

In addition to focusing on activities to systematically implement specific countermeasures through risk assessments focused on hazards, we also focus on 5S activities, which are the basis of safety. In addition, some operating sites have implemented virtual reality (VR) systems loaded with content matching actual site conditions and used them for safety education.

VR experiential education
(Nikko Metals Taiwan Co., Ltd.)

• Tantalum and Niobium Division

We are re-checking rules for working at height, analyzing past accidents and rolling out countermeasures across the organization, strengthening safety patrols at each operating site, and promoting activities for near-miss scenarios. We also focus on reviewing risk assessments and 5S activities, which are the basis of safety.

Safety Education at a Safety Education Center

In order to raise the risk sensitivity of each and every employee and improve their safety awareness, the Group has established the Safety Education Center, where we conduct safety education, in Hitachi City, Ibaraki Prefecture. Here, risk sensitivity refers to sensing danger correctly. Sharpening this sensitivity leads to workers being able to avoid danger.

Since many of the occupational accidents that have occurred are recurrences of past cases (similar accidents), the center has prepared a program to improve worker understandings of danger and risk sensitivity through simulated experiences of past occupational accidents. In addition, we have implemented a new educational curriculum that utilizes VR technology, enabling students to have hands-on experience as a victim of an accident or disaster, a situation not easily simulated in real life.

In recent years, while the number of occupational accidents among employees has been decreasing, the number of occupational accidents among employees from Subcontractors has become an issue. To address this, we have introduced mini-education facilities at our core plants to improve the risk sensitivity and safety awareness of not only our employees but also those of our Subcontractors.

The Safety Education Center and the mini-education facilities work in unison to eradicate occupational accidents among workers.

VR experiential education

Accident Dramatization Videos

In addition to setting up safety training facilities at each operating site, we produce videos based on actual past accidents that teach safety by reproducing these accidents in a visual medium. We take opportunities such as our safety lectures to use these materials and raise safety awareness and sensitivity to hazards.

These videos are based on accidents that have occurred both within the Group and outside the Group. They offer viewers an emotional understanding of how disastrous an accident can be and teach the viewer what causes accidents, as well as countermeasures against them, and they facilitate communication at Group companies.

Example video: falling from a high place

Raising Safety Awareness Through E-Learning

The Group strives to ensure the safety and health of all persons connected to our business, and to elevate safety-first awareness and sensitivity to hazards. We periodically conduct safety training programs held via e-learning for all employees at domestic and overseas Group companies. Training consists of safety basics and knowledge that people can absorb in a short time. In fiscal 2020, 2,921 persons, or 73% of our workforce, completed the training.

A screenshot of our e-learning program (falling down the stairs)

Promote Diversity

Approach to Diversity

The Group values diversity in both human resources and work style.
In compliance with relevant laws and regulations in Japan and overseas, the Group is pursuing initiatives including the continued employment of workers aged 60 and older, hiring of persons with disabilities, and women's empowerment. We are also developing a personnel system with consideration for sexual minority employees (LGBTQ+) .
Moreover, we formulated and followed through on a plan for the five-year period to fiscal 2020 in accordance with Japan's Act on Promotion of Women's Participation and Advancement in the Workplace.

Measures to Support Diverse Work Styles

As part of our efforts to energize individuals and organizations, we are actively working to create an environment where a diverse range of people can work with a sense of motivation. Our efforts include the creation of an environment where people can work fully demonstrating their capabilities even if they are pregnant, raising a child, or caring for a family member. We provide legally mandated systems to support having and raising children, and offer our own unique systems as well. Our handbook on the support available for employees offers tips on balancing work with childcare or family care, provides an overview of the public services and company systems available for their use, and describes the roles managers should play in this context. In fiscal 2019, we also acquired the "Kurumin" certification mark related to our action plan for raising next-generation children.

- **Remote work system**

As part of our efforts to create an environment where a diverse range of people can work with a sense of motivation, we introduced a remote work system in January 2018. Amid the COVID-19 pandemic, we have set target work attendance rates as necessary given the state of the virus's spread and requests from government agencies. Our manufacturing sites (e.g., plants) require a majority of employees to attend work on-site in order to do business; therefore, while we have not set quotas or other targets here for attendance rates, we do utilize remote work depending on the particular characteristics of each department. At overseas operating sites, we take measures to prevent the spread of infection in accordance with the actual situation in the respective country/region. At these sites, we make decisions and take action on issues like restricting work attendance accordingly.

As a member of the community, we will take all possible measures to prevent the spread of COVID-19, ensure the safety of our business partners, local communities, employees, and their families, and maintain awareness of our social responsibility to deliver essential products to society as we strive to maintain our business.

- **Introduction of a flextime system without mandatory core hours**

In addition to the current flextime system with core hours, we have introduced a flextime system without mandatory core hours at the head office and for a portion of Isohara Works, and expanded covered hours (from 7:00 am - 10:00 p.m. to 5:00 a.m. - 10:00 p.m.) with the aim of promoting more autonomous work styles among employees.

- **Securing and utilizing highly specialized and senior citizen talent**

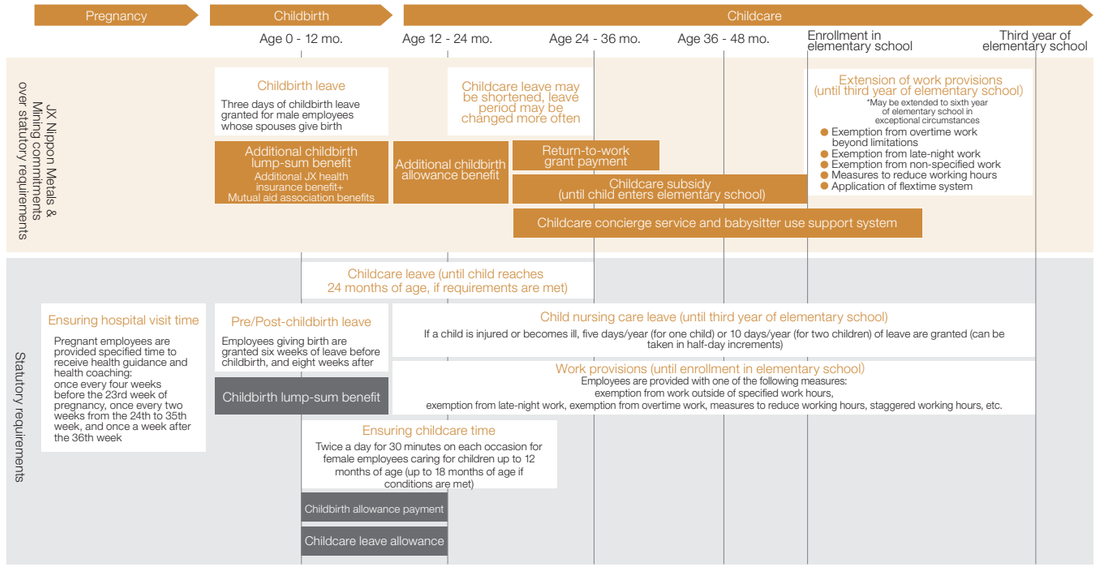
With the establishment of JX Nippon Research Institute for Technology and Strategy Co., Ltd., we introduced a flexible employment system that is not bound by the Group's existing personnel system, and launched efforts to secure and utilize highly specialized and senior citizen personnel.

Creating a Work Environment Where Women can Play an Active Role

At JX Nippon Mining & Metals, while working to create a working environment where diverse human resources can play an active role, we formulated and followed through on a plan for the five-year period to fiscal 2020 in accordance with Japan's Act on Promotion of Women's Participation and Advancement in the Workplace with particular respect to the success of our female employees.

In fiscal 2020, the final year for this plan's targets, we made improvements to the working environment by expanding remote work, introducing a flextime system without mandatory core hours, and expanding the use of childcare centers. We have formulated a new action plan for fiscal 2021 and beyond, and will focus on creating more opportunities for women to play an active role.

Systems for Childbirth and Childcare



Systems for Family Care

	Statutory Requirements	+ JX Nippon Mining & Metals Provisions
Time Off	• For one family member requiring care: five days/year (can be taken in half-day increments) • For two or more family members requiring care: 10 days/year (can be taken in half-day increments)	
Leave	• Maximum of 93 days may be taken in up to three periods	• A total of up to 730 days may be taken over the course of four leave periods • Family care subsidy and leave allowance (financial support)
Work Provisions	• Exemption from overtime work beyond limitations (exemption from overtime work in excess of 24 hours/month and 150 hours/year) • Exemption from late-night work (exemption from work during late night hours except when a family member 16 years of age or older and capable of providing care lives in the same household) • At least two times in three years (measures to reduce working hours) • Application of flextime • Exemption from non-specified work	• Reduction of working hours to a minimum of two hours per day, multiple times in three years

VOICE

Comments From a System Beneficiary

A number of women serve in technical positions at the Technology Development Center, and several are currently on childcare leave. I belong to the Analysis Group, an organization that analyzes exhaust gas and wastewater and measures working environments at business sites. Currently, I work shorter hours and have just returned from maternity and childcare leave. Before I gave birth, I participated in a Women's Success Forum held at my workplace, where I had the opportunity to interact with female employees from other operating sites. Also, in our five-year career independence training program, I was able to consider long-term career design.

Now, I work harder than ever before to communicate with the people in my workplace, share progress in my work, and have come to devise ways to complete tasks within a limited time. Going forward, I am exploring the potential of analysis systems and information management that offer ease of use to all, while also taking advantage of the company's childcare subsidy system.

Tobo Misaki
Hitachi Works
Technology Development Center
Analysis Group
JX Nippon Mining & Metals Corporation

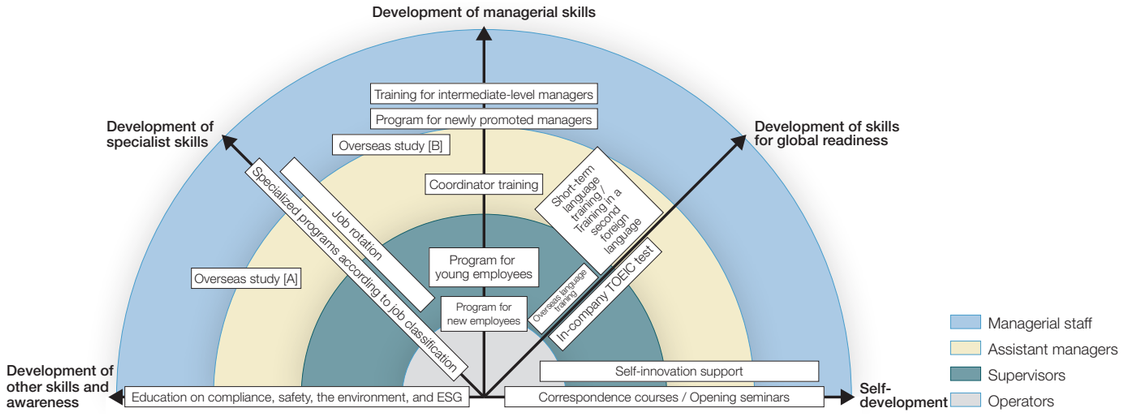
Develop Human Resources and Promote Health

Approach to Human Resources Development

In order to achieve technology-based business management set forth in the 2040 Long-Term Vision, we are working to secure and develop human resources capable of creating added value.

Strengthening our Training System to Energize Individuals and Organizations

Since fiscal 2016, our basic policy for human resources development has included the primary goal of energizing individuals and organizations, and we have been striving for broad-based human resource development by providing various educational programs to develop five key areas: managerial skills, specialist skills, skills for global readiness, self-development, and other skills and awareness. In addition, in order to raise awareness and improve capabilities for each employee, we have launched a new career design training educational program, as well as training to learn about our company's DNA, and various other support programs.



- **Training for young employees (university and graduate school graduates)**

We provide a wide range of training programs for university and graduate school graduates up to five years after they are hired, including New Employee Training for teaching basic businessperson skills, and Fifth Year Training to help them build a vision for their career.

- **Globalization education**

We promote education to globalize our talent so that they can play an active role on a global scale. In our Second Year Overseas Training program, employees are sent to overseas language schools for eight weeks, not only to learn the local language but also to experience different cultures and values, and to develop flexible thinking that can be applied globally.

- **Self-innovation support**

Employees may apply to any eligible external training program. On completing the program, half of the expenses will be subsidized (up to 500,000 yen per program). This is a highly flexible system because we want to address employees' wishes for self-development more than ever before.

Number of applications in fiscal 2020: 24

- **New Career Design Training program**

Fiscal 2020 marks the first year of our systematic career development education. As part of this effort, we have launched a new Career Design Training program for young employees to learn how to envision their future careers.

- **DNA Training**

The objective of this training is to develop core human resources who will be responsible for ESG management. This training will help instill an awareness of their role as a member of a company with roots in natural resources and with direct responsibility for the global environment and local communities, and overlay this awareness on their own values.

Health Promotion Initiatives

Based on the recognition that health and safety are of utmost importance, we are promoting various measures to maintain and improve the physical and mental health of our employees, thereby helping energize them in their daily lives and helping energize organizations. In addition to legally mandated regular health checkups and mental health stress checks, establishment of a centralized management system for this data, subsidizing regular health checkup expenses, and operating a system for substitute physical examinations, we began granting special leave for physical examinations and cancer screenings as of fiscal 2021.

In the area of mental health, we have established a system where employees can easily consult with industrial physicians as a preventive measure against mental health problems. We also offer an online health consultation service for expatriates and their family members, where they can consult with a specialized doctor in Japanese about any health concerns. Stress checks, which are conducted for all employees, will also feature more questions beginning in fiscal 2021 in order to more precisely analyze stress levels.

As part of our actions to prevent the spread of COVID-19, we are taking a variety of measures on a daily basis, including utilizing remote work, providing a special leave system to return to Japan for expatriates forced to lead high-stress lives amid infection prevention and lockdowns, and providing workplace vaccinations at our head office and at major operating sites in Japan.

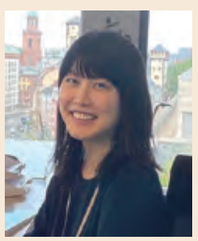
Workplace vaccinations at our head office

VOICE

Comments From a Career Design Training Instructor

In order to develop human resources capable of creating new value, an element of our long-term vision, our aim has been to create a situation where employees can be intrinsically motivated. We have planned our training programs in order to help each employee think about their own career, a necessary step to achieve our aim. I myself have heard people say things like "I can't picture my future career," or "I'm not sure if I can continue working after getting married or having children." So, I set my mind to considering how they could keep working with peace of mind. Some employees joining our training program have said things like "This program gave me a chance to think about my life and career," or "It was helpful to hear from people with more life experience," while others wanted to focus more on their work.

I currently work out of our representative office in Frankfurt, where each of us is tasked with a big mission. Therefore, I want everyone to be able to communicate and for me to be able to respond to their needs in a way that we all can continue to work with peace of mind.



Ii Natsuki
Frankfurt Office
JX Nippon Mining & Metals Corporation

VOICE

Comments from an HR Staffer

We are working to strengthen our various systems in order to provide a comfortable working environment for our diverse workforce. In the area of childbirth and childcare, more and more male employees are taking childcare leave each year. To support this, we inform male employees whose spouses have given birth about the childcare systems and services available to them. In addition, we have designed systems such as flextime, remote work, and childcare subsidies with the intention of allowing all employees to utilize them flexibly according to their lifestyles. In the area of family care, subsidies have seen greater use in recent years, and we hope to provide the necessary support to prepare for future growth in the number of people requiring family care. We believe that the key to helping diverse talent thrive is not only ease of working itself, but also motivation in their work.

In addition to actively promoting initiatives to promote the advancement of women by sending female managers to external training programs, since we have also been boosting the number of mid-career hires and non-Japanese hires, we have to deepen understandings of the various shared language that makes up our DNA, like "community involvement and development," "the mine as one big family", "work orientation" and "free and open communication." In addition to ongoing tours of the Nippon Mining Museum and closed mines, we plan to build a program that will help our employees learn about our company DNA.

We will continue to work to ensure that each and every one of our employees can reach their full potential.

Ando Tomohiko
Human Resources Department
JX Nippon Mining & Metals Corporation

Materiality 4

Respect Human Rights

The Group, which does business on a global scale, sees maintaining sound business practices while respecting the human rights of local residents, customers, employees, business partners and all others involved in the supply chain as a major premise for our continued operation. Based on this belief, we aim to conduct our business with due consideration for human rights, using opportunities like briefings and interviews, and to create a corporate climate where human rights are respected.

Major Initiatives

Human Rights Education and Internal Awareness Raising

▶ P62

Consideration of Human Rights in the Supply Chain

▶ P63

KPIs and Progress

Assessment : ☺ Achieved/Steady Progress ☹ Not Achieved

KPI	Fiscal 2020 Results/Progress	Assessment
Percentage of employees taking human rights training (100% in fiscal 2020)	In addition to stipulating respect for human rights in the Group Code of Conduct and other internal rules, we continue to carry out human rights training and e-learning programs at Group companies to raise awareness of human rights and prevent human rights violations. In fiscal 2020, 100% of officers and employees participated in our ongoing human rights training programs. Human Rights Education and Internal Awareness Raising ▶ P62	☺
Conduct survey of human rights in supply chains	In our work to prevent human rights violations throughout the supply chain, we have established and operate a supply chain due diligence management system in accordance with OECD guidance for procurement of raw materials. In fiscal 2020, we again underwent external audits related to gold, silver, and tantalum, which determined that we were taking appropriate action. Consideration of Human Rights in the Supply Chain ▶ P63	☺

Human Rights Education and Internal Awareness Raising

JX Nippon Mining & Metals Group Code of Conduct (excerpt)

8. International business operations
In international business operations, we aim to contribute to sustainable development by protecting the fundamental human rights of people in countries and areas where we operate, and by respecting their cultures and customs.

JX Nippon Mining & Metals Group Compliance Regulation (excerpt)

Prohibition of unjust discrimination

JX Nippon Mining & Metals Group companies and their officers and employees shall not discriminate in their business operations relating but not limited to hiring, salary, working hours, work conditions, and business terms due to reasons that include but are not limited to race, nationality, sex, age, religious belief, social status, or physical characteristics.

Prevention of harassment

JX Nippon Mining & Metals Group companies and their officers and employees shall work proactively to prevent sexual harassment (including gender harassment) and power harassment.

Protection of personal information

JX Nippon Mining & Metals Group companies and their officers and employees shall comply with personal information protection laws, regulations, and internal rules, adequately protect the personal information of parties including but not limited to customers, business partners, and employees, and in situations where personal information needs to be managed for business purposes, manage it with the utmost care.

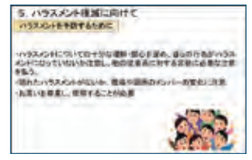
Prevention of child labor and forced labor

JX Nippon Mining & Metals Group companies and their officers and employees shall not be involved with child labor or forced labor and shall work to help solve these issues.

Human Rights Education

The Group provides and makes known guidelines on human rights issues including discrimination, harassment, forced labor, and child labor, for the prevention of these issues. We also create opportunities for periodic training to ensure retention of human rights awareness. We provided training to all Group employees in fiscal 2020, themed on “Harassment.”

This theme was established, given the clear provisions in the JX Nippon Mining & Metals Group Compliance Regulation that we shall not engage in discrimination or harassment, to raise employee awareness of human rights and understanding of harassment. Based on the concept that “anyone can be a perpetrator or a victim of harassment,” the program provided a good opportunity for each participant to gain an awareness of how harassment affects both companies and employees, and to re-evaluate our own words and actions, as well as our work environment. We will continue our work to ensure an understanding of human rights concepts in our global business operations and to do business in consideration of human rights.



E-learning materials

Total Hours Spent in Human Rights E-Learning Training
(Number of trainees x course hours)

Fiscal 2020
1,857 hours

Human Rights Consultation and Remedies

The Group has established the JX Nippon Mining & Metals Group Hotline as an internal consultation service for human rights violations and other issues. Employees are able to anonymously use this hotline to discuss any issues related to human rights–from those that may crop up on a day-to-day basis to significant infringements. All reports to this hotline are presented to the president, including a report on our response to each. Information about the establishment of the hotline is posted on our intranet and disseminated through various training programs, including human rights training. No one using the hotline for consulting or reporting shall be subjected to disadvantageous treatment for its use. Six reports were made to the hotline in fiscal 2020.

In regard to remedies, no restrictions have been made on resolving issues for consultation through external remedies, and therefore consulting parties may seek other remedies according to the legal system of the country in question.

Consideration of Human Rights in the Supply Chain

JX Nippon Mining & Metals Group Basic Procurement Policy (excerpt)

4. Follow the below principles regarding conflict minerals.
·Do not engage in raw materials procurement that contributes to illegal activities in conflict-affected regions or to human rights violations resulting from such activities.
·Respect the guidance of the Organisation for Economic Co-operation and Development (OECD) related to raw materials procurement from conflict-affected areas, and control supply chains in an appropriate manner.

Policy for Selecting Procurement Partners

In the conduct of the JX Nippon Mining & Metals Group's business operations, it is necessary for not only the Group but also our business partners' supply chains to fulfill their responsibility to society. Therefore, we also require our business partners to operate in accordance with the items below. Going forward, we will confirm the process of improvement with respect to business partners who violate the items below and receive an adverse disposition from the government, and business partners revealed not to be complying with the items below. Furthermore, in the case that a business partner is not complying with the items below, we will consider whether it is necessary to review (or cancel) the contract with the business partner.

1. Comply with laws, regulations, and social norms, such as those below, and place priority on human rights and environmental impact. In the event of any inconsistencies between internationally-recognized human rights principles and the laws, regulations, social norms, etc., respect the international human rights principles.
   - · Obey laws and regulations related to manufacturing and sales, etc.
   - · Comply with labor-related laws and regulations
   - · Abide by laws and regulations related to safety and health and develop a proper labor environment
   - · Prohibit child labor and forced labor
   - · Prohibit discrimination based on race, gender, etc. and respect the human rights, personality, and individuality of employees
   - · Comply with environmental laws and regulations
   - · Prohibit bribery and other unfair conduct
   - · Do not engage in conflict minerals procurement or use that contributes to inhumane acts
   - · Preclude all relations with "antisocial forces" (the term used to refer to organized crime groups in Japan)
2. Engage in sound and fair business management.
3. Based on the JX Nippon Mining & Metals Group's Green Purchasing Guideline, build environmental management systems and properly manage specified chemical substances.
4. Offer stable supply capacity and satisfy the quality, price, delivery, and service requirements of the JX Nippon Mining & Metals Group.
5. Possess technological capabilities that meet the requirements of the JX Nippon Mining & Metals Group.

Initiatives for Local Residents

Development and operation of mines can have a particularly significant impact on the surrounding environment. It is therefore essential to pay due consideration to the human rights of local residents. SCM Minera Lumina Copper Chile, the operator of the Caserones Copper Mine, applies a basic three-point policy for supporting local communities: respect for the lifestyles of local residents, protection of the community and environment, and respect for applicable laws. In keeping with this policy, since the launch of this project in 2007, the operator has held briefings and engaged in dialogue with the Collas, indigenous people living in the area around the mine site, endeavoring to build trust. As in earlier years, we found no violations of the rights of local residents in fiscal 2020.

Briefing session for residents

TOPICS

Underwent VAP Audit by RBA*

In order to appropriately address increasing corporate social responsibility and demands from client companies, the Group is actively pursuing initiatives in line with international standards. In fiscal 2020, the RBA's Validated Audit Process (VAP) audit was conducted at our Isohara Works. This audit had already been conducted in fiscal 2019 at the Chigasaki Plant of Toho Titanium Co., Ltd. and at the Mito Plant of TANIOBIS Japan Co., Ltd.

The RBA VAP audit is an assessment of maintenance and compliance with standards and management systems related to labor, safety, health, environment, and ethics, in accordance with the RBA Code of Conduct. This audit's assessment was that Isohara Works was broadly taking good measures. Going forward, we will explore expanding the number of sites subject to audits and, by undergoing audits and implementing PDCA (Plan-Do-Check-Act) cycles to continuously improve our performance, we will contribute to the realization of a sustainable society throughout the global supply chain.

(Left) Isohara Works, (Center) Chigasaki Plant, (Right) Mito Plant

*RBA: Responsible Business Alliance
A business alliance created with the goal of realizing responsible behavior in the electronics industry supply chain.

Confronting the Problem of Conflict Minerals

"Conflict minerals" is the general term for minerals that are mined (illegally, in most cases) in conflict-affected regions, providing a source of funds for local armed groups. The use of these minerals may lead to increasing human rights abuses and inhumane acts. In response to the international trend for stronger information disclosure and monitoring by stakeholders, industry organizations relevant to the Group (including the LBMA*1 and RBA) have established monitoring programs for eliminating conflict minerals, and require each business operator to undergo investigations and external audits.

• Initiatives in the Gold and Silver Supply Chains

JX Metal Smelting Co., Ltd., as a producer of gold ingots, and JX Nippon Mining & Metals, as a producer of silver ingots, have established and operate a management system for supply chain due diligence that calls for confirmation of the origin of raw materials, risk assessments, and confirmation of distribution routes. Operational status is reported to the LBMA after undergoing an external audit by a third-party organization designated by the association. As a result of these processes, the LBMA has included gold ingots produced at the Saganoseki Smelter & Refinery of JX Metal Smelting Co., Ltd. and silver ingots produced at the Company's Hitachi Works on its Good Delivery List. At the same time, they have been included on the RMAP Conformant Smelters list compiled by the RBA and GeSI*2 —recognition that they are taking proper measures to exclude conflict minerals.

*1 LBMA: London Bullion Market Association
An industry association composed of financial institutions and others that deal in gold and silver ingot. Inclusion on this association's Good Delivery List is viewed as a guarantee of high quality and reliability.

*2 GeSI: Global e-Sustainability Initiative
A global trade association of information and communications businesses focused on achieving digital sustainability.

• Initiatives in the Tantalum Supply Chain

TANIOBIS GmbH, a producer of tantalum powder, implements a strict program of purchasing checks based on international standards for procuring raw materials from conflict-affected and high-risk areas. For example, it purchases materials guaranteed by the ITSCI*3 to have no involvement in infringements of human rights, and it conducts supply chain due diligence. As a result of these efforts, TANIOBIS has been included in the RMAP Conformant Smelters list in recognition of its appropriate measures taken to exclude conflict minerals.
In addition, as of fiscal 2019, TANIOBIS began use of a supply chain due diligence system similar to the ITSCI, by means of the Better Sourcing Program (BSP) provided by the RCS Global Group, an international auditing organization for the raw materials supply chain.

*3 ITSCI: ITRI Tin Supply Chain Initiative
An initiative by the International Tin Research Institute (ITRI), a global industry group for tin. Based on OECD Due Diligence Guidance, it works to enable due diligence from mines to smelters, and to encourage procurement from mines in conflict-affected areas that is free of involvement with local armed groups.

Declaration of Support for White Logistics

At the end of April 2020, we announced our participation in the *White Logistics* movement launched by the Japanese government. As the shortage of truck drivers and aging population become more profound issues, we are working as a unified Group under the leadership of the Logistics Department to address these.

Initiatives for Human Rights in the Supply Chain

In accordance with the Basic Policy on Procurement, the Group conducts checks with its suppliers about issues such as ensuring worker rights, the presence of discrimination in hiring and work, forced labor and child labor, and compliance with prohibition against purchasing conflict minerals. In addition, from fiscal 2019, we launched the CSR Purchasing Questionnaire Surveys to ensure that our entire supply chain practices respect for human rights, occupational health and safety, compliance, environmental conservation, and other initiatives to fulfill our social responsibilities. We provide feedback to our suppliers based on the results of this survey, taking care to prevent infringements of human rights in our supply chain.

VOICE

Comments from a Logistics Team Member

Amid fears of a shrinking workforce in Japan in the near future, the trucking and coastal shipping industries are also experiencing significant shrinking and aging in their workforces, and there are concerns about the impact on logistics. In April 2020, we issued a voluntary declaration of support in agreement with the White Logistics recommendations by the Ministry of Land, Infrastructure, Transport and Tourism, and we have been working to address the seven issues listed in the declaration. In fiscal 2020, each of our logistics team members conducted field re-inspections and detailed surveys of our suppliers. They identified 121 issues, including the re-examination of appropriate rate setting for outsourced transport services, safety measures, and improvement of transportation efficiency. For these, 77 improvements were made through discussions with internal and external stakeholders, mainly logistics personnel at each business location. Large-scale capital investment plans, such as the renewal plans for the area around the logistics port at Isohara Works and the launch of the Oita Recycling Logistics Center, have also adopted White Logistics approaches, incorporating safety measures to prevent vehicle collisions and eliminating driver waiting time. So far, we have already made proactive improvements, such as safety considerations for our drivers and eliminating driver cargo handling. Going forward, we will continue our efforts to improve the operating environment of the logistics industry through White Logistics activities.

Oshida Soichi
Logistics Department
JX Nippon Mining & Metals Corporation

Materiality 5

Coexistence and Co-Prosperity With Local Communities

Since the inception of our business at the Hitachi Mine, the JX Nippon Mining & Metals Group has emphasized the spirit of maintaining good relations with local communities in conducting its business. Keeping alive that spirit today, we have written coexistence and co-prosperity with society into our Code of Conduct. We additionally set an action plan for each fiscal year and work day to day to fulfill it.

Major Initiatives

Environmental Conservation Activities
▶P66

Educational Activities
▶P66

Community Development
▶P66

Donations to Local Communities
▶P66

Sports Promotion

*Due to the spread of COVID-19, we canceled sports promotion activities for fiscal 2020.

KPI and Progress

Assessment : ☺ Achieved / Steady Progress ☹ Not Achieved

KPI	FY2020 Results and Progress	Assessment
Continue dialogue with local communities	Despite the impact of COVID-19, we endeavored to understand the needs of local communities, building trust in our corporate activities through ongoing dialogue. Social Contribution Activity Policy for Fiscal 2020 ▶P66	☺

Social Contribution Activity Policy for Fiscal 2020

The JX Nippon Mining & Metals Group social contribution activity policy for fiscal 2020 was to further strengthen relationships with local communities. We conducted community-based initiatives at each of our operating sites in Japan and overseas. While the impact of COVID-19 resulted in restrictions or limitations on our activities, we endeavored to create opportunities for communication with local communities, valuing the spirit of coexistence and co-prosperity that we have pursued since our founding.

Results of Social Contribution Activities in Fiscal 2020

	Activity	Location	Date	Description
Environmental Conservation Activities	Cleanup around plant areas	Various group locations	Year-round	Cleanup activities on roads and local river basins surrounding our plants
		Saganoseki Smelter & Refinery, JX Metals Smelting Co., Ltd.	August 2020	Cleanup activities at Kouzaki Beach (Oita Prefecture)
	Mangrove tree planting	TANIOBIS Co., Ltd.	October 2020	Tree planting activities at local facilities
	Participated in the Kuragakeyama Sakura Mountain development project	Hitachi Works	November 2020	Participated in activities organized by Hitachi City (grass mowing, tree trimming, etc.)
Educational Activities	Plant tours	Various group locations	Year-round	Organized plant tours for area students (elementary, junior high, and high school), explaining plant facilities and the nature of the work performed
	Internships	Various group locations	Year-round	Internships for industrial high school, technical college, and university students; practical training and presentations
	Job skills training	Chile office	November 2020	Job skills training for residents of Tierra Amarilla (275 participants)
	Special online class on the basics of copper	Frankfurt office	March 2021	Online class about the basics of copper taught at the Japanese International School in Frankfurt
Community Development	Film festival	Frankfurt office	August 2020	Screened *A Town and a Tall Chimney* at Japan Filmfest Hamburg
	Entrepreneurship support contest	SCM Minera Lumina Copper Chile	October 2020	Support for entrepreneurs in collaboration with Copiapo City Hall to revitalize economic activities that slowed due to COVID-19
	Participation in Kurobe Fair 2020	JX Nippon Mikkaichi Recycle Co., Ltd.	November 2020	Set up an online company booth to introduce our business at a regional industrial event hosted by Kurobe City
	Participation in Christmas event	SCM Minera Lumina Copper Chile	December 2020	Distributed Christmas gifts to 500 children in schools and kindergartens near the Caserones Copper Mine
	Local Rotary Club activities	JX Nippon Environmental Services Co., Ltd.	March 2021	The president of JX Nippon Environmental Services took the stage as narrator of the picture story, *The Great Smokestack and the Town of Cherry Blossoms*
	Art exhibit sponsorship	Frankfurt office	March 2021	Served as co-sponsor of an exhibit of modern and contemporary Japanese photography in Goslar, Lower Saxony, entitled *Past and Present: The Standpoints of Japanese Photographers*
Donations to Local Communities	Donation of plastic bottle caps, etc.	JX Nippon Exploration and Development Co., Ltd.	Year-round	Collected and donated plastic bottle caps and used stamps
	Donation to victims of typhoons Rolly and Ulysses	JX Nippon Mining & Metals Philippines, Inc.	November 2020	Donations through local foundations to support victims of typhoons Rolly (Bicol Region, Philippines) and Ulysses (Luzon Island)
	Donations to victims of the eruption of Taal Volcano	JX Nippon Mining & Metals Philippines, Inc.	January 2021	Donations of bedding, daily necessities, food, and other items to support evacuees from the eruption of the Taal Volcano (Batangas Province, Philippines)
	Donation of stationery, writing tools, etc.	TANIOBIS Co., Ltd.	February 2021	Donations of notebooks, toys, bicycles, etc., to nearby elementary schools and kindergartens on Children's Day

Cleanup around plant areas

Cleanup of the Miyata River (Hitachi Works)

Art exhibit sponsorship

Sponsored an exhibit of modern and contemporary Japanese photography in Goslar, entitled *Past and Present: The Meaning of Japanese Photography*

Participation in Christmas event

Distributed Christmas gifts to children in schools and kindergartens near the Caserones Copper Mine

Activity Highlights

• Donation of relief funds
JX Nippon Mining & Metals Corporation

Torrential rains in July 2020 caused the Kuma River (Kumamoto Prefecture) and the Chikugo River (Oita Prefecture) to overflow, resulting in widespread flood damage, mainly in western Japan. The ENEOS Group (ENEOS Holdings, ENEOS Corporation, JX Nippon Oil & Gas Exploration, and JX Nippon Mining & Metals) donated 5 million yen to each of the affected areas through the Japanese Red Cross Society. Donations supported the people affected by this disaster and are aiding in the reconstruction of the affected areas. We pray for the earliest possible recovery in the areas impacted by the disaster.

• Online class taught at the Japanese International School
Frankfurt Office

In March 2021, our Frankfurt office conducted a special online class titled, *What is Copper?*, at the Japanese International School of Frankfurt (JISF). The class provided an introduction to JX Nippon Mining & Metals as well as an introduction to the nonferrous metals industry. The school's usual social studies field trip for junior high students to visit companies in person was canceled due to COVID-19. The online class was held in response to the school's request to provide students an alternate opportunity to learn about industry and society.

VOICE

Employee Comments

I was a bit nervous about giving an online lecture on nonferrous metals, a topic unfamiliar to most students. But I was pleased that there were more questions than expected during the Q&A session and that the students took the lecture seriously. I was inspired by the pure inquisitiveness of the students and their lack of bias.

Many Japanese expatriates from automobile manufacturers and other companies work in Frankfurt. I hope that the students, who are the seeds of these manufacturers, will remember that Japan's nonferrous metals industry is also active in Europe. I would be deeply moved if some of the children I met during my stay in Germany were to join the nonferrous metals industry in the future, and we were able to meet again.

Tanaka Kentaro
Frankfurt Office
JX Nippon Mining & Metals Corporation

• Plant tours and internships
Saganoseki Smelter & Refinery, JX Metals Smelting Co., Ltd.

Every year, the Saganoseki Smelter & Refinery invites local elementary and junior high school students to tour the plant. The plant also accepts high school and technical college students for internships. Elementary school students took quizzes about the melting point of copper and the size of the plant's largest chimney. High school students and technical college students receive practical education in weighing, sample analysis, or equipment inspection, according to their course of study. We designed the program to create a deeper understanding of our Metals & Recycling Business, while also providing firsthand experience in the importance of safety and environmental measures.

Plant tour for elementary school students

Interns look through a telescope during a chimney tour

• Supporting economic activity in the Caserones community
SCM Minera Lumina Copper Chile

SCM Minera Lumina Copper Chile, which operates the Caserones copper mine, collaborated with the Copiapó municipality in October 2020 to provide support to small business owners in the region. More than 80 small business owners received support through the program, which is an economic assistance program aimed at revitalizing the local economy that has been paralyzed by the spread of COVID-19. The company will continue to provide support in helping the people of the community return to their regular lives and to develop the region further.

Support for entrepreneurs in collaboration with Copiapó City Hall

Contributing to Local Employment

As a global business enterprise, we believe that contributing to the development of local economies and communities through local employment plays an important role in building good relationships with local communities. The ratio of senior managers among locally hired employees at important overseas locations is 8% for men and 11% for women.

Column

Activities Related to COVID-19

In addition to efforts in preventing the spread of COVID-19, the JX Nippon Mining & Metals Group conducts a variety of social contribution activities.

Basic Policy
(1) As a member of society, we take all possible measures to prevent the spread of infection and ensure the safety of our business partners, local communities, employees, and their families.
(2) Recognizing our social responsibility to deliver advanced materials and other products essential to society, we strive for business continuity through infection prevention measures appropriate to the nature of each business location.

Japan

Participation in the *IP Open Access Declaration Against COVID-19*
JX Nippon Mining & Metals Corporation

In June 2020, JX Nippon Mining & Metals Corporation endorsed the purpose of and participated in the *IP Open Access Declaration Against COVID-19* to support the fight against COVID-19. Under this declaration, companies promise to not exercise patent rights, utility model rights, design rights, or copyrights against any entity using said rights for the purpose of ending the spread of COVID-19. An announcement was made in June 2021 to extend the term of the declaration in light of the ongoing pandemic.

COVID-19と戦う知財宣言

WEB Participation in the *IP Open Access Declaration Against COVID-19* (Japanese only)
https://www.gckyoto.com/covid19

Donations to Local Governments
JX Nippon Mining & Metals Corporation

In May 2020, we donated 30 million yen each to the municipalities of Kitaibaraki City, Ibaraki Prefecture; Hitachi City; Samukawa Town, Koza County, Kanagawa Prefecture; and Oita City, Oita Prefecture. Our donations are aimed at preventing the spread of COVID-19 and conducting future revitalization activities in communities where we operate our main production facilities. Each location in these communities is home to 1,000 employees and subcontractors. These employees are members of the local community, and they continue to work to prevent the spread of COVID-19, as well as for the future revitalization of their communities.

Donation in Samukawa Town, Koza County, Kanagawa Prefecture

Overseas

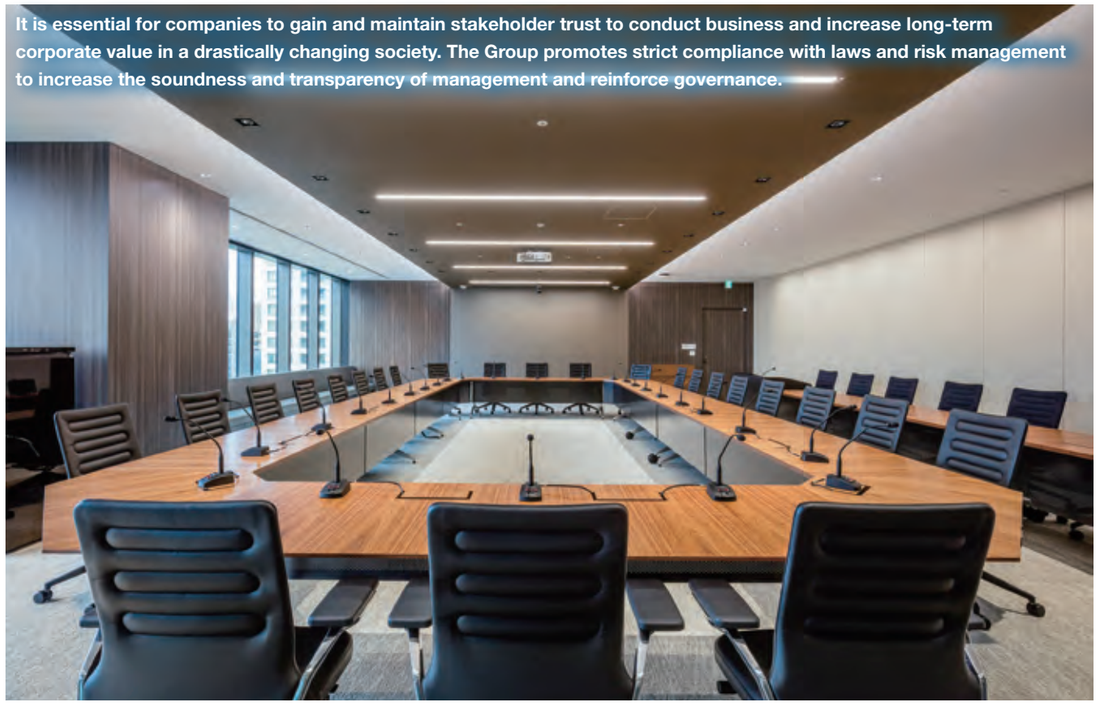
Donation of COVID-19 Prevention Equipment to Local Communities (Chile)
SCM Minera Lumina Copper Chile

In April 2020, SCM Minera Lumina Copper Chile, the operator of the Caserones copper mine, donated 200 simple test kits for COVID-19 to the local Atacama Health Department. The company also donated two sample collection devices for COVID-19 PCR testing to the University of Atacama School of Medicine. In August, we donated ultrasound machines, blood flow meters, resuscitation monitors, and other equipment to the Atacama Health Department to improve the health care of expectant mothers. Mr. Patricio Urquieta, governor of Atacama State, and Mr. Claudio Baeza, Atacama Health Department director of health services expressed their gratitude to the company for these donations.

Donation of goods to the Atacama Health Department

Materiality 6

Strengthen Governance



It is essential for companies to gain and maintain stakeholder trust to conduct business and increase long-term corporate value in a drastically changing society. The Group promotes strict compliance with laws and risk management to increase the soundness and transparency of management and reinforce governance.

Major Initiatives

Strengthen Business Execution Systems

▶ P70

Rigorous Compliance

▶ P72

Risk Management

▶ P74

Global Quality Governance

▶ P76

KPIs and Progress

Assessment : ☺ Achieved/Steady Progress ☹ Not Achieved

KPI	Fiscal 2020 Results/Progress	Assessment
Steady operation of Group-wide risk management	The Group bases its activities in Group-wide risk management concepts with reference to ISO 31000, a set of guidelines for risk management methods. In fiscal 2020, our risk management systems underwent a redefining and recategorization of risks, with our actions reorganized based on risk category. Risk Management ▶ P74	☺
Compliance training tailored to business characteristics and social movements, etc.	The Group conducts compliance training every year to increase awareness and knowledge of compliance among executives and other employees. In fiscal 2020, in addition to annual rank-specific compliance training, we held training programs in Japan and overseas on a number of topics, such as harassment, tailored to business characteristics, social trends, and other factors. Rigorous Compliance ▶ P72	☺

Strengthen Business Execution Systems

Approach to Corporate Governance

The Group is working to strengthen its governance structure in order to have a firm grasp on rapidly changing business environments, to accelerate decision-making and business execution, and to achieve fair and highly transparent management.

Corporate Governance Structure

• Board of Directors

The Board of Directors was established to discuss matters specified by laws, regulations, and the Articles of Incorporation, as well as other important management issues. The Board of Directors is composed of the president and eight directors (as of June 2021) (seven male directors, one female director). Auditors can also attend the meeting and express their opinions. In accordance with laws, regulations, and the rules of the Board of Directors, transactions involving conflicts of interest between directors and the Company are subject to approval by the Board of Directors.

• Executive Council

As an advisory organ to the president, the Executive Council was established to discuss important matters regarding company management and to report the state of business execution. The Executive Council is composed of the president and executive officers designated by the President. Full-time Auditors can also attend the council meeting and express their opinions.

• Executive Officer Compensation System

Company compensation for the executives consists of fixed monthly compensation based on the relevant individual's role, and variable performance-based bonus payments. The bonus is determined by the consolidated business results of the Company as well as ENEOS Holdings. The Company does not have an executive officer retirement benefit program. The share-based payment system was implemented in July 2017. The share-based payment system applies the Board Incentive Plan (BIP) to Board Members, etc. to provide ENEOS Holdings shares according to individual role and performance as part of the incentives program.

• Auditors

Auditors attend Board of Directors meetings, Executive Council meetings and other important meetings of the Company to express their opinions as needed to increase the effectiveness of audits. In addition, auditors endeavor to understand the state of business execution by individual executives of the Company and the Group companies, through interviews, and through the inspection of documents. Furthermore, auditors also receive periodic reports on audit plans, progress, and results from the Internal Auditing Department and the accounting auditor while enhancing cooperation through the exchange of information and opinions.

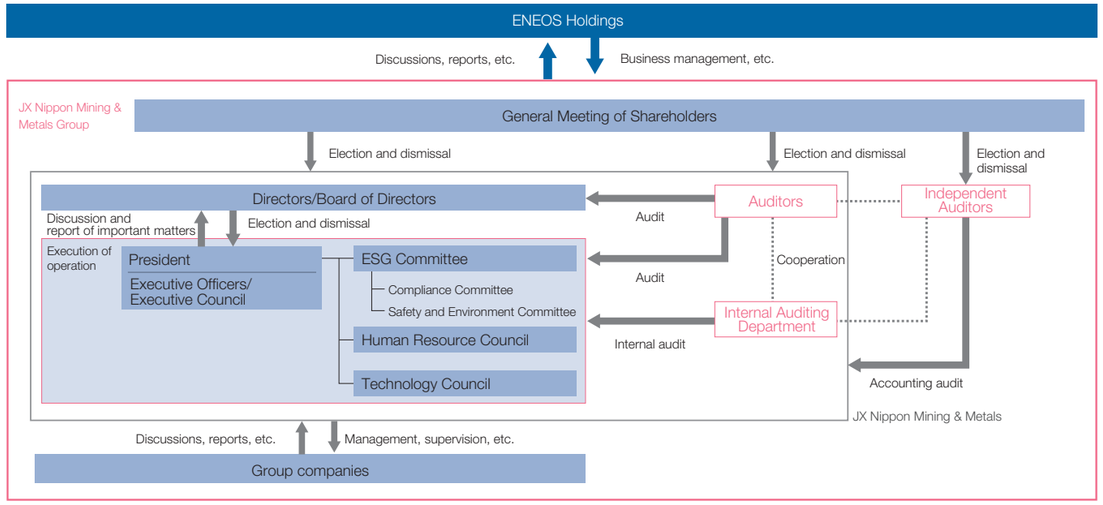
• Outside Directors

The Company appointed a new outside director in April 2021. With the recent growing calls from society to strengthen our internal controls, we decided it would be best to appoint an outside director to incorporate new perspectives in judgment and new stimuli, as well as provide an external oversight function.

• Management of Group Companies

Each Group company is placed under the jurisdiction of the appropriate operating or corporate department of the Company based on its business line, and the execution of its operations is managed and supervised by that department. Important matters regarding the business management of individual Group companies are reported to the Company through the relevant supervising departments. If necessary, they are also reported or discussed at the Executive Council and other important meetings.

JX Nippon Mining & Metals Group Corporate Governance Structure



Internal Control System

The Group has an internal control system to ensure the effectiveness and propriety of operations in accordance with the Basic Policy on Establishment and Operation of Internal Control Systems.

Previously, we had established the Internal Control Council as an advisory organ to the president, and the Internal Control Promotion Committee to provide advice to and assist with the duties of the Internal Control Council. However, following a review of the president's advisory bodies from the perspectives of effectiveness and efficiency, the Internal Control Council and the Internal Control Promotion Committee were abolished as independent bodies as of October 1, 2020. Going forward, the Executive Council will deliberate on the status of internal controls to further enhance the effectiveness of governance and improve the operational efficiency of the Company and the Group.

Internal Audit

We conduct internal audits across the entire JX Nippon Mining & Metals Group to investigate, discuss, and assess the state of business administration, operations, and asset preservation from the standpoints of legality, efficiency, and effectiveness. The Internal Auditing Department is in charge of these functions.

The Internal Auditing Department establishes a medium-term policy at three-year intervals and drafts auditing plans for each fiscal year to ensure systematic internal audits. Internal audits of Group companies are conducted in collaboration and cooperation with auditors dispatched from the Company. Based on the results of these audits, proposals for necessary improvements are made, with progress tracked for corresponding actions. Audit results and findings are reported to the president of JX Nippon Mining & Metals, to the relevant Group company, and, as necessary, to the Executive Council.

Rigorous Compliance

JX Nippon Mining & Metals Group Code of Conduct (excerpt)

2. Compliance with laws and regulations and engagement in fair trade

We will comply with domestic and/or overseas laws and regulations, and will engage in fair, transparent and free competition and trade based on the fulfillment of our social responsibilities.

Compliance Promotion Structure

Measures related to compliance in the Group are determined at Compliance Committee meetings (twice yearly in principle). The Committee consists of executives from the Company and other major Group companies in and outside Japan. In response to reports on the state of compliance provided by individual departments of the Company and Group companies, the Compliance Committee evaluates the risk of fraudulent acts, legal violations, and other misconduct related to business operations, and reflects the results in setting priority issues and formulating education plans.

• Whistleblower Program

To increase reliability, we have outsourced the Group's whistleblower program to an external organization. This external organization is responsible for accepting anonymous reports from whistleblowers. We have also taken a wide range of measures to increase awareness of the program throughout the Group. Such measures include displaying posters at individual Group company sites to publicize the program, posting articles in pocket editions of the Group Philosophy, which is distributed to all employees, opening a special section on the Company intranet, and introducing the program during compliance education sessions. In fiscal 2020, we received several reports through the program and took necessary measures in all instances in accordance with the relevant rules and regulations while taking due care to protect whistleblowers.

Compliance Priority Target Approaches and Achievements

The Group determines priority targets regarding compliance for each fiscal year to examine the actual application of related rules and regulations by Group companies and to make improvements when issues are identified in the structure or operation.

• Handling Anti-Social Forces and Bribery Prevention

Companies within the JX Nippon Mining & Metals Group have undergone audits to monitor progress in dissemination and application. In order to prevent violations or suspected violations of anti-bribery laws and regulations by Group company executives and employees, we have established an anti-bribery system founded on the JX Nippon Mining & Metals Group Anti-Bribery Regulation. This system includes the requirement of a prescribed set of checks when providing entertainment, gifts, etc. to a public official or similar person, and approval from a responsible party when certain conditions are met. In fiscal 2020, we continued to check application based on the aforementioned regulation, and confirmed that these were generally being applied properly. (There were no adverse dispositions issued by regulators in regard to bribery.)

• Program for Compliance with Competition Laws

The Group has established the Program for Compliance with Competition Laws, which includes rules such as those requiring all employees to report in advance planned transactions or gatherings with competitors to confirm that that they do not violate competition laws, requiring individual managers to submit periodic reports to the head office, and so on. In fiscal 2020, we continued to check application based on the aforementioned program, and confirmed that these were generally being applied properly. (There were no adverse dispositions issued by regulators in regard to anti-competitive behavior.)

• Complete Inspections for Compliance With Environment and Safety Laws

We conducted complete inspections for compliance with environment and safety laws at 26 Group sites in fiscal 2020. We confirmed that environment-related and occupational health and safety-related laws were thoroughly understood by employees at all Group company sites and no serious lack of understanding was observed. All sites are also responding appropriately to matters requiring improvement.

• Inspections for Compliance With Labor Laws

We conducted inspections for compliance with personnel and labor laws at seven Group sites in fiscal 2020 and confirmed that they were properly managed.

Overseas Compliance Training

The Group facilitates the fulfillment of compliance education to increase awareness and knowledge of compliance among executives and other employees, and conducts a variety of compliance and legal training sessions in Japan and overseas based on business characteristics and social trends.

The Group held overseas compliance training at Group companies in China* in March 2021, targeting a total of 71 staff in managerial positions. Given the spread of COVID-19, these sessions were held entirely over Zoom, except for live sessions at our Shanghai sites (JX Nippon Mining & Metals Shanghai Co., Ltd., and Nikko Metals Shanghai Co., Ltd.). Attorneys from advisory law firms were invited to provide lectures at each site on prohibition of bribery, compliance with anti-unfair competition laws, prevention of harassment, protection of trade secrets, protection of personal information, prohibition of private use of corporate assets, prohibition of conflicts of interest, and other important issues, providing specific examples in China. These sessions offered excellent opportunities for participants to deepen their understanding of compliance. Going forward, we plan to continue studying and implementing overseas compliance training based on trends in legal revisions, regional characteristics, and other factors.

* JX Nippon Mining & Metals Shanghai Co., Ltd., Nikko Metals Shanghai Co., Ltd., Nippon Mining & Metals (Suzhou) Co., Ltd., Nikko Fuji Precision (Wuxi) Co., Ltd., JX Nippon Mining & Metals Dongguan Co., Ltd., Shenzhen Nikko Shoji Co., Ltd.

Joint training in the Shanghai area

Training at Shenzhen Nikko Shoji Co., Ltd.

Tax Governance

The JX Nippon Mining & Metals Group recognizes that the proper fulfillment of tax obligations in the countries and regions where a company does business is one of the most important social responsibilities that it should fulfill. Based on this, we are fostering awareness of tax compliance and working to maintain our tax governance system in accordance with the ENEOS Group Tax Matters Policy.

ENEOS Group Tax Matters Policy (Excerpt)

1. Basic Approach
   Companies have a social responsibility to appropriately honor their tax obligations in the countries and areas where they conduct their business activities.
2. Compliance with Applicable Laws and Regulations
   We comply with the relevant tax laws and regulations in the countries and areas in which we conduct our business activities.
   We conduct our business activities in accordance with the purposes of the rules regarding international tax matters (such as the OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations and the Base Erosion and Profit Shifting Project).
3. Fostering Awareness of Tax Compliance
   Through continuous training concerning tax matters and other relevant training, we make efforts to maintain and improve our awareness of tax compliance.
4. Optimization of Tax Costs
   By using the Advance Pricing Arrangement and other relevant systems, we attempt to obtain agreement with tax authorities, and make efforts to reduce risks and optimize costs.
5. Establishment of Relationships of Trust with Tax Authorities
   At the request of tax authorities, we timely and properly provide them with necessary information.

Risk Management

We identify, analyze, and assess the various risks surrounding our business based on future projections and changes in the internal and external environment, implement measures such as reducing, transferring, and retaining these risks, and monitor their status. In this way, we appropriately manage risk, and act on a daily basis with the goal of supporting the management of the JX Nippon Mining & Metals Group.

JX Nippon Mining & Metals Group Code of Conduct (excerpt)

6. Enhancement and strengthening of risk management
We will establish a risk management system based on scientific data to enhance and strengthen risk management.

Risk Management Promotion System

At the Group, we select important risks, approve response plans for each important risk, and monitor these plans, all with the approval of the JX Nippon Metals & Mining Executive Council. In addition, the Risk Management Office in the Company's Administration Department is responsible for the overall risk management for both the Company and Group, handling Group-wide risk management.

• Risk Management Initiatives

The Group bases its activities in Group-wide risk management concepts with reference to ISO 31000, a set of guidelines for risk management methods. These activities are founded in the five core principles of (1) management participation, (2) appropriate risk classification, (3) operation of processes, (4) adaptation to the organization, and (5) continuous improvement.

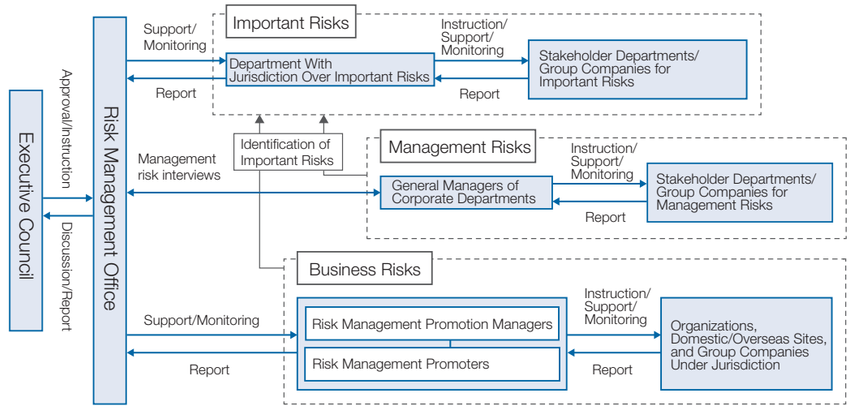
Risk is defined as "any uncertainty that may affect the management of JX Nippon Mining & Metals Group companies." Here, in order to achieve risk management that is linked to our long-term vision, medium-term management plan, and business plan, we classify risks into "management risks" and "business risks."

Of these two categories, those risks that are judged to have a significant impact on the management of the Group are approved by the Executive Council as "important risks." The department with jurisdiction over a given important risk will lead actions taken to mitigate risks, and the Executive Council monitors the status of these actions.

We will continue to take risk management initiatives as we operate PDCA cycles within this mechanism. In this process, we will evaluate the appropriateness and adequacy of our risk management system, identify issues, and make continuous improvements.

1. Management Risks
   Risks that may hinder the achievement of the Group's management goals are selected by consensus from the General Managers of corporate departments.
2. Business Risks
   Each department or Group company selects risks that may affect the achievement of goals related to the execution of business by the respective organization. Each organization appoints Risk Management Promotion Managers and Risk Management Promoters, with the goal of promoting the penetration of risk management activities within each organization.

Risk Management Structure



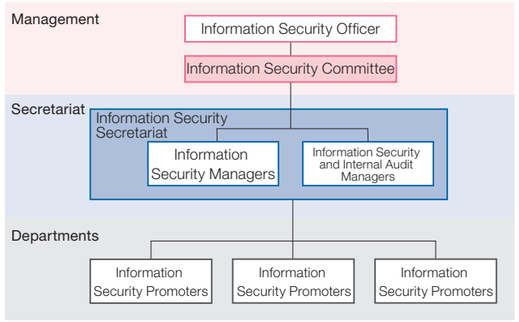
Information Security Initiatives

The Group has taken steps to build an information security management system (ISMS) in compliance with ISO 27001 from the three perspectives of strengthening information security compliance, increasing customer trust, and leveraging information internally and externally.

In fiscal 2020, under the supervision of the Information Security Officer, we strengthened our policies and rules regarding risk assessments and internal audits, which form the basis of the rules and operations required for our management systems. We also further strengthened physical protection measures. In addition, in order to raise awareness of information security within the Group, we conducted rank-based training programs based on the newest information available, including training for members of management and training for general employees. In addition, in fiscal 2021, we will develop a network based on the Zero Trust architecture in order to strengthen our cyber security measures.

Going forward, we will continue to make continuous improvements in line with the ISMS with the goals of enhancing information security and contributing to the realization of our long-term vision of becoming a technology-based company.

Information Security Structure



Business Continuity Plan (BCP) Initiatives

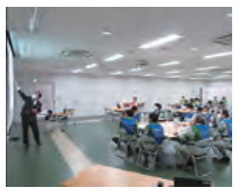
The Group has established business continuity plans (BCPs) for the Head Office, other offices and affiliated companies to minimize damage and quickly recover after a major earthquake or any other incident that could disrupt business operations.

In fiscal 2020, the head office, Isohara Works, and the Kurami Works held BCP training. The BCP training exercise was conducted for an earthquake measuring 6+ on the Japanese seismic intensity scale to evaluate (1) the establishment of a disaster control headquarters, (2) the confirmation of employee safety, (3) the assessment of damages both inside and outside each company, and (4) the sharing and discussing of information and the initiation of measures. The exercise was carried out without disclosing the scenario in advance. As a result, we identified the need to review the initial response manuals, which we continue to improve.

The Group endeavors to verify BCPs through periodical training and establish a Business Continuity Management (BCM) system for further improvement.

*1 BCP: Business Continuity Plan
*2 BCM: Business Continuity Management

BCP training at the Head Office



BCP training at Kurami Works

VOICE

Comment from BCP Training Participant

Kurami Works held a workshop-style training in March 2021. In order to make effective use of training time, issues were organized in advance, and on the day of the training, each of us brought issues to the table for discussion. Each team made a to-do list of items necessary for the initial response after a major earthquake and for planning production for plant restoration. They also discussed necessities in decision-making, including who needs what information at what timing and in what order. We will leverage this workshop's results to continue our efforts in achieving rapid recovery and providing a stable supply of products in the event of a major disaster.

Iwai Taichi
Administration Department,
Kurami Works
JX Nippon Mining & Metals Corporation

Global Quality Governance

JX Nippon Mining & Metals Group Basic Quality Policy

The JX Nippon Mining & Metals Group hereby sets forth, and acts in observance of, this Basic Quality Policy in order to contribute to the development of a sustainable society while recognizing that its social mission is to stably supply nonferrous metals and materials.

1. Grasp the requirements of customers and society correctly in order to offer products and services that customers can trust and that satisfy their needs.
2. Improve and maintain quality in all processes from development, design, and production to delivery, while paying due attention to safety and environmental conservation.
3. Establish a quality management system, carry out continual improvements, and develop human resources.
4. Comply with all pertinent laws and regulations of Japan and other countries, and provide customers and society with accurate information on quality.

Establishing and Operating a Quality Management System

The Group has and operates a quality management system (QMS) to realize our Basic Quality Policy. We work to continually make improvements through steady PDCA cycles, aiming to realize better quality through the QMS. Company sites both in Japan and overseas have acquired QMS third-party certification (ISO 9001, etc.).

In addition, the Group reviews quality improvement activities and establishes action plans through the Quality Management Meeting, which is made up of top management. We also hold Quality Assurance Managers' Meetings twice annually to share information on quality management. Participants share the action plans adopted at the Quality Management Meeting and share issues encountered and best practices found at each site to promote interactions among quality assurance managers.

Manufacturing Sites With Third-Party QMS Certification

Domestic

Isohara Works; Kitaibaraki Precision Co., Ltd.; Kurami Works; JX Nippon Coil Center Co., Ltd. (Kurami Office, Kawasaki Office); Hitachi Works (Copper Foil Dept.); Ichinoseki Foil Manufacturing Co., Ltd.; JX Metal Smelting Co., Ltd. (Saganoseki Smelter & Refinery, Hitachi Refinery); Japan Copper Casting Co., Ltd. (Saganoseki Works); JX Metals Trading Co., Ltd. (Takatsuki Plant); JX Metals Precision Technology Co., Ltd. (Esashi Works, Nasu Works, Kakegawa Works); TANIOBIS Japan Co., Ltd.; and Toho Titanium Co., Ltd. (Headquarters/Chigasaki Plant, Hitachi Plant, Yahata Plant, Wakamatsu Plant, Kurobe Plant)

Overseas

Nippon Mining & Metals (Suzhou) Co., Ltd.; Nikko Fuji Precision (Wuxi) Co., Ltd.; JX Nippon Mining & Metals Dongguan Co., Ltd.; Nikko Metals Taiwan Co., Ltd. (Longtan Works, Kuanyin Works); JX Nippon Mining & Metals Philippines, Inc.; JX Nippon Mining & Metals USA, Inc.; JX Nippon Mining & Metals Korea Co., Ltd.; TANIOBIS GmbH (Goslar); TANIOBIS Smelting GmbH & Co. KG (Laufenburg); TANIOBIS Co., Ltd. (Map Ta Phut); Materials Service Complex Malaysia Sdn. Bhd.; Materials Service Complex Coil Center (Thailand) Co., Ltd.; and SCM Minera Lumina Copper Chile

Quality Control Department Activities

The Quality Control Department is in charge of planning, proposal, promotion, and oversight for enhancement of Group-wide quality control. This department is also engaged in clarifying Group-wide QMS requirements, improving the effectiveness of internal quality audits, and supporting quality improvement activities and quality control education at manufacturing sites.

In fiscal 2020, we continued to remotely conduct internal quality audits at more than 40 sites in Japan and overseas, despite restrictions imposed by the COVID-19 pandemic.

Remote audit by the Quality Control Department

Implementation of Automated Quality Inspection System

The Group promotes the implementation of an automated quality inspection system to improve reliability and efficiency, as well as to prevent human error in quality inspections for a wide range of Group company products. In fiscal 2020, despite impact from the spread of COVID-19, we were able to advance implementation almost entirely as planned, with our future tasks including sharing best practices and rolling this out to new businesses.

Liability Claims

In fiscal 2020, there were no claims pursued under the Product Liability Act due to personal or property damage caused by defects in products made by Group companies.

Providing Information on Products and Services

In accordance with the Basic Quality Policy, the Group provides customers with information on its products and services through product specifications and Safety Data Sheets (SDS)*. For example, sulfuric acid sold by Group companies is designated as a deleterious substance under Japan's Poisonous and Deleterious Substances Control Act. By limiting our business partners to sellers of poisonous or deleterious substances and issuing SDSs, we strive to prevent serious negative effects on the occupational health and safety for our customers and their employees after delivery.

* A Safety Data Sheet (or SDS) is a document that provides information on chemical substances, product names, suppliers, hazards, safety precautions, and emergency responses with regard to a given chemical product.

Promotion of Personnel Quality Education

While improving the Group's quality control level, we also provide quality control education to all employees to improve their problem identification and resolution capability, helping them to logically infer the root cause of a problem and independently resolve it. The Group has developed a wide range of well-established training programs, from introductory to advanced, tailored to the level of participants, and systematically provides training to individual employees according to their occupation and years of service.

Starting in fiscal 2020, the Company's Quality Control Department encourages internal quality auditors to acquire qualifications such as QMS Auditor and is introducing retrospective training from outside instructors in order to improve their competence.

Participants attend a remote education session at Hitachi Works

Practical exercises during a remote education session

VOICE

Comment From a Training Program Participant

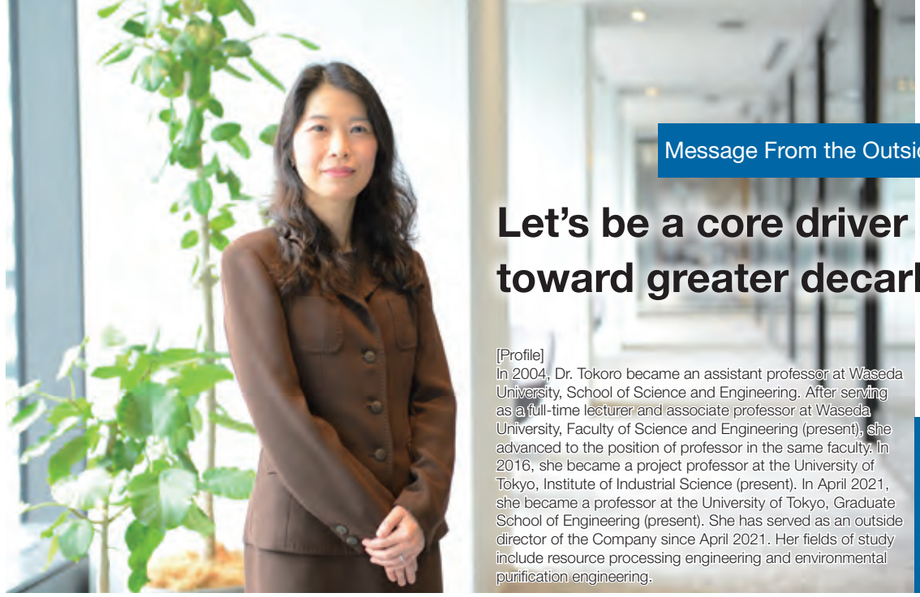
I attended an ISO 9001 internal auditor seminar with the goal of becoming an auditor serving in internal quality audits for plants and Group affiliates both in Japan and overseas. At this seminar, I learned the principles of the process approach, as well as the importance of assessing not only conformity with requirements, but also effectiveness in achieving quality objectives. These lessons helped me obtain certification.

In the future, I would like to use the lessons from this seminar to conduct audits with a close understanding of the actual situation of the auditees, and build strong trust relationships. I will also work hard to further improve my skills as an internal quality auditor so that I can contribute to the improvement of our QMS.

Watanabe Satoko

Technology Group, Quality Control Department

JX Nippon Mining & Metals Corporation



Message From the Outside Director

Let's be a core driver in innovating toward greater decarbonization

[Profile]
In 2004, Dr. Tokoro became an assistant professor at Waseda University, School of Science and Engineering. After serving as a full-time lecturer and associate professor at Waseda University, Faculty of Science and Engineering (present), she advanced to the position of professor in the same faculty. In 2016, she became a project professor at the University of Tokyo, Institute of Industrial Science (present). In April 2021, she became a professor at the University of Tokyo, Graduate School of Engineering (present). She has served as an outside director of the Company since April 2021. Her fields of study include resource processing engineering and environmental purification engineering.

Tokoro Chiharu
Outside Director
JX Nippon Mining & Metals Corporation

My role as an outside director

With my specialty in resource engineering, I have worked with JX Nippon Mining & Metals in a range of activities, including a visit to the Toyoha Mine just before it closed when I was a student, and subsequent research on mine drainage treatment and recycling. The issues of securing resources and resource recycling is entering a phase of importance as a social issue, and my desire is to assist in these areas from my position as a specialist. As I hold a neutral position as a university instructor, I will do my best to provide an impartial perspective on the Company's management.

Separately, since female researchers are very rare in the field of engineering, I have long experienced being a minority. As an outside director, I would also like to provide commentary from a diversity viewpoint and incorporating my experience.

Unconscious bias within an organization impedes promoting diversity. In order to create an organization that is resilient to environmental changes, I believe it is important to neutralize these biases as much as possible, create a workplace where diverse human resources have the power of self-expression, and link human resource diversity to the strength of the organization. I have been a member of the Board of Directors since April 2021. My experience is that it has been much easier to speak up than I had expected, and that we have successfully created a forum enabling open discussion.

Thoughts on accelerating ESG management

Japanese companies appear to lag behind their peers in the West when it comes to ESG management, but despite this, I think the Company deserves praise for its leadership in driving ESG management in the nonferrous metals industry. The endowed course at the University of Tokyo, in which I have been assisting since 2016, also has the mission of outreach to society as a whole from a long-term perspective, and I believe that JX Nippon Mining & Metals has always maintained a mindset valuing broad contributions to society.

JX Nippon Mining & Metals also has a mission to contribute to the social and environment through the stable supply of metal resources and technological innovation in advanced functional materials. For example, any attempt toward more widespread battery use, smart electricity use, or growth in renewable energies will necessitate high-efficiency foils and wires using copper, a conductive element. Furthermore, since metals can be recycled, we must safeguard our scarce resources by using technology possessed by JX Nippon Mining & Metals to facilitate their repeated use. In other words, since the Company's business is fundamentally related to contributing to the social and environment, we can say that the shift toward ESG management was a logical step to take.

The road to achieving carbon neutrality

I believe that JX Nippon Mining & Metals plays a very important role in the decarbonization of society. Against this backdrop, the Company has set a very ambitious goal of reducing its total CO_2 emissions by 50% in fiscal 2030 (compared to fiscal 2018). Such a lofty goal cannot be achieved simply through incrementing on existing initiatives; it will require disruptive innovation. I feel it is difficult for a single company to bring about such social innovation by itself. My belief is that now is the time for JX Nippon Mining & Metals to be a core driver in forming a network carefully connecting suppliers, customers, universities, and local communities, founded on the technological capabilities and trust that it has built up over the years.

In its long-term vision, the Company declares a future goal to become a "global company that fosters the development of society's innovation with advanced materials." In order to achieve this goal, it is extremely important to create a cycle of trust through networking with stakeholders around the world. It is my hope that the Company will achieve this vision through creating innovations altering the very foundations of social infrastructure, and that it will continue to be a company indispensable to its society.

Responding to International Norms and Initiatives

The Group recognizes compliance with international norms and initiatives as one of the most important issues across the entire company. We will contribute to achieving a sustainable society by complying with social demands such as recent international norms and initiatives. To this end, we are actively participating in initiatives.

Communication with Industrial Associations

As a member of the global community, the Group fulfills its social responsibilities and actively participates in various industry associations in order to contribute to the realization of a sustainable society.

Name of Association	The Role of JX Nippon Mining & Metals in FY2020	Activity Content
Japan Mining Industry Association (JMIA)	Director	The JMIA is an association of companies engaged in the smelting business and nonferrous metal resource development. JMIA promotes the sound growth of the industry by conducting research and publicizing knowledge for technical improvement and making policy proposals to concerned government ministries and agencies. The Group participates in committees and is involved in the administration of JMIA with a representative serving as Director.
The Sulphuric Acid Association of Japan	Permanent Director	The Association was established to promote the development of the sulfuric acid industry, communication among manufacturers, and the increase of common benefits. JX Nippon Mining & Metals is involved in the administration of the association as well as in the survey and reporting of supply and demand as a member of the Operations Committee and General Affairs Committee.
Japan Copper and Brass Association (JCBA)	Director	The JCBA works with member companies to promote progress and growth throughout the entire copper production industry. The Group sits on the Roadmap Committee to take part in the improvement of quality and the discovery of new demand. The Group is also involved in the survey and reporting of market size as a member of the Statistics Committee.
Japan Society of Newer Metals (JSNM)	Director	The JSNM was established to promote the sound growth of new metals that support high-tech and related industries through research and the collection and provision of information. JX Nippon Mining & Metals sits on the Compound Semiconductors Subcommittee and the Target Subcommittee in order to be involved in the survey and reporting of market size as well as to take part in providing opinions and advice to concerned government ministries and agencies. JX Nippon Mining & Metals also sits on the Safety Committee to contribute to the improvement of health and safety throughout the industry.
Japan Catalyst Recovering Association (JCRA)	Chairman	Comprising companies engaged in the reuse of catalysts, JCRA was established to promote the recycling of precious and rare metals through appropriate processing of used catalysts. It holds periodical training for technical improvement and mutual communication among members while engaging in the investigation and collection of statistics relating to recycling. JX Nippon Mining & Metals provides the chairman of the association and is also involved in the publication of survey reports as well as management of general meetings as a member of the PR Committee.

Joining ICMM

The International Council on Mining & Metals (ICMM) is an international organization established to promote the sustainable growth of society through the nonferrous metal industry business. As a member of the ICMM, JX Nippon Mining & Metals established the Code of Conduct in accordance with the ICMM Mining Principles and are working to resolve various issues raised in the Position Statements.

ICMM
International Council on Mining & Metals

ICMM Mining Principles

1. Apply ethical business practices and sound systems of corporate governance and transparency to support sustainable development.
2. Integrate sustainable development in corporate strategy and decision-making processes.
3. Respect human rights and the interests, cultures, customs and values of employees and communities affected by our activities.
4. Implement effective risk-management strategies and systems based on sound science, and which account for stakeholder perceptions of risk.
5. Pursue continual improvement in health and safety performance with the ultimate goal of zero harm.
6. Pursue continual improvement in environmental performance issues, such as water stewardship, energy use and climate change.
7. Contribute to the conservation of biodiversity and integrated approaches to land-use planning.
8. Facilitate and support the knowledge-base and systems for responsible design, use, re-use, recycling and disposal of products containing metals and minerals.
9. Pursue continual improvement in social performance and contribute to the social, economic and institutional development of host countries and communities.
10. Proactively engage key stakeholders on sustainable development challenges and opportunities in an open and transparent manner. Effectively report and independently verify progress and performance.

ICMM Position Statements

- Climate Change
- Water Stewardship
- Tailings Governance
- Indigenous Peoples
- Partnerships for Development
- Mineral Revenues
- Mercury Risk Management
- Protected Areas

Agreement with and Support for EITI

The Extractive Industries Transparency Initiative (EITI) is the multilateral cooperation standard for the promotion of open and accountable management of extractive resources with the goal of reducing poverty and achieving sustainable development in resource-producing countries. Being engaged in resource development at the global level, JX Nippon Mining & Metals agrees to the goals of the EITI and supports its activities.

EITI
Extractive Industries Transparency Initiative

WEB The EITI Principles
Extractive Industry Transparency Initiative
https://eiti.org/document/eiti-principles

Agreement with TCFD Response and Challenge Zero

The Task Force on Climate-related Financial Disclosures (TCFD), chaired by Michael Bloomberg, was established by the Financial Stability Board (FSB) at the request of the G20. It recommends that companies disclose climate change-related risks and opportunities. In May 2019, ENEOS Holdings endorsed and signed the recommendations set out by the TCFD. In response to this, the Group is also taking steps to disclose information on climate change in line with the aims of these recommendations.

In addition, in June 2020, we endorsed the Keidanren's *Challenge Zero* (Challenge Net Zero Carbon Innovation) declaration and announced our participation. We are taking on challenges through a wide range of innovations and are contributing to achieving of a low-carbon, recycling-oriented society.

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

WEB TCFD Official Website
https://www.fsb-tcfd.org/

Challenge Zero

WEB Challenge Zero Official Website
https://www.challenge-zero.jp/en/

Participation in WIPO GREEN

WIPO GREEN is a framework for technology exchange launched by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations, with the aim of dissemination of environmental technologies and promotion of innovation. By registering environmental technology in the database operated by WIPO GREEN, it can match the technology with individuals and organizations that require it. We agree with the objectives of WIPO GREEN and joined in October 2020. We have registered our intellectual property related to the JX-Iodine Process, our proprietary copper recovery technology, in the database. We will consider registering additional projects in the future.

WIPO | GREEN
The Marketplace for Sustainable Technology

WEB WIPO GREEN official website
https://www3.wipo.int/wipogreen/en/

Agreement with CDP

CDP (Carbon Disclosure Project) is an international NGO based in London. It is an organization that collects, analyzes, and evaluates information on the environmental activities of the world's major corporations and discloses these results to institutional investors. Our company is promoting the disclosure of information on climate change, water safety, and deforestation, which CDP has identified as priority issues. We are also disclosing information through questionnaires to our business partners.

CDP
DISCLOSURE INSIGHT ACTION

WEB CDP's global website
https://www.cdp.net/en

Participation in the United Nations Global Compact

The United Nations Global Compact is a global framework for companies and organizations to act as good members of society and achieve sustainable growth. We have been participating in the program since August 2008, supporting the 10 principles in four areas and are striving to achieve them.

UN GLOBAL COMPACT
COMMUNICATION ON PROGRESS

This is our **Communication on Progress** in implementing the principles of the **United Nations Global Compact** and supporting broader UN goals.

We welcome feedback on its contents.

WEB The Ten Principles of the UN Global Compact
https://www.unglobalcompact.org/what-is-gc/mission/principles

Stakeholder Engagement

The Group believes that understanding the demands of various stakeholders accurately, responding in good faith, and building relationships of trust will lead to an increase in corporate value. To this end, we take advantage of opportunities for dialogue with each stakeholder and engage in active two-way communications.

Key Stakeholders and Responsibilities	Main Means of Communication	Main Topics
Customers We will contribute to achieving a more affluent society by improving satisfaction and fulfilling our social responsibilities through the stable and efficient supply of high-quality products.	• Communication in sales activities • Dissemination of information via website and SNS • Exhibit at the 7th Highly-functional Metal Expo • Invitation to SQUARE LAB	• Stable supply of highly-functional products • Improve economic efficiency and added value of products • Improve environmental performance of products • Appropriate disclosure of product information
Shareholders and investors As a major operating company of the ENEOS Group, we will strive to disclose information in a timely and appropriate manner through ENEOS Holdings, a listed company.	• Publication of Sustainability Report • Disclosure of information on website • IR News Email Distribution • General meeting of shareholders, financial results briefing, business office information	• Stable profit return • Easy-to-understand information disclosure on management strategies • Full disclosure of ESG information
Employees We will promote the creation of a rewarding workplace, focusing on the improvement of the work environment and the enhancement of training systems. And we will strive to improve the motivation of each individual.	• Publication of the group newsletter *Cuprum* • Preparation and distribution of the *Handbook for Supporting Balancing Childcare or Nursing Care* • Implementation of self-assessment system • Hold online workshops • Dialogue between labor unions and management • Various employee training and education	• Prevention of occupational accidents • Creation of diverse work styles • Enhancement of training system • Fair and equitable personnel evaluation • Maintaining and improving mental and physical health
Business partners We will conduct business with our partners built on relationships of trust. We are working to achieve fair and equitable transactions throughout the supply chain.	• Communication through purchasing activities • Operation of an inquiry desk • Conducting surveys with business partners • Invitation to SQUARE LAB	• Equal and fair trade • Management of occupational safety
Local communities We will pursue coexistence and co-prosperity at each of our bases by creating understanding of our business and building cooperative relationships through various exchange opportunities.	• Creation of cooperation agreements with universities and establishment of joint research courses • Conducting factory tours, office tours, and visiting classes • Participation in and sponsorship of community events • Conduct briefings for local residents • Participation in local volunteer activities	• Revitalization of local communities • Cultivation of a new generation and educational support • Reduce the environmental impact of the region
International community We pay close attention to trends in global warming and other international issues. We engage with issues proactively and comply with laws and regulations.	• Implement business practices that support the SDGs • Engage in activities as an ICMM member company • Support of EITI • Response to TCFD / Endorsement of Challenge Zero / Response to CDP / Participation in WIPO GREEN	• Establishment of a resource-recycling society • Climate change adaptation and mitigation • Progress in the Digital Society

Global Network (as of March 31, 2021)

JX Nippon Mining & Metals has many production sites and Group companies in Japan and overseas. By utilizing this Group network, we are able to meet the increasingly sophisticated and diverse needs of our customers and society, and provide them with new value.

Europe

- Frankfurt Office
- JX Nippon Mining & Metals Europe GmbH
- TANIOBIS GmbH
- TANTANIOBIS Smelting GmbH & Co. KG
- Nippon LP Resources UK Ltd.

Middle East

- Advanced Metal Industries Cluster and Toho Titanium Metal Company Limited

Asia

- JX Nippon Mining & Metals Korea Co., Ltd.
- LS-Nikko Copper Inc.
- Poongsan-Nikko Tin Plating Corporation
- JX Nippon Mining & Metals Shanghai Co., Ltd.
- Nikko Metals Shanghai Co., Ltd.
- Nippon Mining & Metals (Suzhou) Co., Ltd.
- Nikko Fuji Precision (Wuxi) Co., Ltd.
- JX Nippon Mining & Metals Dongguan Co., Ltd.
- Nikko Shoji (Hong Kong) Co., Ltd.
- Shenzhen Nikko Shoji Co., Ltd.
- Nikko Metals Taiwan Co., Ltd.
- JX Nippon Mining & Metals Philippines, Inc.
- TANIOBIS Co., Ltd.
- Materials Service Complex Malaysia Sdn. Bhd.
- JX Nippon Mining & Metals Singapore Pte. Ltd.

North America

- JX Nippon Mining & Metals USA, Inc.
- TANIOBIS USA LLC

Central and South America

- JX Nippon Mining & Metals Exploration Peru S.A.C.
- Compania Minera Quechua S.A.
- Escondida Copper Mine
- Caserones Copper Mine
- Los Pelambres Copper Mine
- Chile Office
- JX Nippon Mining & Metals Chile SpA
- JX Nippon Mining & Metals Exploration Chile Limitada
- SCM Minera Lumina Copper Chile

Japan

- JX Nippon Tomakomai Chemical Co., Ltd.
- Esashi Works, JX Metals Precision Technology Co., Ltd.
- Ichinoseki Foil Manufacturing Co., Ltd.
- Shirakawa Plant, JX Nippon Takasho Co., Ltd.
- Isohara Works
- JX Nippon Foundry Co., Ltd.
- Hitachi Works
- Hitachi Refinery, JX Metals Smelting Co., Ltd.
- JX Nippon Environmental Services Co., Ltd.
- Kamine Clean Service Co., Ltd.
- Hitachi Plant, Toho Titanium Co., Ltd.
- Mito Plant, TANIOBIS Japan Co., Ltd.
- Tsukuba Factory, Furuuchi Chemical Corporation
- Tatebayashi Works, JX Metals Precision Technology Co., Ltd.
- Nasu Works, JX Metals Precision Technology Co., Ltd.
- Kurami Works
- Kurami Office, JX Nippon Coil Center Co., Ltd.
- Kawasaki Office, JX Nippon Coil Center Co., Ltd.
- Chigasaki Plant, Toho Titanium Co., Ltd.
- JX Nippon Mikkaichi Recycle Co., Ltd.
- Kurobe Plant, Toho Titanium Co., Ltd.
- Kakegawa Works, JX Metals Precision Technology Co., Ltd.
- Tsuruga Plant
- JX Nippon Tsuruga Recycle Co., Ltd.
- Takatsuki Plant, JX Metals Trading Co., Ltd.
- Yahata Plant, Toho Titanium Co., Ltd.
- Wakamatsu Plant, Toho Titanium Co., Ltd.
- Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd.
- Saganoseki Works, Japan Copper Casting Co., Ltd.
- Nissho Kou-un Co., Ltd.
- Kasuga Mines Co., Ltd.

Corporate Profile

Company Name	JX Nippon Mining & Metals Corporation
Paid-in Capital	75.0 billion yen (wholly owned by ENEOS Holdings, Inc.)
Representative	Murayama Seiichi, President and Representative Director
Revenue	1,092.1 billion yen (fiscal 2020, consolidated)
Head Office	10-4, Toranomon 2-chome, Minato-ku, Tokyo 105-8417, Japan The Okura Prestige Tower
Business Lines	• Functional Materials Business • Thin Film Materials Business • Tantalum and Niobium Business • Mineral Resources Business • Metals & Recycling Business • Titanium Business

Employees (Non-consolidated)	3,190 (as of March 31, 2021)
Employees (Consolidated)	9,887 (as of March 31, 2021)
Domestic Operating Sites	• Hitachi Works (Ibaraki Prefecture) • Isohara Works (Ibaraki Prefecture) • Kurami Works (Kanagawa Prefecture) • Tsuruga Plant (Fukui Prefecture) • Technology Development Center (Ibaraki Prefecture)
Overseas Operating Sites*	• Chile Office • Frankfurt Office

* The JX Nippon Mining & Metals Group conducts business in Japan and 11 other countries worldwide, including Chile, Germany, China, South Korea, and the United States.

Environment

Social

This and future reports include TANIOBIS GmbH, TANIOBIS Co. Ltd., TANIOBIS Smelting GmbH & Co. KG, and TANIOBIS USA LLC. However, TANIOBIS USA LLC is excluded from environmental data. The Hibi Smelter of Pan Pacific Copper Co., Ltd. was transferred to Mitsui Mining & Smelting Co., Ltd. on April 1, 2020, and is therefore not included in this report.

Mass Balance Table for the Group (Fiscal 2020)

INPUT

Raw Materials ☑

Primary raw materials

Domestic operating sites	1,634kt
Overseas operating sites	17kt
Total	1,651kt

Recycled raw materials

Domestic operating sites	170kt
Overseas operating sites	3kt
Total	174kt

Energy ☑

Fuel

Domestic operating sites	3,058TJ
Overseas operating sites	2,373TJ
Total	5,430TJ

Electricity*

Domestic operating sites	11,164TJ
Overseas operating sites	10,197TJ
Total	21,361TJ

*Includes thermal energy (consuming steam, hot water, and cold water) supplied by third parties.

Water Resources ☑

Fresh water

Domestic operating sites	17.8 million cubic meters
Overseas operating sites	8.9 million cubic meters
Total	26.7 million cubic meters

Seawater

Domestic operating sites	31.0 million cubic meters
Overseas operating sites	— million cubic meters
Total	31.0 million cubic meters

JX Nippon Mining & Metals Group

OUTPUT

Principal Products ☑

Copper concentrate	312kt
Electrolytic copper	428kt
Gold	36t
Silver	373t
Platinum	606kg
Palladium	2,716kg
Other metals (selenium, tellurium)	320t
Electro-deposited and rolled copper foil	9kt
Copper alloy, special steel strips, etc.	32kt
Titanium sponge	20kt
Sulfuric acid (by-product)	1,268kt

Emissions

CO_2 ☑

Total of domestic operating sites

Scope	416kt
Scope2	488kt

Total of overseas operating sites

Scope1	162kt
Scope2	279kt
Total	1,345kt

Chemical substances (release and transfer) ☑

Total of domestic operating sites: 0.50kt

Sulphur oxides ☑

Domestic operating sites	4.1kt
Overseas operating sites	0.1kt
Total	4.2kt

Final disposal of waste materials ☑

Domestic operating sites	7.2kt
Overseas operating sites	41.9kt
Total	49.0kt

Nitrogen oxides ☑

Domestic operating sites	0.6kt
Overseas operating sites	0.1kt
Total	0.7kt

Wastewater ☑

Domestic operating sites	51.5 million cubic meters
Overseas operating sites	1.0 million cubic meters
Total	52.5 million cubic meters

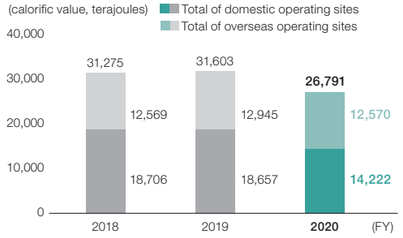
Environmental Management

Operating Sites That Have Obtained ISO 14001 Certification (as of March 31, 2021)

Domestic Operating Sites: 28	Overseas Operating Sites: 12
Hitachi Works (including Hitachi Seido Works of JX Metals Smelting Co., Ltd. and JX Nippon Environmental Services Co., Ltd.), Copper Foil Dept. of Hitachi Works (including Ichinoseki Foil Manufacturing Co., Ltd.)	JX Nippon Mining & Metals Philippines, Inc.
Isohara Works	JX Nippon Mining & Metals USA, Inc.
Kurami Works (including JX Nippon Coil Center Co., Ltd. and the Kurami Office of JX Metals Trading Co., Ltd.)	Materials Service Complex Malaysia Sdn. Bhd.
Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd. (including Japan Copper Casting Co., Ltd., and Nissho Kou-un Co., Ltd.)	JX Nippon Mining & Metals Korea Co., Ltd.
JX Nippon Tomakomai Chemical Co., Ltd.	Nikko Fuji Precision (Wuxi) Co., Ltd.
JX Nippon Tsuruga Recycle Co., Ltd.	Longtan Works of Nikko Metals Taiwan Co., Ltd.
JX Nippon Mikkaichi Recycle Co., Ltd.	Nippon Mining & Metals (Suzhou) Co., Ltd.
Chigasaki Plant of Toho Titanium Co., Ltd. (including its Kurobe Plant and Wakamatsu Plant and Toho Technical Service Co., Ltd.)	JX Nippon Mining & Metals Dongguan Co., Ltd.
JX Metals Precision Technology Co., Ltd. (Esashi Works, Tatebayashi Works, Nasu Works, and Kakegawa Works)	TANIOBIS GmbH (includes TANIOBIS Smelting GmbH & Co. KG, TANIOBIS Japan Co., Ltd., and TANIOBIS Co., Ltd.)
JX Metals Trading Co., Ltd. (including its Amagasaki Office and Takatsuki Plant)	
Shirakawa Plant of JX Nippon Takasho Co., Ltd.	
Furuuchi Chemical Corporation	

Energy

Energy Consumption

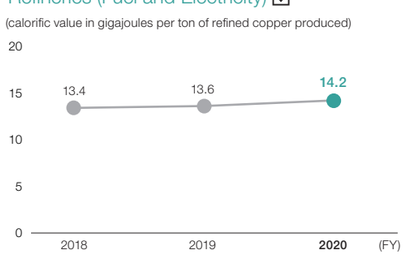


* Figures have been retroactively revised back to fiscal 2018 due to changes in aggregation scope to cover the entire JX Nippon Mining & Metals Group, in principle.

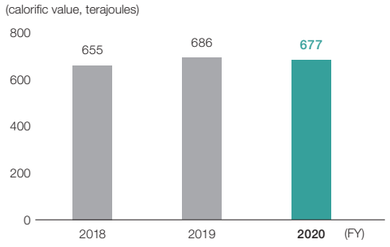
Breakdown by Fuel Type

	Domestic operating sites	Overseas operating sites
Kerosene (kL)	272	—
Light oil (kL)	2,970	51,476
Class A heavy oil (kL)	10,827	1,282
Class B and C heavy oil (kL)	22,267	5,425
Reclaimed oil (kL)	1,017	—
LPG/Butane (t)	5,292	8
LNG (t)	4,770	760
Coke (t)	2,146	—
Petroleum coke (t)	6,017	—
City gas (thousand cubic meters)	16,964	2,446

Energy Consumption Intensity at Smelters and Refineries (Fuel and Electricity)



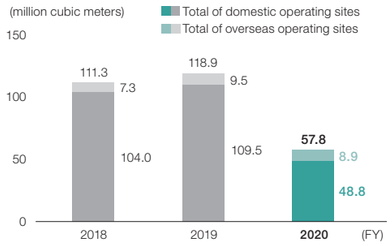
Energy Consumption in Logistics Stages (Domestic)



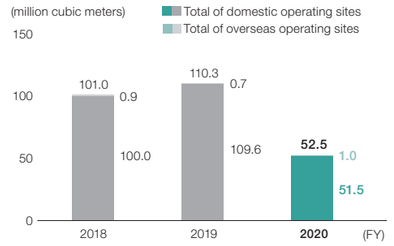
* Applicable to specified consigners as defined in the Act on the Rational Use of Energy. Four Group companies fall under this definition: JX Nippon Mining & Metals Corporation, JX Metals Smelting Co., Ltd., Kasuga Mines Co., Ltd., and Pan Pacific Copper Co., Ltd.

Water Resources

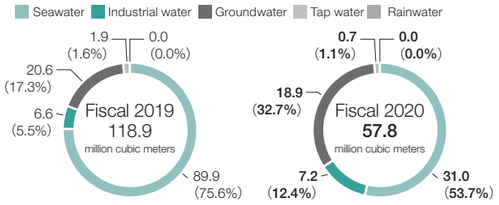
Water Usage*1



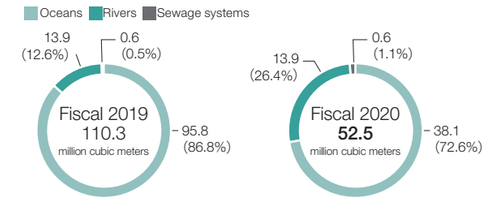
Water Discharge Volume*2



Total Water Usage*1



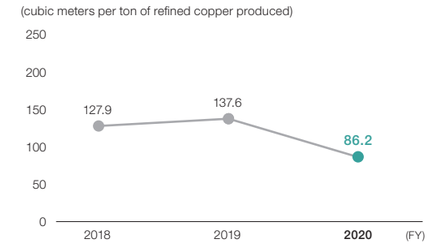
Total Water Discharge*2



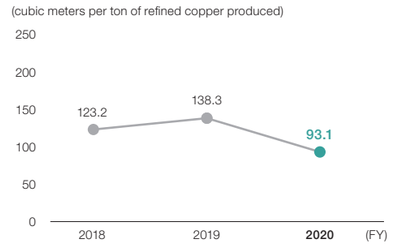
*1 Seawater usage at the Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd. is calculated based on pumping capacity. Freshwater usage at the Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd. and water usage at other operating sites are based on flowmeter readings or on invoices from the site's respective water utility.

*2 The volume of water discharged into public waters (oceans and rivers) at each operating site represents the following: an amount calculated based on drainage weirs (Hitachi Works, Isohara Works, JX Nippon Tomakomai Chemical Co., Ltd., and JX Nippon Mikkaichi Recycle Co., Ltd.); an amount obtained by multiplying groundwater usage by a fixed rate (Kurami Works, Toho Titanium Co., Ltd.'s Headquarters & Chigasaki Plant); an amount from invoices (Toho Titanium Co., Ltd.'s Yahata Plant and Kurobe Plant); or an amount based on flowmeter readings (other operating sites). The volume of water discharged into the sewage system at each operating site represents the following: an amount calculated based on daily water discharge (TANIOBIS Co., Ltd.); or an amount based on flowmeter readings or on invoices from the site's respective sewage utility for other operating sites. We have retroactively revised data for ocean discharge for the Saganoseki Smelter & Refinery as far back as fiscal 2018 due to changes made in the figure's calculation method.

Water Usage Intensity at Smelters and Refineries



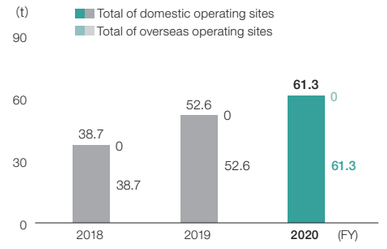
Water Discharge Intensity at Smelters and Refineries



* We have retroactively revised figures for discharge for Saganoseki Smelter & Refinery as far back as fiscal 2018 due to changes made in the figure's calculation method.

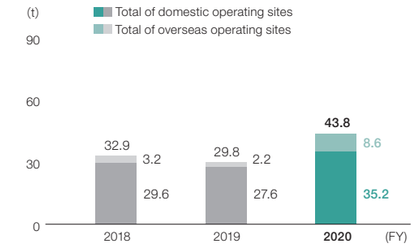
Water Pollutants

COD Load



* Totals are for operating sites subject to legal requirements (sites that discharge water into oceans).
* We have retroactively revised data as far back as fiscal 2018 due to revised discharge data in the Water Resources section.

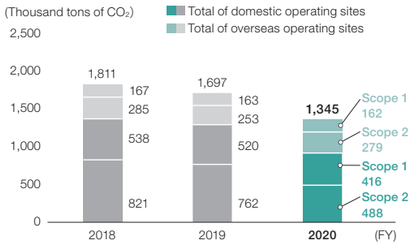
BOD Load



* Totals are for operating sites subject to legal requirements (sites that discharge water into rivers or streams).

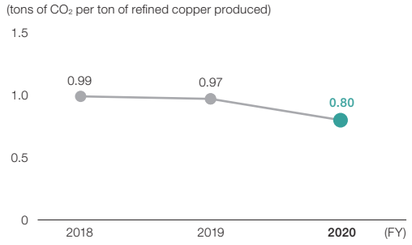
Climate Change

CO_2 Emissions From the Entire JX NMM Group (Scope 1 & 2)

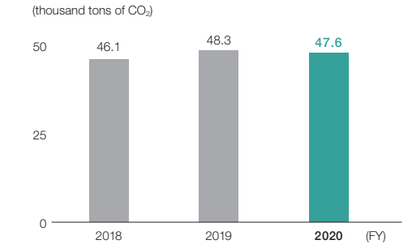


* We have made retroactive revisions as far back as fiscal 2018 due to the following factors.
  - •Expansion of aggregation scope to cover the entire JX Nippon Mining & Metals Group, in principle
  - •Review of emission factors applied to electricity consumption
  - •Expansion of the scope of activities subject to calculation of non-energy-derived CO_2 emissions
* Scope 1 emissions are those from energy consumption (fuel), emissions from incineration of waste materials (waste oil, waste plastic, sludge, waste wood), and emissions from reducing agents, neutralizing agents, graphite electrodes, and recycled materials, converted to equivalent CO_2.
* Scope 2 emissions are those from electricity consumption converted to equivalent CO_2. Emissions from electricity consumption include those from thermal energy (consuming steam, hot water, cold water) supplied by third parties. The emission factors applied for Scope 2 calculation are as follows for domestic and overseas Group operating sites, respectively.
  Domestic: Adjusted emission factors are applied
  Overseas: Emission factors published by local power companies or country-specific emission factors published by the IEA are applied

CO_2 Emission Intensity at Smelters and Refineries



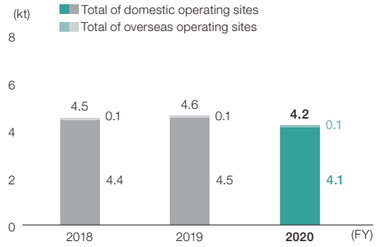
CO_2 Emissions in Logistics Stages



* Applicable to specified consigners as defined in the Act on the Rational Use of Energy. Four Group companies fall under this definition: JX Nippon Mining & Metals Corporation, JX Metals Smelting Co., Ltd., Kasuga Mines Co., Ltd., and Pan Pacific Copper Co., Ltd.

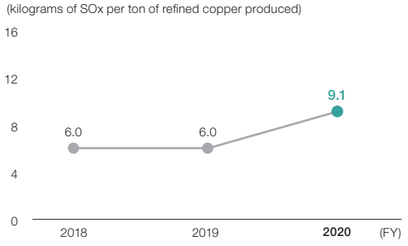
Air Pollutants

SOx Emissions

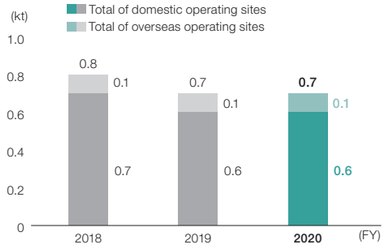


* Totals are for operating sites subject to emissions regulations.

SOx Emission Intensity at Smelters and Refineries

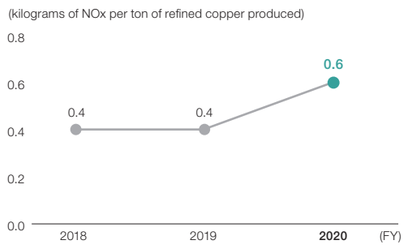


NOx Emissions



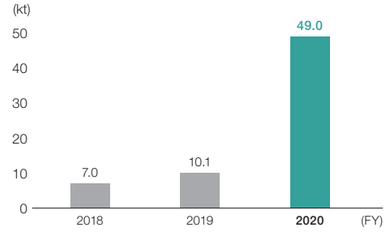
* Totals are for operating sites subject to emissions regulations.

NOx Emission Intensity at Smelters and Refineries



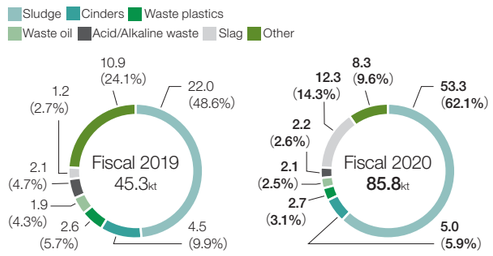
Waste Materials and By-Products

Volume of Final Disposal of Waste



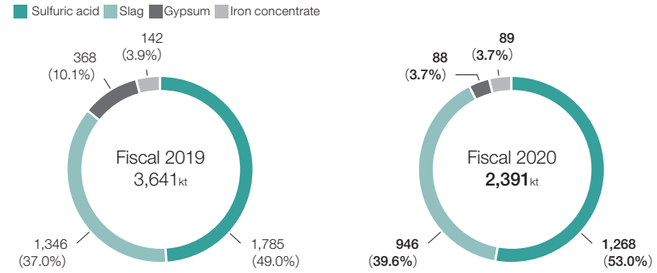
* These do not include the approximately 28.5 million tons of slag from the Caserones Copper Mine.
* The volume of final disposal of waste has increased rapidly due to the inclusion of Toho Titanium's offshore landfill volume and final disposal volume of the TANIOBIS Group in calculations, as of fiscal 2020.

Total Discharge Volume by Type of Waste Materials



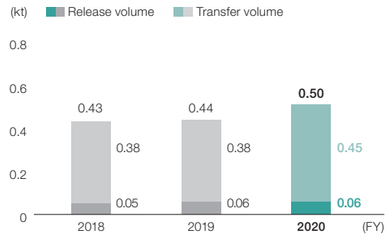
* The volume of total emissions has increased rapidly due to the inclusion of Toho Titanium's offshore landfill volume and the TANIOBIS Group's emissions volume in calculations, as of fiscal 2020.

By-Product Production

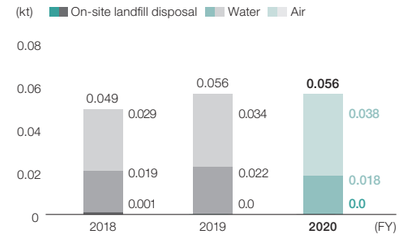


Chemical Substances

Volumes of Release and Transfer of PRTR Substances



Breakdown of Release Volumes of PRTR Substances



Volumes of Release and Transfer of Major PRTR Substances in Fiscal 2020

(t)

No.	Cabinet order no.	Chemical substance	Release volume			Transfer volume	
			Air	Water	On-site landfill disposal	Sewage systems	Waste materials
1	75	Cadmium and its compounds	0.1	0.1	0.0	0.0	20.0
2	132	Cobalt and its compounds	0.0	0.3	0.0	0.0	26.0
3	300	Toluene	33.7	0.0	0.0	1.3	352.7
4	305	Lead compounds	0.8	0.1	0.0	0.0	10.2
5	309	Nickel compounds	0.1	0.5	0.0	0.0	20.0
6	354	Dibutyl phthalate	0.0	0.0	0.0	0.0	6.5
7	405	Boron compounds	0.0	9.3	0.0	0.0	1.7

(g-TEQ)

8	243	Dioxins	0.1	0.0	0.0	0.0	6.0

* The values given are totals for companies with operating sites subject to reporting requirements under the PRTR Act (JX Metals Trading Co., Ltd., Kasuga Mines Co., Ltd., TANIOBIS Japan Co., Ltd., and the domestic companies defined in boundary of the Report on page 4 as subject to Environment section reporting).
  Of the 50 chemical substances subject to reporting, those totaling at least 5.0 tons in any category, and dioxins, are listed here.
  There were no cases of chemical substances released into the soil.

Occupational Health and Safety

Occupational and Other Accidents*1, *2

Category				2018	2019	2020
Safety performance at domestic operating sites*3	Employees (including Group companies)	Casualties of occupational accidents ☑	Fatalities (persons) *4	0	0	0
			Occupational accidents with severe consequences (persons) *4	0	0	0
			Accidents with lost work days (persons) *4	13	3	7
			Accidents without lost work days (persons) *4	9	10	13
			Total (persons)	22	13	20
		Major types of occupational accidents *5 ☑	Strain or overexertion	4	1	5
			Fall on same level	7	1	1
			Caught in, on or between	4	1	3
		Frequency rate of industrial accidents *6 ☑	Fatalities *4	—	—	0.00
			Occupational accidents with severe consequences *4	—	—	0.00
			Accidents with lost work days *4	—	—	0.53
		Severity rate of industrial accidents *6 ☑		—	—	0.03
		Cumulative work hours *6		—	—	13,290,060
	Employees of subcontractors *7	Casualties of occupational accidents *5 ☑	Fatalities (persons)	0	0	2
			Occupational accidents with severe consequences (persons)	0	2	0
			Accidents with lost work days (persons)	6	2	2
			Accidents without lost work days (persons)	3	5	6
			Total (persons)	9	9	10
		Major types of occupational accidents *5 ☑	Cut or rubbed	2	1	4
			Crashes or falls to lower level	0	0	2
			Struck by object	0	2	0
		Frequency rate of industrial accidents *6,7	Fatalities *4	—	—	0.64
			Occupational accidents with severe consequences *4	—	—	0.00
			Accidents with lost work days *4	—	—	0.64
		Severity rate of industrial accidents *6,7		—	—	4.82
		Cumulative work hours *7		—	—	3,117,548
		Total casualties (persons) ☑		31	22	30
		Occupational injury rate per 1,000 employees (four or more lost workdays) *8		1.6	0.7	1.1
		Explosions and fires (incidences) *9 ☑		3	3	1
(Reference) Safety performance at overseas operating sites *10 ☑		Fatalities (persons)		0	1	0
		Accidents with lost work days (persons)		16	18	13
		Accidents without lost work days (persons)		2	3	5
		Total (persons)		18	22	18
		Major types of occupational accidents	Caught in, on or between	4	8	3
			Fall on same level	1	1	5
			Strain or overexertion	4	0	3

*1 Safety performance data is compiled on a calendar year basis (January to December).
*2 The number of casualties presented in this table includes work-related illnesses such as back pain and heat stroke.
*3 Until 2020, data included the Company and other Group companies (excluding Toho Titanium); however, from 2020, Toho Titanium and subcontractors have also been included in the scope of aggregation, and data has been retroactively revised as far back as 2018. Note that frequency and severity rates are excluded.
*4 Each accident category is defined as follows.
- •Fatalities: Worker deaths resulting from work-related causes.
- •Occupational accidents with severe consequences: Accidents resulting in more than six months of lost work days or a disability grade.
- •Accidents with lost work days: Accidents requiring one or more days of absence from work for the purpose of examination, treatment or recuperation. These shall in principle be at a physician's discretion. Note that this excludes "Occupational accidents with severe consequences."
- •Accidents without lost work days: An accident that does not require one full day or more of absence from work as diagnosed by a physician, and in which the affected worker is able to go to work after the accident.

*5 Incidences related to the cause of the injury or illness, based on "Types of Accidents," published by the Ministry of Health, Labour and Welfare.
*6 Both the frequency rate (the number of persons harmed or killed due to occupational accidents per million cumulative actual work hours) and the severity rate (number of work days lost per thousand cumulative actual work hours) had only covered Company employees until 2020; however, as of 2020, these figures cover Company employees and employees at other Group companies (including Toho Titanium). Note that cumulative working hours include some estimated figures.
*7 Safety statistics for subcontractor employees include not only those stationed permanently but also spot vendors. Note that these are subject to statistics for frequency rate and severity rate as of 2020. Here, cumulative work hours are calculated as follows: Number of permanently stationed subcontractor employees at the end of each month x number of operating days x 8 hours/day. (Reference) In 2020, the frequency and severity rate of occupational accidents for all businesses in Japan were 1.95 and 0.09, respectively. (Source: Ministry of Health, Labour and Welfare, "Survey on Industrial Accidents")
*8 The Group defines a serious accident as one that results in four or more days of lost work, and considers the occupational injury rate per 1,000 employees to be one of its key indicators. (Occupational injury rate per 1,000 employees (four or more lost workdays) = number of casualties with four or more days of lost work ÷ total number of employees (including employees of regular partner companies) x 1,000)
*9 No physical injuries were caused as a result of explosions/fires.
*10 While this includes Group companies and subcontractors, this data should be used only for reference as it is difficult to conduct follow-up surveys and aggregate working hours for subcontractors at overseas operating sites, and detailed data such as frequency rates are not disclosed.

Human Resource Development

Training Programs Implemented in Fiscal 2020 ☑

(hours)

	Managerial staff			Non-management employees			Total		
	Men	Women	Overall	Men	Women	Overall	Men	Women	Overall
Total program hours (annual)	8,497	334	8,831	58,364	8,562	66,926	66,861	8,896	75,757
Per employee	14	22	14	26	27	26	23	27	24

* Survey scope: Employees of JX Nippon Mining & Metals plus those seconded by the Company to JX Nippon Environmental Services Co., Ltd. and JX Metals Smelting Co., Ltd. (Saganoseki Smelter & Refinery, Hitachi Refinery)

Employment and Work Styles

Survey scope: Companies in which JX Nippon Mining & Metals has 50% or more of their voting rights, directly or indirectly
Counting of seconded employees: Includes all employees being seconded to or from the companies subject to this survey

No. of Employees (by Employment Status and Employment Contract Type; as of March 31, 2021) ☑

(persons)

Employment status	Contract type	Male	Female	Total
Full-time	Contracts without fixed terms	7,955	1,217	9,172
	Contracts with fixed terms	469	100	569
Full-time subtotal		8,424	1,317	9,741
Part-time	Contracts without fixed terms	21	36	57
	Contracts with fixed terms	57	32	89
Part-time subtotal		78	68	146
Total		8,502	1,385	9,887

(persons)

Employment status	Contract type	Japan	North America	South America	Asia	Europe	Middle East	Total
Full-time	Contracts without fixed terms	6,313	125	955	1,396	368	15	9,172
	Contracts with fixed terms	472	2	12	65	18	0	569
Full-time subtotal		6,785	127	967	1,461	386	15	9,741
Part-time	Contracts without fixed terms	39	0	0	1	17	0	57
	Contracts with fixed terms	86	0	2	0	1	0	89
Part-time subtotal		125	0	2	1	18	0	146
Total		6,910	127	969	1,462	404	15	9,887

No. of Employees (by Region; as of March 31, 2021) ☑

(persons)

	Japan	North America	South America	Asia	Europe	Middle East	Total
Male	6,136	100	887	1,025	339	15	8,502
Female	774	27	82	437	65	0	1,385
Total	6,910	127	969	1,462	404	15	9,887

No. of Newly Hired Employees (April 1, 2020 to March 31, 2021) ☑

(persons)

	Male	Female	Total
New hires	509	115	624
Percent of total employee count as of March 31, 2021	6%	8%	6%

(persons)

Age 29 or younger	Age 30 to 49	Age 50 or older	Total
290	235	99	624
20%	4%	4%	6%

(persons)

	Japan	North America	South America	Asia	Europe	Middle East	Total
New hires	422	18	71	105	8	0	624
Percent of total employee count as of March 31, 2021	6%	14%	7%	7%	2%	0%	6%

No. of Employees Ending Employment (April 1, 2020 to March 31, 2021) ☑

(persons)

	Male	Female	Total
Retiring employees	465	64	529
Percent of total employee count as of March 31, 2021	5%	5%	5%

(persons)

Age 29 or younger	Age 30 to 49	Age 50 or older	Total
109	248	172	529
7%	4%	7%	5%

(persons)

	Japan	North America	South America	Asia	Europe	Middle East	Total
Retiring employees	286	8	105	109	21	0	529
Percent of total employee count as of March 31, 2021	4%	6%	11%	7%	5%	0%	5%

* Figures include employees transferred to companies outside of survey scope and those returning due to termination of secondment.
* Figures do not include employees who were transferred within a company inside the survey scope, or those returning due to termination of secondment.
* Employees retiring at the mandatory retirement age are not in scope.

Membership in Labor Unions (as of March 31, 2021) ☑

(persons)

	Male	Female	Total
No. of union members	5,373	758	6,131
Percent of total employee count as of March 31, 2021	63%	55%	62%

(persons)

Age 29 or younger	Age 30 to 49	Age 50 or older	Total
1,095	3,901	1,135	6,131
75%	66%	45%	62%

Strikes or lockouts lasting more than one week: None

Diversity

Use of Childcare Leave in Fiscal 2020 (JX Nippon Mining & Metals) ☑

(persons)

	Male	Female	Total
No. of employees using leave	19	12	31
No. of employees eligible to use leave*	117	12	129
Usage rate (rounded to nearest percent)	16%	100%	24%

* Male: Employees with a child born within the fiscal year
Female: Employees whose post-childbirth leave ended during the fiscal year and who can take childcare leave

Retention Rate After Return From Childcare Leave (Percentage of Those Still Employed 12 Months After Returning From Leave) (JX Nippon Mining & Metals) ☑

(persons)

	Male	Female	Total
No. of employees who returned to work from childcare leave during fiscal 2019	8	10	18
No. of employees still employed 12 months after returning to work	8	10	18
Percentage	100%	100%	100%

Rate of Return to Work After Childcare Leave (JX Nippon Mining & Metals) ☑

(persons)

	Male	Female	Total
No. of employees who returned to work from childcare leave during fiscal 2020	19	3	22
No. of employees scheduled to return to work	19	4	23
Percentage	100%	75%	96%

Status of Rehiring Efforts in Fiscal 2020 (JX Nippon Mining & Metals) ☑

(persons)

No. of age-limited retirees	47
No. of these rehired	44
Rehiring rate (%)	94%

Persons with Disabilities as a Percentage of the Workforce in Fiscal 2020 (JX Nippon Mining & Metals) ☑

Percentage of employees with disabilities (statutory minimum: 2.3%)	2.19%

No. of Locally Hired Senior Managers Overseas (Section Manager or Above) and Locally Hired Employees (as of March 31, 2021)

(persons)

		Number of senior managers	Senior managers as a share of locally hired employees *1	Number of locally hired employees *2
North America	Male	14	16%	87
	Female	4	15%	27
North America subtotal		18	16%	114
South America	Male	38	4%	847
	Female	5	6%	82
South America subtotal		43	5%	929
Europe	Male	36	11%	321
	Female	7	11%	63
Europe subtotal		43	11%	384
Asia	Male	93	10%	960
	Female	54	12%	433
Asia subtotal		147	11%	1,393
Male		181	8%	2,215
Female		70	12%	605
Total		251	9%	2,820

Scope of aggregation: Overseas Group companies in which JX Nippon Mining & Metals has 50% or more of their voting rights, directly or indirectly
Treatment of seconded employees: Employees seconded from companies outside of survey scope to companies inside of survey scope are counted.
Employees seconded from companies inside of survey scope to companies outside of survey scope are also counted.
*1 Percentage calculated as (Number of senior managers ÷ Number of locally hired employees) x 100
*2 The number of employees directly employed by overseas subsidiaries, excluding employees on secondment and employees transferred to overseas subsidiaries

Independent Assurance Report

To the President and CEO of JX Nippon Mining & Metals Corporation

We were engaged by JX Nippon Mining & Metals Corporation (the "Company") to undertake a limited assurance engagement of the environmental and social performance indicators marked with ☑ for the period from April 1, 2020 to March 31, 2021 included in its Sustainability Report 2021 (the "Report") for the fiscal year ended March 31, 2021, the alignment of the Company's policies to the International Council on Mining and Metals ("ICMM")'s 10 Sustainable Development ("SD") Principles and the applicable mandatory requirements set out in ICMM position statements, the Company's identification and prioritization of material issues, and the Company's approach and management of its material issues.

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, reporting on the alignment of the Company's policies to the ICMM's 10 SD Principles and the applicable mandatory requirements set out in ICMM position statements, reporting on the Company's identification and prioritization of material issues, and reporting on the Company's approach and management of its material issues.

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.
- Making inquiries and reviewing materials including documented evidence of one of the Company's domestic factories selected on the basis of a risk analysis, as alternative procedures to a site visit.
- Assessing the alignment of the Company's policies to the ICMM's 10 SD Principles and the applicable mandatory requirements set out in ICMM position statements through documentation reviews and interviews.
- Interviewing the Company's responsible personnel and reviewing documents with respect to the Company's process of identifying and prioritizing its material issues.
- Interviewing the Company's responsible personnel and reviewing documents with respect to the Company's approach to and management of its material issues.
- 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;
- the Company's policies are not aligned to the ICMM's 10 SD Principles and the applicable mandatory requirements set out in ICMM position statements as described on page 80;
- the Company has not identified and prioritized its material issues as described on pages 37-38; and
- the Company has not approached and managed its material issues as described on pages 37-38, 39-42, 43-50, 53-60, 61-64, 65-66, and 69-77.

Our Independence and Quality Control

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 Control 1, we maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

KPMG AZSA Sustainability Co., Ltd.

Tokyo, Japan

December 27, 2021

GRI Standards Content Index (Core Option)

◎ = Core Items Green: Standards adopted for core option compliance Blue: Standards adopted for reference, rather than for compliance

No.	Disclosure	Reporting requirements	Relevant contents
GRI 102: General disclosures			
◎102-1	Name of the organization	a. Name of the organization.	P83-84: Global Network
◎102-2	Activities, brands, products, and services	a. A description of the organization's activities. b. Primary brands, products, and services, including an explanation of any products or services that are banned in certain markets.	P7-8: Value Creation Model P17-18: JX Nippon Mining & Metals Group for the Future Society P19-20: Business Areas and Strengths
◎102-3	Location of headquarters	a. Location of the organization's headquarters.	P83-84: Global Network
◎102-4	Location of operations	a. Number of countries where the organization operates, and the names of countries where it has significant operations and/or that are relevant to the topics covered in the report.	P83-84: Global Network
◎102-5	Ownership and legal form	a. Nature of ownership and legal form.	P83-84: Global Network
◎102-6	Markets served	a. Markets served, including: i. geographic locations where products and services are offered; ii. sectors served; iii. types of customers and beneficiaries.	P9-12: Message From the President P17-18: JX Nippon Mining & Metals Group for the Future Society P19-20: Business Areas and Strengths
◎102-7	Scale of the organization	a. Scale of the organization, including: i. total number of employees; ii. total number of operations; iii. net sales (for private sector organizations) or net revenues (for public sector organizations); iv. total capitalization (for private sector organizations) broken down in terms of debt and equity; v. quantity of products or services provided.	P13-16: Medium-Term Management Plan P17-18: JX Nippon Mining & Metals Group for the Future Society P19-20: Business Areas and Strengths P83-84: Global Network P92-93: ESG Data Book (Employment and Work Styles)
◎102-8	Information on employees and other workers	a. Total number of employees by employment contract (permanent and temporary), by gender. b. Total number of employees by employment contract (permanent and temporary), by region. c. Total number of employees by employment type (full-time and part-time), by gender. d. Whether a significant portion of the organization's activities are performed by workers who are not employees. If applicable, a description of the nature and scale of work performed by workers who are not employees. e. Any significant variations in the numbers reported in Disclosures 102-8-a, 102-8-b, and 102-8-c (such as seasonal variations in the tourism or agricultural industries). f. An explanation of how the data have been compiled, including any assumptions made.	P92-93: ESG Data Book (Employment and Work Styles)
◎102-9	Supply chain	a. A description of the organization's supply chain, including its main elements as they relate to the organization's activities, primary brands, products, and services.	P7-8: Value Creation Model P17-18: JX Nippon Mining & Metals Group for the Future Society P19-20: Business Areas and Strengths P23-28: Overview By Business
◎102-10	Significant changes to the organization and its supply chain	a. Significant changes to the organization's size, structure, ownership, or supply chain, including: i. Changes in the location of, or changes in, operations, including facility openings, closings, and expansions; ii. Changes in the share capital structure and other capital formation, maintenance, and alteration operations (for private sector organizations); iii. Changes in the location of suppliers, the structure of the supply chain, or relationships with suppliers, including selection and termination.	P9-12: Message From the President P51-52: Column
◎102-11	Precautionary Principle or approach	a. Whether and how the organization applies the Precautionary Principle or approach.	P9-12: Message From the President P21-22: Risks and Opportunities in Nonferrous Metals P29-32: Special Feature 1 P33-36: Special Feature 2 P39-42: Contributing to Environmental Conservation P53-60: Create Attractive Workplaces P61-64: Respect Human Rights P69-77: Strengthen Governance
◎102-12	External initiatives	a. A list of externally-developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes, or which it endorses.	P79-81: Responding to International Norms and Initiatives
◎102-13	Membership of associations	a. A list of the main memberships of industry or other associations, and national or international advocacy organizations.	P79-81: Responding to International Norms and Initiatives
◎102-14	Statement from senior decision-maker	a. A statement from the most senior decision-maker of the organization (such as CEO, chair, or equivalent senior position) about the relevance of sustainability to the organization and its strategy for addressing sustainability.	P9-12: Message From the President
102-15	Key impacts, risks, and opportunities	a. A description of key impacts, risks, and opportunities.	P9-12: Message From the President P21-22: Risks and Opportunities in Nonferrous Metals
◎102-16	Values, principles, standards, and norms of behavior	a. A description of the organization's values, principles, standards, and norms of behavior.	P1-2: Introduction
102-17	Mechanisms for advice and concerns about ethics	a. A description of internal and external mechanisms for: i. seeking advice about ethical and lawful behavior, and organizational integrity; ii. reporting concerns about unethical or unlawful behavior, and organizational integrity.	P69-77: Strengthen Governance
◎102-18	Governance structure	a. Governance structure of the organization, including committees of the highest governance body. b. Committees responsible for decision-making on economic, environmental, and social topics.	P37-38: Materiality and ESG Promotion System P69-77: Strengthen Governance

GRI Standards Content Index

No.	Disclosure	Reporting requirements	Relevant contents
102-19	Delegating authority	a. Process for delegating authority for economic, environmental, and social topics from the highest governance body to senior executives and other employees.	
102-20	Executive-level responsibility for economic, environmental, and social topics	a. Whether the organization has appointed an executive-level position or positions with responsibility for economic, environmental, and social topics. b. Whether post holders report directly to the highest governance body.	P37-38: Materiality and ESG Promotion System
102-21	Consulting stakeholders on economic, environmental, and social topics	a. Processes for consultation between stakeholders and the highest governance body on economic, environmental, and social topics. b. If consultation is delegated, describe to whom it is delegated and how the resulting feedback is provided to the highest governance body.	
102-22	Composition of the highest governance body and its committees	a. Composition of the highest governance body and its committees by: i. executive or non-executive; ii. independence; iii. tenure on the governance body; iv. number of each individual's other significant positions and commitments, and the nature of the commitments; v. gender; vi. membership of under-represented social groups; vii. competencies relating to economic, environmental, and social topics; viii. stakeholder representation.	
102-23	Chair of the highest governance body	a. Whether the chair of the highest governance body is also an executive officer in the organization. b. If the chair is also an executive officer, describe his or her function within the organization's management and the reasons for this arrangement.	
102-24	Nominating and selecting the highest governance body	a. Nomination and selection processes for the highest governance body and its committees. b. Criteria used for nominating and selecting highest governance body members, including whether and how: i. stakeholders (including shareholders) are involved; ii. diversity is considered; iii. independence is considered; iv. expertise and experience relating to economic, environmental, and social topics are considered.	
102-25	Conflicts of interest	a. Processes for the highest governance body to ensure conflicts of interest are avoided and managed. b. Whether conflicts of interest are disclosed to stakeholders, including, as a minimum: i. Cross-board membership; ii. Cross-shareholding with suppliers and other stakeholders; iii. Existence of controlling shareholder; iv. Related party disclosures.	P70-71: Strengthen Business Execution Systems
102-26	Role of highest governance body in setting purpose, values, and strategy	a. Highest governance body's and senior executives' roles in the development, approval, and updating of the organization's purpose, value or mission statements, strategies, policies, and goals related to economic, environmental, and social topics.	P37-38: Materiality and ESG Promotion System
102-27	Collective knowledge of highest governance body	a. Measures taken to develop and enhance the highest governance body's collective knowledge of economic, environmental, and social topics.	P37-38: Materiality and ESG Promotion System
102-28	Evaluating the highest governance body's performance	a. Processes for evaluating the highest governance body's performance with respect to governance of economic, environmental, and social topics. b. Whether such evaluation is independent or not, and its frequency. c. Whether such evaluation is a self-assessment. d. Actions taken in response to evaluation of the highest governance body's performance with respect to governance of economic, environmental, and social topics, including, as a minimum, changes in membership and organizational practice.	P37-38: Materiality and ESG Promotion System
102-29	Identifying and managing economic, environmental, and social impacts	a. Highest governance body's role in identifying and managing economic, environmental, and social topics and their impacts, risks, and opportunities – including its role in the implementation of due diligence processes. b. Whether stakeholder consultation is used to support the highest governance body's identification and management of economic, environmental, and social topics and their impacts, risks, and opportunities.	
102-30	Effectiveness of risk management processes	a. Highest governance body's role in reviewing the effectiveness of the organization's risk management processes for economic, environmental, and social topics.	P74-75: Risk Management
102-31	Review of economic, environmental, and social topics	a. Frequency of the highest governance body's review of economic, environmental, and social topics and their impacts, risks, and opportunities.	P37-38: Materiality and ESG Promotion System
102-32	Highest governance body's role in sustainability reporting	a. The highest committee or position that formally reviews and approves the organization's sustainability report and ensures that all material topics are covered.	
102-33	Communicating critical concerns	a. Process for communicating critical concerns to the highest governance body.	P70-71: Strengthen Business Execution Systems
102-34	Nature and total number of critical concerns	a. Total number and nature of critical concerns that were communicated to the highest governance body. b. Mechanism(s) used to address and resolve critical concerns.	
102-35	Remuneration policies	a. Remuneration policies for the highest governance body and senior executives for the following types of remuneration: i. Fixed pay and variable pay, including performance-based pay, equity-based pay, bonuses, and deferred or vested shares; ii. Sign-on bonuses or recruitment incentive payments; iii. Termination payments; iv. Clawbacks; v. Retirement benefits, including the difference between benefit schemes and contribution rates for the highest governance body, senior executives, and all other employees. b. How performance criteria in the remuneration policies relate to the highest governance body's and senior executives' objectives for economic, environmental, and social topics.	
102-36	Process for determining remuneration	a. Process for determining remuneration. b. Whether remuneration consultants are involved in determining remuneration and whether they are independent of management. c. Any other relationships that the remuneration consultants have with the organization.	
102-37	Stakeholders' involvement in remuneration	a. How stakeholders' views are sought and taken into account regarding remuneration. b. If applicable, the results of votes on remuneration policies and proposals.	
102-38	Annual total compensation ratio	a. Ratio of the annual total compensation for the organization's highest-paid individual in each country of significant operations to the median annual total compensation for all employees (excluding the highest-paid individual) in the same country.	
102-39	Percentage increase in annual total compensation ratio	a. Ratio of the percentage increase in annual total compensation for the organization's highest-paid individual in each country of significant operations to the median percentage increase in annual total compensation for all employees (excluding the highest-paid individual) in the same country.	
◎102-40	List of stakeholder groups	a. A list of stakeholder groups engaged by the organization.	P82: Stakeholder Engagement
◎102-41	Collective bargaining agreements	a. Percentage of total employees covered by collective bargaining agreements.	P93: ESG Data Book (Employment and Work Styles)
◎102-42	Identifying and selecting stakeholders	a. The basis for identifying and selecting stakeholders with whom to engage.	P82: Stakeholder Engagement
◎102-43	Approach to stakeholder engagement	a. The organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group, and an indication of whether any of the engagement was undertaken specifically as part of the report preparation process.	P82: Stakeholder Engagement
◎102-44	Key topics and concerns raised	a. Key topics and concerns that have been raised through stakeholder engagement, including: i. how the organization has responded to those key topics and concerns, including through its reporting; ii. the stakeholder groups that raised each of the key topics and concerns.	P82: Stakeholder Engagement
◎102-45	Entities included in the consolidated financial statements	a. A list of all entities included in the organization's consolidated financial statements or equivalent documents. b. Whether any entity included in the organization's consolidated financial statements or equivalent documents is not covered by the report.	P4: Sustainability Report 2021
◎102-46	Defining report content and topic Boundaries	a. An explanation of the process for defining the report content and the topic Boundaries. b. An explanation of how the organization has implemented the Reporting Principles for defining report content.	P4: Sustainability Report 2021
◎102-47	List of material topics	a. A list of the material topics identified in the process for defining report content.	P7-8: Value Creation Model P37-38: Materiality and ESG Promotion System
◎102-48	Restatements of information	a. The effect of any restatements of information given in previous reports, and the reasons for such restatements.	P85-94: ESG Data Book
◎102-49	Changes in reporting	a. Significant changes from previous reporting periods in the list of material topics and topic Boundaries.	N/A
◎102-50	Reporting period	a. Reporting period for the information provided.	P4: Sustainability Report 2021
◎102-51	Date of most recent report	a. If applicable, the date of the most recent previous report.	P4: Sustainability Report 2021
◎102-52	Reporting cycle	a. Reporting cycle.	P4: Sustainability Report 2021
◎102-53	Contact point for questions regarding the report	a. The contact point for questions regarding the report or its contents.	Back cover
◎102-54	Claims of reporting in accordance with the GRI Standards	a. The claim made by the organization, if it has prepared a report in accordance with the GRI Standards, either: i. 'This report has been prepared in accordance with the GRI Standards: Core option'; ii. 'This report has been prepared in accordance with the GRI Standards: Comprehensive option'.	P4: Sustainability Report 2021 GRI Standards Content Index (This page)
◎102-55	GRI content index	a. The GRI content index, which specifies each of the GRI Standards used and lists all disclosures included in the report. b. For each disclosure, the content index shall include: i. the number of the disclosure (for disclosures covered by the GRI Standards); ii. the page number(s) or URL(s) where the information can be found, either within the report or in other published materials; iii. if applicable, and where permitted, the reason(s) for omission when a required disclosure cannot be made.	GRI Standards Content Index (This page)
◎102-56	External assurance	a. A description of the organization's policy and current practice with regard to seeking external assurance for the report. b. If the report has been externally assured: i. A reference to the external assurance report, statements, or opinions. If not included in the assurance report accompanying the sustainability report, a description of what has and what has not been assured and on what basis, including the assurance standards used, the level of assurance obtained, and any limitations of the assurance process; ii. The relationship between the organization and the assurance provider; iii. Whether and how the highest governance body or senior executives are involved in seeking external assurance for the organization's sustainability report.	P4: Sustainability Report 2021 P95: Independent Assurance Report

Specific Standard Disclosures

Contributing to Environmental Conservation			
GRI-103: Management Approach			
103-1	Explanation of the material topic and its Boundary	—	P29-32: Special Feature 1 P33-36: Special Feature 2 P37-38: Materiality and ESG Promotion System P39: Contributing to Environmental Conservation
103-2	The management approach and its components	—	P29-32: Special Feature 1 P33-36: Special Feature 2 P37-38: Materiality and ESG Promotion System P39: Contributing to Environmental Conservation

GRI Standards Content Index

No.	Disclosure	Reporting requirements	Relevant contents
103-3	Evaluation of the management approach	—	P29-32: Special Feature 1 P33-36: Special Feature 2 P37-38: Materiality and ESG Promotion System P39-42: Contributing to Environmental Conservation P78: Message From the Outside Director
GRI-301: Materials			
301-1	Materials used by weight or volume	a. Total weight or volume of materials that are used to produce and package the organization's primary products and services during the reporting period, by: i. non-renewable materials used; ii. renewable materials used.	P86: ESG Data Book (Mass Balance Table for the Group)
301-2	Recycled input materials used	a. Percentage of recycled input materials used to manufacture the organization's primary products and services.	P86: ESG Data Book (Mass Balance Table for the Group)
301-3	Reclaimed products and their packaging materials	a. Percentage of reclaimed products and their packaging materials for each product category. b. How the data for this disclosure have been collected.	
GRI-302: Energy			
302-1	Energy consumption within the organization	a. Total fuel consumption within the organization from nonrenewable sources, in joules or multiples, and including fuel types used. b. Total fuel consumption within the organization from renewable sources, in joules or multiples, and including fuel types used. c. In joules, watt-hours or multiples, the total: i. electricity consumption ii. heating consumption iii. cooling consumption iv. steam consumption d. In joules, watt-hours or multiples, the total: i. electricity sold ii. heating sold iii. cooling sold iv. steam sold e. Total energy consumption within the organization, in joules or multiples. f. Standards, methodologies, assumptions, and/or calculation tools used. g. Source of the conversion factors used.	P86-87: ESG Data Book (Mass Balance Table for the Group / Energy)
302-2	Energy consumption outside of the organization	a. Energy consumption outside of the organization, in joules or multiples. b. Standards, methodologies, assumptions, and/or calculation tools used. c. Source of the conversion factors used.	P86-87: ESG Data Book (Mass Balance Table for the Group / Energy)
302-3	Energy intensity	a. Energy intensity ratio for the organization. b. Organization-specific metric (the denominator) chosen to calculate the ratio. c. Types of energy included in the intensity ratio; whether fuel, electricity, heating, cooling, steam, or all. d. Whether the ratio uses energy consumption within the organization, outside of it, or both.	P86-87: ESG Data Book (Mass Balance Table for the Group / Energy)
302-4	Reduction of energy consumption	a. Amount of reductions in energy consumption achieved as a direct result of conservation and efficiency initiatives, in joules or multiples. b. Types of energy included in the reductions; whether fuel, electricity, heating, cooling, steam, or all. c. Basis for calculating reductions in energy consumption, such as base year or baseline, including the rationale for choosing it. d. Standards, methodologies, assumptions, and/or calculation tools used.	P86-87: ESG Data Book (Mass Balance Table for the Group / Energy)
302-5	Reductions in energy requirements of products and services	a. Reductions in energy requirements of sold products and services achieved during the reporting period, in joules or multiples. b. Basis for calculating reductions in energy consumption, such as base year or baseline, including the rationale for choosing it. c. Standards, methodologies, assumptions, and/or calculation tools used.	
GRI 303: Water and Effluents 2018			
303-1	Interactions with water as a shared resource	a. A description of how the organization interacts with water, including how and where water is withdrawn, consumed, and discharged, and the water-related impacts the organization has caused or contributed to, or that are directly linked to its operations, products, or services by its business relationships (e.g., impacts caused by runoff). b. A description of the approach used to identify water-related impacts, including the scope of assessments, their timeframe, and any tools or methodologies used. c. A description of how water-related impacts are addressed, including how the organization works with stakeholders to steward water as a shared resource, and how it engages with suppliers or customers with significant water-related impacts. d. An explanation of the process for setting any water-related goals and targets that are part of the organization's approach to managing water and effluents, and how they relate to public policy and the local context of each area with water stress.	P41-42: Initiatives for Environmental Conservation
303-2	Management of water discharge-related impacts	a. A description of any minimum standards set for the quality of effluent discharge, and how these minimum standards were determined, including: i. how standards for facilities operating in locations with no local discharge requirements were determined; ii. any internally developed water quality standards or guidelines; iii. any sector-specific standards considered; iv. whether the profile of the receiving waterbody was considered.	
303-3	Water withdrawal	a. Total water withdrawal from all areas in megaliters, and a breakdown of this total by the following sources, if applicable: i. Surface water; ii. Groundwater; iii. Seawater; iv. Produced water; v. Third-party water. b. Total water withdrawal from all areas with water stress in megaliters, and a breakdown of this total by the following sources, if applicable: i. Surface water; ii. Groundwater; iii. Seawater; iv. Produced water; v. Third-party water, and a breakdown of this total by the withdrawal sources listed in i-iv. c. A breakdown of total water withdrawal from each of the sources listed in Disclosures 303-3-a and 303-3-b in megaliters by the following categories: i. Freshwater (≤1,000 mg/L Total Dissolved Solids); ii. Other water (>1,000 mg/L Total Dissolved Solids). d. Any contextual information necessary to understand how the data have been compiled, such as any standards, methodologies, and assumptions used.	
303-4	Water discharge	a. Total water discharge to all areas in megaliters, and a breakdown of this total by the following types of destination, if applicable: i. Surface water; ii. Groundwater; iii. Seawater; iv. Third-party water, and the volume of this total sent for use to other organizations, if applicable. b. A breakdown of total water discharge to all areas in megaliters by the following categories: i. Freshwater (≤1,000 mg/L Total Dissolved Solids); ii. Other water (>1,000 mg/L Total Dissolved Solids). c. Total water discharge to all areas with water stress in megaliters, and a breakdown of this total by the following categories: i. Freshwater (≤1,000 mg/L Total Dissolved Solids); ii. Other water (>1,000 mg/L Total Dissolved Solids). d. Priority substances of concern for which discharges are treated, including: i. how priority substances of concern were defined, and any international standard, authoritative list, or criteria used; ii. the approach for setting discharge limits for priority substances of concern; iii. number of incidents of non-compliance with discharge limits. e. Any contextual information necessary to understand how the data have been compiled, such as any standards, methodologies, and assumptions used.	P88: ESG Data Book (Water Resources)
303-5	Water consumption	a. Total water consumption from all areas in megaliters. b. Total water consumption from all areas with water stress in megaliters. c. Change in water storage in megaliters, if water storage has been identified as having a significant water-related impact. d. Any contextual information necessary to understand how the data have been compiled, such as any standards, methodologies, and assumptions used, including whether the information is calculated, estimated, modeled, or sourced from direct measurements, and the approach taken for this, such as the use of any sector-specific factors.	P88: ESG Data Book (Water Resources)
GRI-304: Biodiversity			
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	a. For each operational site owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas, the following information: i. Geographic location; ii. Subsurface and underground land that may be owned, leased, or managed by the organization; iii. Position in relation to the protected area (in the area, adjacent to, or containing portions of the protected area) or the high biodiversity value area outside protected areas; iv. Type of operation (office, manufacturing or production, or extractive); v. Size of operational site in km^2 (or another unit, if appropriate); vi. Biodiversity value characterized by the attribute of the protected area or area of high biodiversity value outside the protected area (terrestrial, freshwater, or maritime ecosystem); vii. Biodiversity value characterized by listing of protected status (such as IUCN Protected Area Management Categories, Ramsar Convention, national legislation).	P41-42: Initiatives for Environmental Conservation
304-2	Significant impacts of activities, products and services on biodiversity	a. Nature of significant direct and indirect impacts on biodiversity with reference to one or more of the following: i. Construction or use of manufacturing plants, mines, and transport infrastructure; ii. Pollution (introduction of substances that do not naturally occur in the habitat from point and non-point sources); iii. Introduction of invasive species, pests, and pathogens; iv. Reduction of species; v. Habitat conversion; vi. Changes in ecological processes outside the natural range of variation (such as salinity or changes in groundwater level). b. Significant direct and indirect positive and negative impacts with reference to the following: i. Species affected; ii. Extent of areas impacted; iii. Duration of impacts; iv. Reversibility or irreversibility of the impacts.	P41-42: Initiatives for Environmental Conservation

GRI Standards Content Index

No.	Disclosure	Reporting requirements	Relevant contents
304-3	Habitats protected or restored	a. Size and location of all habitat areas protected or restored, and whether the success of the restoration measure was or is approved by independent external professionals. b. Whether partnerships exist with third parties to protect or restore habitat areas distinct from where the organization has overseen and implemented restoration or protection measures. c. Status of each area based on its condition at the close of the reporting period. d. Standards, methodologies, and assumptions used.	
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	a. Total number of IUCN Red List species and national conservation list species with habitats in areas affected by the operations of the organization, by level of extinction risk: i. Critically endangered ii. Endangered iii. Vulnerable iv. Near threatened v. Least concern	
GRI-305: Emissions			
305-1	Direct (Scope 1) GHG emissions	a. Gross direct (Scope 1) GHG emissions in metric tons of CO_2 equivalent. b. Gases included in the calculation; whether CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, NF_3, or all. c. Biogenic CO_2 emissions in metric tons of CO_2 equivalent. d. Base year for the calculation, if applicable, including: i. the rationale for choosing it; ii. emissions in the base year; iii. the context for any significant changes in emissions that triggered recalculations of base year emissions. e. Source of the emission factors and the global warming potential (GWP) rates used, or a reference to the GWP source. f. Consolidation approach for emissions; whether equity share, financial control, or operational control. g. Standards, methodologies, assumptions, and/or calculation tools used.	P86: ESG Data Book (Mass Balance Table for the Group) P89: ESG Data Book (Climate Change / Air Pollutants)
305-2	Energy indirect (Scope 2) GHG emissions	a. Gross location-based energy indirect (Scope 2) GHG emissions in metric tons of CO_2 equivalent. b. If applicable, gross market-based energy indirect (Scope 2) GHG emissions in metric tons of CO_2 equivalent. c. If available, the gases included in the calculation; whether CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, NF_3, or all. d. Base year for the calculation, if applicable, including: i. the rationale for choosing it; ii. emissions in the base year; iii. the context for any significant changes in emissions that triggered recalculations of base year emissions. e. Source of the emission factors and the global warming potential (GWP) rates used, or a reference to the GWP source. f. Consolidation approach for emissions; whether equity share, financial control, or operational control. g. Standards, methodologies, assumptions, and/or calculation tools used.	P89: ESG Data Book (Climate Change / Air Pollutants)
305-3	Other indirect (Scope 3) GHG emissions	a. Gross other indirect (Scope 3) GHG emissions in metric tons of CO_2 equivalent. b. If available, the gases included in the calculation; whether CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, NF_3, or all. c. Biogenic CO_2 emissions in metric tons of CO_2 equivalent. d. Other indirect (Scope 3) GHG emissions categories and activities included in the calculation. e. Base year for the calculation, if applicable, including: i. the rationale for choosing it; ii. emissions in the base year; iii. the context for any significant changes in emissions that triggered recalculations of base year emissions. f. Source of the emission factors and the global warming potential (GWP) rates used, or a reference to the GWP source. g. Standards, methodologies, assumptions, and/or calculation tools used.	P89: ESG Data Book (Climate Change / Air Pollutants)
305-4	GHG emissions intensity	a. GHG emissions intensity ratio for the organization. b. Organization-specific metric (the denominator) chosen to calculate the ratio. c. Types of GHG emissions included in the intensity ratio; whether direct (Scope 1), energy indirect (Scope 2), and/or other indirect (Scope 3). d. Gases included in the calculation; whether CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, NF_3, or all.	P89: ESG Data Book (Climate Change / Air Pollutants)
305-5	Reduction of GHG emissions	a. GHG emissions reduced as a direct result of reduction initiatives, in metric tons of CO_2 equivalent. b. Gases included in the calculation; whether CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, NF_3, or all. c. Base year or baseline, including the rationale for choosing it. d. Scopes in which reductions took place; whether direct (Scope 1), energy indirect (Scope 2), and/or other indirect (Scope 3). e. Standards, methodologies, assumptions, and/or calculation tools used.	P29-32: Special Feature 1
305-6	Emissions of ozone-depleting substances (ODS)	a. Production, imports, and exports of ODS in metric tons of CFC-11 (trichlorofluoromethane) equivalent. b. Substances included in the calculation. c. Source of the emission factors used. d. Standards, methodologies, assumptions, and/or calculation tools used.	
305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	a. Significant air emissions, in kilograms or multiples, for each of the following: i. NOx ii. SOx iii. Persistent organic pollutants (POP) iv. Volatile organic compounds (VOC) v. Hazardous air pollutants (HAP) vi. Particulate matter (PM) vii. Other standard categories of air emissions identified in relevant regulations b. Source of the emission factors used. c. Standards, methodologies, assumptions, and/or calculation tools used.	P86: ESG Data Book (Mass Balance Table for the Group) P89: ESG Data Book (Climate Change / Air Pollutants) P90: ESG Data Book (Chemical Substances)

No.	Disclosure	Reporting requirements	Relevant contents
GRI-306: Waste 2020			
306-1	Waste generation and significant waste-related impacts	a. For the organization's significant actual and potential waste-related impacts, a description of: i. the inputs, activities, and outputs that lead or could lead to these impacts; ii. whether these impacts relate to waste generated in the organization's own activities or to waste generated upstream or downstream in its value chain.	P33-36: Special Feature 2
306-2	Management of significant waste-related impacts	a. Actions, including circularity measures, taken to prevent waste generation in the organization's own activities and upstream and downstream in its value chain, and to manage significant impacts from waste generated. b. If the waste generated by the organization in its own activities is managed by a third party, a description of the processes used to determine whether the third party manages the waste in line with contractual or legislative obligations. c. The processes used to collect and monitor waste-related data.	P33-36: Special Feature 2
306-3	Waste generated	a. Total weight of waste generated in metric tons, and a breakdown of this total by composition of the waste. b. Contextual information necessary to understand the data and how the data has been compiled.	P90: ESG Data Book (Waste Materials and By-Products)
306-4	Waste diverted from disposal	a. Total weight of waste diverted from disposal in metric tons, and a breakdown of this total by composition of the waste. b. Total weight of hazardous waste diverted from disposal in metric tons, and a breakdown of this total by the following recovery operations: i. Preparation for reuse; ii. Recycling; iii. Other recovery operations. c. Total weight of non-hazardous waste diverted from disposal in metric tons, and a breakdown of this total by the following recovery operations: i. Preparation for reuse; ii. Recycling; iii. Other recovery operations. d. For each recovery operation listed in Disclosures 306-4-b and 306-4-c, a breakdown of the total weight in metric tons of hazardous waste and of non-hazardous waste diverted from disposal: i. onsite; ii. offsite. e. Contextual information necessary to understand the data and how the data has been compiled.	P90: ESG Data Book (Waste Materials and By-Products)
306-5	Waste directed to disposal	a. Total weight of waste directed to disposal in metric tons, and a breakdown of this total by composition of the waste. b. Total weight of hazardous waste directed to disposal in metric tons, and a breakdown of this total by the following disposal operations: i. Incineration (with energy recovery); ii. Incineration (without energy recovery); iii. Landfilling; iv. Other disposal operations. c. Total weight of non-hazardous waste directed to disposal in metric tons, and a breakdown of this total by the following disposal operations: i. Incineration (with energy recovery); ii. Incineration (without energy recovery); iii. Landfilling; iv. Other disposal operations. d. For each disposal operation listed in Disclosures 306-5-b and 306-5-c, a breakdown of the total weight in metric tons of hazardous waste and of non-hazardous waste directed to disposal: i. onsite; ii. offsite. e. Contextual information necessary to understand the data and how the data has been compiled.	P90: ESG Data Book (Waste Materials and By-Products)
GRI307: Environmental Compliance			
307-1	Non-compliance with environmental laws and regulations	a. Significant fines and non-monetary sanctions for non-compliance with environmental laws and/or regulations in terms of: i. total monetary value of significant fines; ii. total number of non-monetary sanctions; iii. cases brought through dispute resolution mechanisms. b. If the organization has not identified any non-compliance with environmental laws and/or regulations, a brief statement of this fact is sufficient.	P40: Environmental Management
Provide Advanced Materials That Support Lives and Lifestyles			
GRI-103: Management Approach			
103-1	Explanation of the material topic and its Boundary	—	P37-38: Materiality and ESG Promotion System P43: Provide Advanced Materials That Support Lives and Lifestyles
103-2	The management approach and its components	—	P37-38: Materiality and ESG Promotion System P43: Provide Advanced Materials That Support Lives and Lifestyles
103-3	Evaluation of the management approach	—	P37-38: Materiality and ESG Promotion System P43-52: Provide Advanced Materials That Support Lives and Lifestyles
Create Attractive Workplaces			
GRI-103: Management Approach			
103-1	Explanation of the material topic and its Boundary	—	P37-38: Materiality and ESG Promotion System P53: Create Attractive Workplaces
103-2	The management approach and its components	—	P37-38: Materiality and ESG Promotion System P53: Create Attractive Workplaces
103-3	Evaluation of the management approach	—	P37-38: Materiality and ESG Promotion System P53-60: Create Attractive Workplaces

GRI Standards Content Index

No.	Disclosure	Reporting requirements	Relevant contents
GRI-401: Employment			
401-1	New employee hires and employee turnover	a. Total number and rate of new employee hires during the reporting period, by age group, gender and region. b. Total number and rate of employee turnover during the reporting period, by age group, gender and region.	P92-93: ESG Data Book (Employment and Work Styles)
401-2	Benefits provided to fulltime employees that are not provided to temporary or part-time employees	a. Benefits which are standard for full-time employees of the organization but are not provided to temporary or part-time employees, by significant locations of operation. These include, as a minimum: i. life insurance; ii. health care; iii. disability and invalidity coverage; iv. parental leave; v. retirement provision; vi. stock ownership; vii. others. b. The definition used for 'significant locations of operation'.	
401-3	Parental leave	a. Total number of employees that were entitled to parental leave, by gender. b. Total number of employees that took parental leave, by gender. c. Total number of employees that returned to work in the reporting period after parental leave ended, by gender. d. Total number of employees that returned to work after parental leave ended that were still employed 12 months after their return to work, by gender. e. Return to work and retention rates of employees that took parental leave, by gender.	P92-93: ESG Data Book (Employment and Work Styles)
GRI-403: Occupational Health and Safety 2018			
403-1	Occupational health and safety management system	a. A statement of whether an occupational health and safety management system has been implemented, including whether: i. the system has been implemented because of legal requirements and, if so, a list of the requirements; ii. the system has been implemented based on recognized risk management and/or management system standards/guidelines and, if so, a list of the standards/guidelines. b. A description of the scope of workers, activities, and workplaces covered by the occupational health and safety management system, and an explanation of whether and, if so, why any workers, activities, or workplaces are not covered.	P54-56: Foster a Culture of Safety P91: ESG Data Book (Occupational Health and Safety)
403-2	Hazard identification, risk assessment, and incident investigation	a. A description of the processes used to identify work-related hazards and assess risks on a routine and non-routine basis, and to apply the hierarchy of controls in order to eliminate hazards and minimize risks, including: i. how the organization ensures the quality of these processes, including the competency of persons who carry them out; ii. how the results of these processes are used to evaluate and continually improve the occupational health and safety management system. b. A description of the processes for workers to report work-related hazards and hazardous situations, and an explanation of how workers are protected against reprisals. c. A description of the policies and processes for workers to remove themselves from work situations that they believe could cause injury or ill health, and an explanation of how workers are protected against reprisals. d. A description of the processes used to investigate work-related incidents, including the processes to identify hazards and assess risks relating to the incidents, to determine corrective actions using the hierarchy of controls, and to determine improvements needed in the occupational health and safety management system.	P54-56: Foster a Culture of Safety P91: ESG Data Book (Occupational Health and Safety)
403-3	Occupational health services	a. A description of the occupational health services' functions that contribute to the identification and elimination of hazards and minimization of risks, and an explanation of how the organization ensures the quality of these services and facilitates workers' access to them.	P54-56: Foster a Culture of Safety P91: ESG Data Book (Occupational Health and Safety)
403-4	Worker participation, consultation, and communication on occupational health and safety	a. A description of the processes for worker participation and consultation in the development, implementation, and evaluation of the occupational health and safety management system, and for providing access to and communicating relevant information on occupational health and safety to workers. b. Where formal joint management-worker health and safety committees exist, a description of their responsibilities, meeting frequency, decision-making authority, and whether and, if so, why any workers are not represented by these committees.	P54-56: Foster a Culture of Safety P91: ESG Data Book (Occupational Health and Safety)
403-5	Worker training on occupational health and safety	a. A description of any occupational health and safety training provided to workers, including generic training as well as training on specific work-related hazards, hazardous activities, or hazardous situations.	P54-56: Foster a Culture of Safety
403-6	Promotion of worker health	a. An explanation of how the organization facilitates workers' access to non-occupational medical and healthcare services, and the scope of access provided. b. A description of any voluntary health promotion services and programs offered to workers to address major non-work-related health risks, including the specific health risks addressed, and how the organization facilitates workers' access to these services and programs.	P54-56: Foster a Culture of Safety
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	a. A description of the organization's approach to preventing or mitigating significant negative occupational health and safety impacts that are directly linked to its operations, products, or services by its business relationships, and the related hazards and risks.	P54-56: Foster a Culture of Safety
403-8	Workers covered by an occupational health and safety management system	a. If the organization has implemented an occupational health and safety management system based on legal requirements and/or recognized standards/guidelines: i. the number and percentage of all employees and workers who are not employees but whose work and/or workplace is controlled by the organization, who are covered by such a system; ii. the number and percentage of all employees and workers who are not employees but whose work and/or workplace is controlled by the organization, who are covered by such a system that has been internally audited; iii. the number and percentage of all employees and workers who are not employees but whose work and/or workplace is controlled by the organization, who are covered by such a system that has been audited or certified by an external party. b. Whether and, if so, why any workers have been excluded from this disclosure, including the types of worker excluded. c. Any contextual information necessary to understand how the data have been compiled, such as any standards, methodologies, and assumptions used.	

No.	Disclosure	Reporting requirements	Relevant contents
403-9	Work-related injuries	a. For all employees: i. The number and rate of fatalities as a result of work-related injury; ii. The number and rate of high-consequence work-related injuries (excluding fatalities); iii. The number and rate of recordable work-related injuries; iv. The main types of work-related injury; v. The number of hours worked. b. For all workers who are not employees but whose work and/or workplace is controlled by the organization: i. The number and rate of fatalities as a result of work-related injury; ii. The number and rate of high-consequence work-related injuries (excluding fatalities); iii. The number and rate of recordable work-related injuries; iv. The main types of work-related injury; v. The number of hours worked. c. The work-related hazards that pose a risk of high-consequence injury, including: i. how these hazards have been determined; ii. which of these hazards have caused or contributed to high-consequence injuries during the reporting period; iii. actions taken or underway to eliminate these hazards and minimize risks using the hierarchy of controls. d. Any actions taken or underway to eliminate other work-related hazards and minimize risks using the hierarchy of controls. e. Whether the rates have been calculated based on 200,000 or 1,000,000 hours worked. f. Whether and, if so, why any workers have been excluded from this disclosure, including the types of worker excluded. g. Any contextual information necessary to understand how the data have been compiled, such as any standards, methodologies, and assumptions used.	P54-56: Foster a Culture of Safety P91: ESG Data Book (Occupational Health and Safety) Frequency rates and working hours are not disclosed at this time for overseas operating sites, as it is difficult to obtain the necessary information due to the lack of an internal data collection system. We are taking action to establish a system for this and disclose this information in the coming years.
403-10	Work-related ill health	a. For all employees: i. The number of fatalities as a result of work-related ill health; ii. The number of cases of recordable work-related ill health; iii. The main types of work-related ill health. b. For all workers who are not employees but whose work and/or workplace is controlled by the organization: i. The number of fatalities as a result of work-related ill health; ii. The number of cases of recordable work-related ill health; iii. The main types of work-related ill health. c. The work-related hazards that pose a risk of ill health, including: i. how these hazards have been determined; ii. which of these hazards have caused or contributed to cases of ill health during the reporting period; iii. actions taken or underway to eliminate these hazards and minimize risks using the hierarchy of controls. d. Whether and, if so, why any workers have been excluded from this disclosure, including the types of worker excluded. e. Any contextual information necessary to understand how the data have been compiled, such as any standards, methodologies, and assumptions used.	
GRI-404: Training and Education			
404-1	Average hours of training per year per employee	a. Average hours of training that the organization's employees have undertaken during the reporting period, by: i. gender; ii. employee category.	P92: ESG Data Book (Human Resource Developments)
404-2	Programs for upgrading employee skills and transition assistance programs	a. Type and scope of programs implemented and assistance provided to upgrade employee skills. b. Transition assistance programs provided to facilitate continued employability and the management of career endings resulting from retirement or termination of employment.	P59-60: Develop Human Resources and Promote Health
404-3	Percentage of employees receiving regular performance and career development reviews	a. Percentage of total employees by gender and by employee category who received a regular performance and career development review during the reporting period.	P59-60: Develop Human Resources and Promote Health
GRI-405: Diversity and Equal Opportunity			
405-1	Diversity of governance bodies and employees	a. Percentage of individuals within the organization's governance bodies in each of the following diversity categories: i. Gender; ii. Age group: under 30 years old, 30-50 years old, over 50 years old; iii. Other indicators of diversity where relevant (such as minority or vulnerable groups). b. Percentage of employees per employee category in each of the following diversity categories: i. Gender; ii. Age group: under 30 years old, 30-50 years old, over 50 years old; iii. Other indicators of diversity where relevant (such as minority or vulnerable groups).	P94: ESG Data Book (Diversity)
405-2	Ratio of basic salary and remuneration of women to men	a. Ratio of the basic salary and remuneration of women to men for each employee category, by significant locations of operation. b. The definition used for 'significant locations of operation'.	
Respect Human Rights			
GRI-103: Management Approach			
103-1	Explanation of the material topic and its Boundary	—	P37-38: Materiality and ESG Promotion System P61: Respect Human Rights
103-2	The management approach and its components	—	P37-38: Materiality and ESG Promotion System P61: Respect Human Rights
103-3	Evaluation of the management approach	—	P37-38: Materiality and ESG Promotion System P61-64: Respect Human Rights

GRI Standards Content Index

No.	Disclosure	Reporting requirements	Relevant contents
GRI-411: Rights of Indigenous Peoples			
411-1	Incidents of violations involving rights of indigenous peoples	a. Total number of identified incidents of violations involving the rights of indigenous peoples during the reporting period. b. Status of the incidents and actions taken with reference to the following: i. Incident reviewed by the organization; ii. Remediation plans being implemented; iii. Remediation plans that have been implemented, with results reviewed through routine internal management review processes; iv. Incident no longer subject to action.	P63-64: Consideration of Human Rights in the Supply Chain
GRI-412: Human Rights Assessment			
412-1	Operations that have been subject to human rights reviews or impact assessments	a. Total number and percentage of operations that have been subject to human rights reviews or human rights impact assessments, by country.	P63-64: Consideration of Human Rights in the Supply Chain
412-2	Employee training on human rights policies or procedures	a. Total number of hours in the reporting period devoted to training on human rights policies or procedures concerning aspects of human rights that are relevant to operations. b. Percentage of employees trained during the reporting period in human rights policies or procedures concerning aspects of human rights that are relevant to operations.	P62: Human Rights Education and Internal Awareness Raising
412-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	a. Total number and percentage of significant investment agreements and contracts that include human rights clauses or that underwent human rights screening. b. The definition used for 'significant investment agreements'.	P63-64: Consideration of Human Rights in the Supply Chain
Coexistence and Co-Prosperity With Local Communities			
GRI-103: Management Approach			
103-1	Explanation of the material topic and its Boundary	—	P37-38: Materiality and ESG Promotion System P65: Coexistence and Co-Prosperity With Local Communities
103-2	The management approach and its components	—	P37-38: Materiality and ESG Promotion System P65: Coexistence and Co-Prosperity With Local Communities
103-3	Evaluation of the management approach	—	P37-38: Materiality and ESG Promotion System P65-68: Coexistence and Co-Prosperity With Local Communities
GRI-202: Market Presence			
202-1	Ratios of standard entry level wage by gender compared to local minimum wage	a. When a significant proportion of employees are compensated based on wages subject to minimum wage rules, report the relevant ratio of the entry level wage by gender at significant locations of operation to the minimum wage. b. When a significant proportion of other workers (excluding employees) performing the organization's activities are compensated based on wages subject to minimum wage rules, describe the actions taken to determine whether these workers are paid above the minimum wage. c. Whether a local minimum wage is absent or variable at significant locations of operation, by gender. In circumstances in which different minimums can be used as a reference, report which minimum wage is being used. d. The definition used for 'significant locations of operation'.	
202-2	Proportion of senior management hired from the local community	a. Percentage of senior management at significant locations of operation that are hired from the local community. b. The definition used for 'senior management'. c. The organization's geographical definition of 'local'. d. The definition used for 'significant locations of operation'.	P67: Coexistence and Co-Prosperity With Local Communities P94: ESG Data Book (Diversity)
GRI-203: Indirect Economic Impacts			
203-1	Infrastructure investments and services supported	a. Extent of development of significant infrastructure investments and services supported. b. Current or expected impacts on communities and local economies, including positive and negative impacts where relevant. c. Whether these investments and services are commercial, in-kind, or pro bono engagements.	P65-68: Coexistence and Co-Prosperity With Local Communities P82: Stakeholder Engagement
203-2	Significant indirect economic impacts	a. Examples of significant identified indirect economic impacts of the organization, including positive and negative impacts. b. Significance of the indirect economic impacts in the context of external benchmarks and stakeholder priorities, such as national and international standards, protocols, and policy agendas.	
GRI-413: Local Communities			
413-1	Operations with local community engagement, impact assessments, and development programs	a. Percentage of operations with implemented local community engagement, impact assessments, and/or development programs, including the use of: i. social impact assessments, including gender impact assessments, based on participatory processes; ii. environmental impact assessments and ongoing monitoring; iii. public disclosure of results of environmental and social impact assessments; iv. local community development programs based on local communities' needs; v. stakeholder engagement plans based on stakeholder mapping; vi. broad based local community consultation committees and processes that include vulnerable groups; vii. works councils, occupational health and safety committees and other worker representation bodies to deal with impacts; viii. formal local community grievance processes.	P65-68: Coexistence and Co-Prosperity With Local Communities P82: Stakeholder Engagement
413-2	Operations with significant actual and potential negative impacts on local communities	a. Operations with significant actual and potential negative impacts on local communities, including: i. the location of the operations; ii. the significant actual and potential negative impacts of operations.	P41-42: Initiatives for Environmental Conservation
Strengthen Governance			
GRI-103: Management Approach			
103-1	Explanation of the material topic and its Boundary	—	P37-38: Materiality and ESG Promotion System P69: Strengthen Governance
103-2	The management approach and its components	—	P37-38: Materiality and ESG Promotion System P69: Strengthen Governance
103-3	Evaluation of the management approach	—	P37-38: Materiality and ESG Promotion System P69-77: Strengthen Governance P78: Message From the Outside Director

No.	Disclosure	Reporting requirements	Relevant contents
GRI-205: Anti-corruption			
205-1	Operations assessed for risks related to corruption	a. Total number and percentage of operations assessed for risks related to corruption. b. Significant risks related to corruption identified through the risk assessment.	
205-2	Communication and training about anti-corruption policies and procedures	a. Total number and percentage of governance body members that the organization's anticorruption policies and procedures have been communicated to, broken down by region. b. Total number and percentage of employees that the organization's anti-corruption policies and procedures have been communicated to, broken down by employee category and region. c. Total number and percentage of business partners that the organization's anticorruption policies and procedures have been communicated to, broken down by type of business partner and region. Describe if the organization's anti-corruption policies and procedures have been communicated to any other persons or organizations. d. Total number and percentage of governance body members that have received training on anti-corruption, broken down by region. e. Total number and percentage of employees that have received training on anticorruption, broken down by employee category and region.	P72-73: Rigorous Compliance
205-3	Confirmed incidents of corruption and actions taken	a. Total number and nature of confirmed incidents of corruption. b. Total number of confirmed incidents in which employees were dismissed or disciplined for corruption. c. Total number of confirmed incidents when contracts with business partners were terminated or not renewed due to violations related to corruption. d. Public legal cases regarding corruption brought against the organization or its employees during the reporting period and the outcomes of such cases.	P72-73: Rigorous Compliance
GRI-206: Anti-competitive Behavior			
206-1	Legal actions for anticompetitive behavior, anti-trust, and monopoly practices	a. Number of legal actions pending or completed during the reporting period regarding anti-competitive behavior and violations of anti-trust and monopoly legislation in which the organization has been identified as a participant. b. Main outcomes of completed legal actions, including any decisions or judgments.	P72-73: Rigorous Compliance
GRI-207: Tax 2019			
207-1	Approach to tax	a. A description of the approach to tax, including: i. whether the organization has a tax strategy and, if so, a link to this strategy if publicly available; ii. the governance body or executive-level position within the organization that formally reviews and approves the tax strategy, and the frequency of this review; iii. the approach to regulatory compliance; iv. how the approach to tax is linked to the business and sustainable development strategies of the organization.	P72-73: Rigorous Compliance
207-2	Tax governance, control, and risk management	a. A description of the tax governance and control framework, including: i. the governance body or executive-level position within the organization accountable for compliance with the tax strategy; ii. how the approach to tax is embedded within the organization; iii. the approach to tax risks, including how risks are identified, managed, and monitored; iv. how compliance with the tax governance and control framework is evaluated. b. A description of the mechanisms to raise concerns about the organization's business conduct and the organization's integrity in relation to tax. c. A description of the assurance process for disclosures on tax and, if applicable, a reference to the assurance report, statement, or opinion.	P72-73: Rigorous Compliance
207-3	Stakeholder engagement and management of concerns related to tax	a. A description of the approach to stakeholder engagement and management of stakeholder concerns related to tax, including: i. the approach to engagement with tax authorities; ii. the approach to public policy advocacy on tax; iii. the processes for collecting and considering the views and concerns of stakeholders, including external stakeholders.	
207-4	Country-by-country reporting	a. All tax jurisdictions where the entities included in the organization's audited consolidated financial statements, or in the financial information filed on public record, are resident for tax purposes. b. For each tax jurisdiction reported in Disclosure 207-4-a: i. Names of the resident entities; ii. Primary activities of the organization; iii. Number of employees, and the basis of calculation of this number; iv. Revenues from third-party sales; v. Revenues from intra-group transactions with other tax jurisdictions; vi. Profit/loss before tax; vii. Tangible assets other than cash and cash equivalents; viii. Corporate income tax paid on a cash basis; ix. Corporate income tax accrued on profit/loss; x. Reasons for the difference between corporate income tax accrued on profit/loss and the tax due if the statutory tax rate is applied to profit/loss before tax. c. The time period covered by the information reported in Disclosure 207-4.	
GRI-416: Customer health and safety			
416-1	Assessment of the health and safety impacts of product and service categories	a. Percentage of significant product and service categories for which health and safety impacts are assessed for improvement.	P76-77: Global Quality Governance
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	a. Total number of incidents of non-compliance with regulations and/or voluntary codes concerning the health and safety impacts of products and services within the reporting period, by: i. incidents of non-compliance with regulations resulting in a fine or penalty; ii. incidents of non-compliance with regulations resulting in a warning; iii. incidents of non-compliance with voluntary codes. b. If the organization has not identified any non-compliance with regulations and/or voluntary codes, a brief statement of this fact is sufficient.	P76-77: Global Quality Governance
GRI-419: Socioeconomic Compliance			
419-1	Non-compliance with laws and regulations in the social and economic area	a. Significant fines and non-monetary sanctions for non-compliance with laws and/or regulations in the social and economic area in terms of: i. total monetary value of significant fines; ii. total number of non-monetary sanctions; iii. cases brought through dispute resolution mechanisms. b. If the organization has not identified any non-compliance with laws and/or regulations, a brief statement of this fact is sufficient. c. The context against which significant fines and non-monetary sanctions were incurred.	P76-77: Global Quality Governance

We welcome your views and questions regarding this *Sustainability Report 2021*.

Any opinions provided will be used to improve future reports even further.
Please use our e-mail or post address below to contact us.

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UN GLOBAL COMPACT
COMMUNICATION ON PROGRESS

This is our **Communication on Progress** in implementing the principles of the **United Nations Global Compact** and supporting broader UN goals.

We welcome feedback on its contents.