Sustainability Report 2024

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We welcome your views and questions regarding this *Sustainability Report 2024.*

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

JX Advanced Metals Corporation

JX Advanced Metals Corporation ESG Promotion Department

10-4, Toranomon 2-chome, Minato-ku, Tokyo 105-8417, Japan
The Okura Prestige Tower
E-mail: esg_promotion@jx-nmm.com
URL: https://www.jx-nmm.com/english/

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.

SUSTAINABILITY REPORT 2024

JX Advanced Metals Corporation

We contribute to the development of a sustainable economy and society through innovation in materials.

JX Advanced 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 2024

Editorial Policy

The JX Advanced Metals Group engages in ESG management in all 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, shareholders and investors, employees, suppliers, and local and international communities. As an important communication tool, this report is designed to enhance stakeholder understanding of our ESG activities.
Sustainability Report 2024 presents the JX Advanced Metals Group efforts to transform our business portfolio to achieve our Long-Term Vision, highlighting Group initiatives with a focus on sustainable businesses.

Referenced Guidelines

- Global Reporting Initiative (GRI) Sustainability Reporting Standards
- Guidance for Collaborative Value Creation 2.0, Ministry of Economy, Trade and Industry
- Environmental Reporting Guidelines 2018, Ministry of the Environment
- Task Force on Climate-related Financial Disclosures (TCFD)

☑ The indicators in this report that are assured by a third-party organization are marked a check in square.

✓ The indicators in this report that are assured by a third-party organization in March 2025 are marked with a check in circle.

Definitions of Terminology

JX Advanced Metals (the “Company”): JX Advanced Metals Corporation.
The JX Advanced Metals Group (the “Group”): JX Advanced Metals Corporation and subsidiaries. However, the company subject to reporting may differ according to the section of the report (see Scope of This Report for details).
ENEOS Group: A corporate group formed by ENEOS Holdings, Inc., the parent company of JX Advanced Metals Corporation. Along with the Company, the core operating companies of the JX Advanced Metals Group are ENEOS Corporation and JX Nippon Oil & Gas Exploration Corporation.

Publication Date

November 2024

Reporting Period

April 2023 - March 2024
In principle, this report covers our business activities during fiscal 2023. 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 Advanced Metals Corporation as well as domestic and overseas Group companies. The main indicators reported in each reporting area are as shown below. Where the scope of reporting for each indicator differs from the scope shown in the table below, this scope shall be noted separately.

Corresponding Sections	Scope of This Report
Business Overview	Companies included in the consolidated financial statements of JX Advanced Metals. * The Company and its consolidated subsidiaries listed below have the ◎ symbol after their names.
Environment	Energy and GHGs: Business locations of quantitative importance to the JX Advanced Metals Group (including business locations with production activities and closed mines) (Companies listed below marked with ●) Other environmental data: Production sites of corporations with 21 or more employees (Companies listed below marked with ✻)
Employees, Society, Corporate Governance	The Company and 59 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.

Corporate Profile

Company Name	JX Advanced Metals Corporation
Paid-in Capital	75.0 billion yen (wholly owned by ENEOS Holdings, Inc.)
Representative	President and Chief Executive Officer Hayashi Yoichi
Revenue	1,513.1 billion yen (FY2023, consolidated)
Head Office	10-4, Toranomon 2-chome, Minato-ku, Tokyo 105-8417, Japan The Okura Prestige Tower
Business Lines	Thin Film Materials Business Tantalum and Niobium Business Functional Materials Business Titanium Business Metals & Recycling Business Mineral Resources Business
Employees (Non-Consolidated)	3,196 (as of March 31, 2024)
Employees (Consolidated)	9,715 (as of March 31, 2024)
Domestic Operating Sites	Hitachi Works (Ibaraki Prefecture) Isohara Works (Ibaraki Prefecture) Kurami Works (Kanagawa Prefecture) Technology Development Center (Ibaraki Prefecture)
Overseas Operating Sites*	Chile Office Frankfurt Office Johannesburg Office

* The JX Advanced Metals Group conducts business in 15 countries and regions outside Japan.

Main Companies Covered by This Report

Domestic

JX Advanced Metals Corporation ◎●✻★
JX Metals Trading Co., Ltd. ◎●✻★
Toho Titanium Co., Ltd. ◎●✻★
JX Nippon Mining Ecomanagement, Inc. ◎●★
Shimoda Hot Springs Co., Ltd. ◎●★
Kamine Clean Service Co., Ltd. ◎★
Furuuchi Chemical Corporation ◎●✻★
JX Metals Research Institute for Technology & Strategy Co., Ltd. ◎★
Ibaraki Nikko Kensetsu Co., Ltd. ◎★
JX Metals Circular Solutions Co., Ltd. ◎●✻★
JX Metals Plant Saganoseki Co., Ltd. ◎★
Kasuga Mines Co., Ltd. ◎●✻★
JX Metals Resources Exploration & Development Co., Ltd. ◎★
Pan Pacific Copper Co., Ltd. ◎●
Keihin Kaseihin Center Co., Ltd. ◎●
PPC Logistics Co., Ltd. ◎
JX Metals Smelting Co., Ltd. ◎●✻★
JX Metals Smelting Logitech Co., Ltd. ◎●★
Japan Copper Casting Co., Ltd. ◎●✻★
Japan Korea Joint Smelting Co., Ltd. ◎★
JX Metals Environmental Services Co., Ltd. ◎●✻★
JX Metals Tomakomai Chemical Co., Ltd. ◎●✻★
JX Metals Mikkaichi Recycle Co., Ltd. ◎●✻★
JX Metals Takasho Co., Ltd. ◎●✻★
Ichinoseki Foil Manufacturing Co., Ltd. ◎●✻★
JX Nippon Coil Center Co., Ltd. ◎●✻★
JX Metals Precision Technology Co., Ltd. ◎●✻
Kitaibaraki Precision Co., Ltd. ◎●✻★
TANIOBIS Japan Co., Ltd. ◎●✻★
Toho Material Co., Ltd. ◎●
Advanced Forging Technology, Inc. ◎●★
Tokyo Denkai Co., Ltd. ◎●✻★
JX Advanced Metals Corporate Service Co., Ltd. ◎★
Osaka Alloying Works Co., Ltd. ◎●★

Other

One domestic company ◎✻
One overseas company ◎★

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 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 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 Metals Korea Co., Ltd. ◎●✻★
JX Metals Singapore Pte. Ltd. ◎★
TANIOBIS GmbH ◎●✻★
TANIOBIS Co., Ltd. ◎●✻★
TANIOBIS Smelting GmbH & Co. KG ◎●✻★
TANIOBIS USA LLC ◎★
JX Metals Circular Solutions Europe GmbH ◎★
eCycle Solutions Inc. ◎●✻★
Green-Go Recycling Inc. ◎★
Refreshtek Information Technology Services International Inc. ◎★
Materials Service Complex Vietnam Co., Ltd. ◎★
JX Metals Canada Inc. ◎★
Nippon Mining of Australia Pty. Ltd. ◎★

Section 1 The JX Advanced Metals Group

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 forward, taking on the challenge of contributing to the development of sustainable economies and societies through innovation in materials.

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 Head Office to the Toranomon area

Activity-based working (ABW) was introduced as a new work style that increases productivity by allowing employees to work independently but also encourages open and frank communication that removes organizational boundaries. In addition, SQUARE LAB has been established to promote collaboration with our various partners in the creation of next-generation office space.

2023 Preparations for stock listing begin

Our goal is to increase corporate value by establishing a management structure that enables expert and rapid decision making as well as creating an optimal capital structure that suits the characteristics of our business.

2024

Net Sales **151.31** bil. yen
(FY March 2024)*Consolidated

No. of Employees **9,715**
(as of March 31, 2024)*Consolidated

1905 Opened the Hitachi Mine

Company founder Kuhara Fusanosuke opened the Hitachi Mine in Ibaraki Prefecture, 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

Saganoseki Smelter & Refinery was built in Oita Prefecture to further expand the mining, smelting, and refining segments fundamental to the Company's diversified business. It was one of the largest such plants in Japan. Even to this day, it remains a key location within the JX Advanced 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 Kurami Works in Kanagawa Prefecture 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. With the establishment of the Isohara Works in Ibaraki Prefecture as a new main manufacturing center, the Company expanded into the development and manufacturing of various electronics materials.

The newly-established Isohara Works

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)

2022 Significant investment in advanced materials

We acquired large sites in Hitachinaka City, Ibaraki Prefecture, Japan, and Mesa, Arizona, the U.S., for construction of new plants to meet the growing demand for advanced materials essential for DX and decarbonization. We are looking to have a smooth roll out.

Rendering of the new factory in Hitachinaka

Value Creation Model

The JX Advanced 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.

INPUT

Financial Capital

Total Assets
1,361.4 billion yen
* Fiscal year ending March 2024 (consolidated)

Manufacturing Capital

No. of sites
Japan:**34**
overseas:**38**
* As of March 31, 2024 (consolidated)

Global Network ▶ P.15

Intellectual Capital

R&D expenses
15.9 billion yen
* Fiscal year ending March 31, 2024 (consolidated)

Number of Patents Held
Domestic **2,172**
Overseas **4,108**
* As of March 31, 2024 (consolidated)

Materiality 2 ▶ P.59

Human Capital

Employees
9,715
* As of March 31, 2024 (consolidated)

Materiality 3 ▶ P.75

Social/Relationship Capital

Coexistence and mutual prosperity with the surrounding communities

Materiality 5 ▶ P.91

Form Green Enabling Partnerships

Materiality 1 ▶ P.37

Natural Capital

Energy Consumption
10,818 TJ
* Fiscal year ending March 31, 2024 (consolidated)

BUSINESS

Promote Digital Transformation (DX)

Pursuing Open Innovation

Purification | Composition and Microstructure Design | Powder Design | Precision Rolling and Fabrication | Surface Design | Analysis and Evaluation | Extraction and Refining

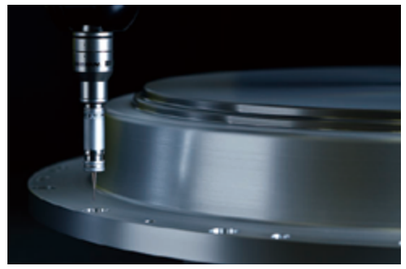
Materiality 2 ▶ P.59

Added Value in Technology

Added Value of Base Business Products

Metals & Recycling Segment

Added Value of Focus Business Products



Semiconductor Materials Segment
ICT Materials Segment

Added Value in the Environment

Materiality 1 ▶ P.37

Resource Recycling
Sustainable Copper Vision

Decarbonization
2050 Net Zero

Nature-Positive

Working With External Partners

Human Capital Management — Materiality 3 ▶ P.75

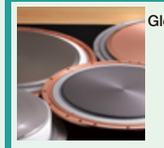
Respect Human Rights — Materiality 4 ▶ P.85

Corporate Governance — Materiality 6 ▶ P.99

Corporate Code of Conduct — Introduction ▶ P.1

OUTPUT

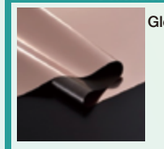
Sputtering Targets for Semiconductors



Global Market Share
Approximately **60%**
(as of 2023)

Smart Phone
Data Center

Treated Rolled Copper Foil for Flexible Printed Circuit Boards (FPC)



Global Market Share
Approximately **80%**
(as of 2023)

Smartphones and EVs

Indium Phosphide Compound Semiconductor Substrates

Global Market Share
Approximately **30%**
(estimate as of 2023)

Data Center and Optical Communication Network

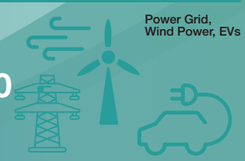
High-Purity Tantalum Powder

Global Market Share
Approximately **50%**
(estimate as of 2023)

Smart Phone
Data Center

Electrolytic Copper Production Capacity

Annual
Approximately **450,000** tons



Power Grid, Wind Power, EVs

Copper Recycling

Ratio of Recycled Raw Materials in Electrolytic Copper
24.3%

OUTCOME

Economic Value

Projected Operating Profit in 2040

Focus Businesses
200.0 billion yen

Base Businesses
50.0 billion yen

Key Stakeholders and Responsibilities

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.

Shareholders and investors
Currently, we disclose information in a timely and appropriate manner through ENEOS Holdings. However, as we prepare for a potential listing, we will establish an independent system for timely disclosure.

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.

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.

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.

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.

We contribute to the sustainable development of the economy and society through innovation and creativity in materials.

Message From the President

Working together as one to achieve new business targets, contributing to societal development and innovations through advanced materials as the global leader in semiconductor and ICT materials

JX Advanced Metals Corporation
President and Chief Executive Officer

Hayashi Yoichi

FY2023 Business Environment and Review

In the challenging business environment of the post-COVID era, we are engaged in structural reform to strengthen our business structure toward the next stage of growth

In May 2023, the Japanese government reclassified COVID-19 as a Class 5 disease, ushering in the post-COVID era. Around this same time, the JX Advanced Metals Group announced our intention for an initial public offering. I feel that this was good timing for our move into the next era together with society.

Meanwhile, the fiscal 2023 business environment was challenging on many fronts. Semiconductor Materials and ICT Materials represent the main markets for our products, and both industries were in an inventory adjustment phase. We also saw the impact of geopolitical risks across the globe, the fragmentation of economic blocs, and the emergence of the Global South, all contributing to the multi-polarization of the world markets. We must continue to grow, even under challenging circumstances, so we take what risks we can while identifying opportunities, acting with a sense of calmness balanced with a sense of urgency. We launched a structural reform project to reorganize our Base Businesses, improve working capital, optimize capital investment, grow sales, review selling prices, and optimize organization-wide costs, including overhead.

Something else I felt strongly throughout the fiscal year was concern about the Japanese economy and society. While the ongoing depreciating value of the yen is a positive factor in our earnings, the extreme weakness gives the impression that Japan is being bought at a discount. Despite various measures to combat the declining birthrate, new births continue to decline. Other worrisome developments due to the decline in population include a weakening in national vitality, waning industrial competitiveness, and a drop in the overall level of education. I have grandchildren of my own, and I cannot help but wonder what Japan will be like when they grow up. Frankly, I feel that we must achieve sustainable growth as a member of the semiconductor materials industry, where Japan maintains a high level of competitiveness internationally, doing our utmost somehow to contribute to the nation and society of Japan.

New Medium- and Long-Term Business Targets

Building a muscular organization and seizing opportunities in turbulent markets

In May 2023, we announced a medium-term management plan for fiscal years 2023 to 2025. However, the market in fiscal 2023 was slower than expected, and the gap between our plan and the underlying economic reality widened. Our business portfolio changed drastically as we pursued structural reforms. Changes included the sale of interests in mines and partial sale of shares in our Metals & Recycling Business. We came to the conclusion that, in both senses, the original business plan was no longer appropriate as a business goal. Accordingly, we thought it more appropriate to forecast market trends over the medium to long term given our current business portfolio, making decisions through targets set slightly more ahead into the future. Therefore, we established new business targets through fiscal 2027.

The overarching policy of Long-Term Vision 2040 is to transition from a process industry-type firm to a technology-based firm, aiming to contribute to the realization of a sustainable society as a global leader in semiconductor and ICT materials sectors to realize a highly profitable structure even in the face of intensifying international competition. Under this policy, we intend to bolster the number of No.1 products, including sputtering targets for semiconductors, by increasing our production capacity for semiconductor materials in response to market conditions. In addition, we have made clear our direction to hasten the development of new product lines and to become a manufacturer offering a wide range of semiconductor materials beyond sputtering targets for semiconductors.

The decline in ICT materials was particularly large. And while we expect growth in the future, this field is prone to structural changes. Accordingly, we embarked on a structural review to ensure the soundness of this business. Under a basic policy to build a muscular organization, we intend to strengthen our systems and make this business an entity capable of a certain level of ongoing profit, even after structural change in the sector.

Rather than being constrained by the current scale of our Base Businesses, we intend to reform our structure for capital efficiency to provide high-function, high-quality materials that support the growth of our Focus Businesses. This is an area in which we launched our Sustainable Copper Vision, advocating for contributing to a recycling-oriented society. Therefore, we intend to clearly state the significance of the JX Advanced Metals role in society. With regard to recycling, in particular, we plan to collaborate with general trading companies to achieve unprecedented levels of recycling, leveraging not only our technology, but also our diverse networks in Japan and overseas.

For capital allocation, we place the highest priority on growth investments in the Semiconductor Materials Segment to ensure we capture the growing demand for semiconductors and provide a stable supply of high-quality materials amid the rapid spread of generative AI and other factors. At the same time, we will allocate capital to reducing interest-bearing debt. Over the past several years, we have addressed the seemingly conflicting themes of investing in growth and improving our financial position. We reduced interest-bearing debt by approximately 200 billion yen in fiscal 2023 through business portfolio realignment and structural reforms. Even when investing in growth businesses, we assess the appropriateness and timing in very strict terms. As a result, the Company is making progress in both growth and improvement in financial position.

JX Advanced Metals Group Strengths

Creating a third pillar of business together with sputtering targets for semiconductors and rolled annealed copper foil, and pursuing initiatives based on the Sustainable Copper Vision

To achieve our vision of transforming into a technology-based company, we have been developing future-oriented businesses over the past two to three years, including crystalline materials and next-generation semiconductor materials. We recently established the CVD/ALD Business Promotion Office as part of this effort. We own the world's top market share*1 in sputtering targets for semiconductors used in the PVD process*2, which forms thin film on semiconductor chips. However, the need for thin-film deposition by CVD and ALD*3 is likely to increase (in addition to sputtering) as semiconductors continue to become even smaller and more multilayered. The CVD/ALD Business Promotion Office is responsible for everything from development to the mass production of materials for next-generation semiconductors, aiming to bring products to market as quickly as possible.

As part of this effort, in June 2024, the office announced an expansion for the full-scale production of CVD and ALD materials. As with sputtering methods, various elements will be used in CVD and ALD methods. I am convinced this business could rival that of the current sputtering targets for semiconductors if we are able to supply a wide range of materials in a comprehensive manner. We previously announced our work in advanced crystal materials. We expect demand for InP (indium phosphorus) to increase with the dramatic growth of high-speed, high-capacity communications in conjunction with the spread of AI. CdZnTe (cadmium zinc telluride) is attracting attention in the medical, astronomy, and aerospace fields. We intend to create a third pillar of earnings through these niche but high-value-added materials, standing alongside sputtering targets for semiconductors and rolled annealed copper foil.

Another strength of the JX Advanced Metals Group is an upstream business providing a stable supply of sustainably produced non-ferrous metal materials in addition to our downstream business of supplying advanced materials. We pursue social significance by leveraging our foundation for supplying the world with materials—materials that are not only superior in terms of quality, but also in terms of decarbonization and resource recycling. Our Sustainable Copper Vision was born from our ideal for sustainable copper production to meet the world's needs. We will continue to focus on the use of sustainable materials, enjoying the support of world-renowned companies, academia, and other organizations.

Preparing for an IPO

Engaging in ongoing communication with stakeholders to become a company that thrives on challenges and change

The vision for 2040, announced by former President and current Chairman Murayama in 2019, was our first-ever long-term management strategy. At that time, we determined to transform our organization from a long-term perspective. One important keyword for this transformation is "IPO." By analogy, a ship embarking on its own out to sea must have the horsepower and control required. As part of our efforts, we are undertaking structural reforms. The process of building a strong and muscular organization in terms of business infrastructure and governance places a burden on employees that is not inconsiderable. One of my important responsibilities is to communicate and engage in dialogue about the implications of an IPO.

In my opinion, the essential meaning of an IPO is to create a consistent perception of JX Advanced Metals both internally and externally, or in other words, reach a state in which we are well understood by our stakeholders. I want us to be a company that is accountable internally and externally, that shares our strengths and challenges with stakeholders, that takes on new challenges and grows, and that will never give up until we do so. As I look at the significant environmental changes in the world today, I feel only companies of this caliber will survive in the world. We must make dramatic improvements in the efficiency of the management resources we possess. The logic of growing business by simply adding more people, as was the case a decade ago, no longer holds true. By expanding investment in human capital and creating more comfortable work environments, we encourage each individual to aim for higher ideals, using DX and other tools to level up one or two stages in a limited amount of time.

Once we complete our IPO, our shareholders and investors will evaluate us on factors that include resources, management capabilities, and our impact on sustainability. Once in a position to receive funds from our shareholders, we will explain our aims and intentions behind cash and investments in human capital carefully. We will also provide opportunities to listen to feedback and engage in dialogue. In this way, we will communicate with stakeholders about improving our corporate value and building a company that aims for growth.

*1 PVD: Abbreviation of physical vapor deposition; sputtering is a typical PVD process.
*2 Based on a survey conducted by an external research organization at our request (2023 results based on the Company's share of the semiconductor target market excluding AI-related products; based on sales value)
*3 CVD: Abbreviation of chemical vapor deposition; A method of forming thin film through the use of chemical reactions.
ALD: Abbreviation of atomic layer deposition; A method for forming thin film by controlling film thickness at the atomic layer level.

Our Products That Support the Future

As a leader in the nonferrous metals industry, our Group supplies nonferrous metal resources, such as copper, minor 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 Advanced Metals Group advanced materials

Data Storage/Processing

Tantalum and Niobium Pentachlorides
High Purity Metal Chloride
Sputtering Target for Semiconductors for LSI
Magnetic Material Sputtering Target
HDD
Advanced LSI/Memory
ECU/Electronic Module
High Purity Copper
Ag Bonding Wire
Electroless UBM Plating Service
Lowα Tin for Soft Error Reduction
3D Formable Sheet for Electromagnetic Shielding
EMI Shielding Tape for Metal Can
Negative Thermal Expansion Material
Electro-Deposited Copper Foil for FPC
Via Filling Paste for Thermal Release
Upinorg (High-Purity Copper Sulfate)

Connecting/Communicating

Rolled Annealed Copper Foil for FPC
Electro-Deposited Copper Foil for FPC
Copper Foil Surface Treatment for High Frequency
EMI Shielding Film
Ta_2O_5/Nb_2O_5 Powder
Flexible Printed Circuit Board
SAW Filter
Cable
Sn-Cu-PET
Sputtering Target for Optics
EMI Shielding Tape for COF/COP
Sputtering Target for Transparent Electrodes/Semiconductor
Display
Optical Communication
InP Wafer

Connector

High Current Connector
SIM/SD Card Connector
Connector for Wiring Harnesses
PCB Connector
Flexible Printed Circuit Board Connector
Board to Board Connector
USB Type-C
Floating Connector
Press-Fit Connector
Corson Alloy
Titanium Copper
Precision Stamping

Sensing/Capturing

Sputtering Target for Optics
Camera
Nb_2O_5 Powder
Titanium Copper Foil
Millimeter-Wave Radar/LiDAR
YAG Ceramics
InP Wafer
High-Frequency Compatible Treated Rolled Copper Foil
CdZnTe Substrate
Radiologic Exam
Ta_2O_5/Nb_2O_5 Powder
Pressure Sensor
Optical Sensor
Sputtering Target for Optics
Magnetic Material Sputtering Target
Magnetic Sensor

Energy Generation/Storage

Solar Cell
InP Wafer
Tantalum Capacitor
Tantalum Powder
Lithium Ion Battery
LLTO (Solid Electrolyte)
Rolled Copper Foil for Negative Current Collector

Flexible Manufacturing/Miniaturization

SiC Module
Electroless UBM Plating Service
Composite of Multi Material
Sn-Cu-PET
3D Formable Sheet for Electromagnetic Shielding
Metal-Ceramics Composite
Additive Manufacturing
Copper Powder
Titanium Powders
Tantalum and Niobium Powders

A Sustainable Supply of Materials

The stable supply of copper, for which demand is expected to increase in the IoT/AI and decarbonized societies of the future, is an important social mission for the Group.

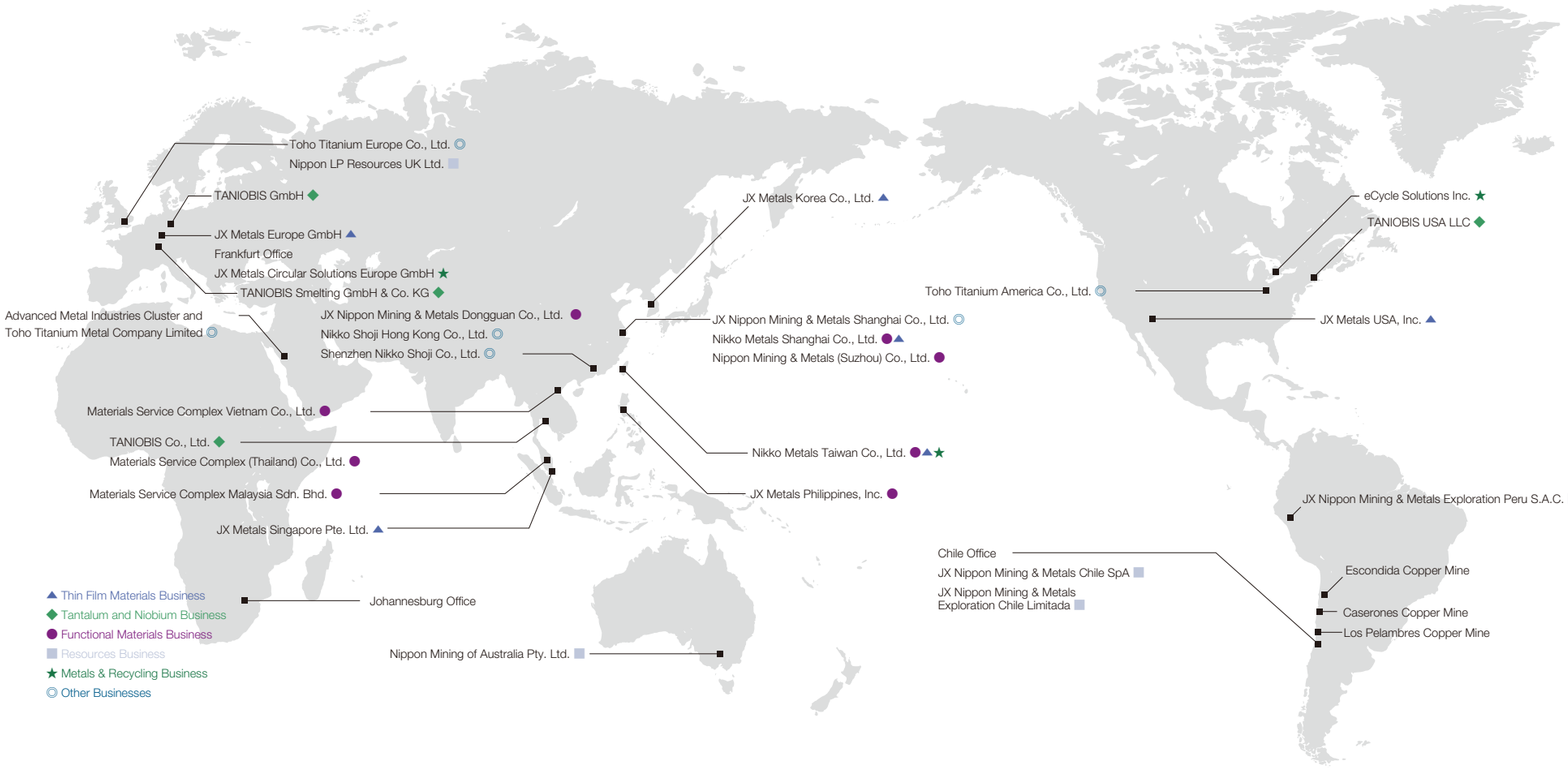
Electrolytic Copper
Copper Sulfides Ore
Copper Oxides Ore
Electronic Waste
Scrap Copper

TECHNOLOGY
INNOVATION
SOLUTIONS
PARTNERSHIP
COMMUNICATION
MANAGEMENT

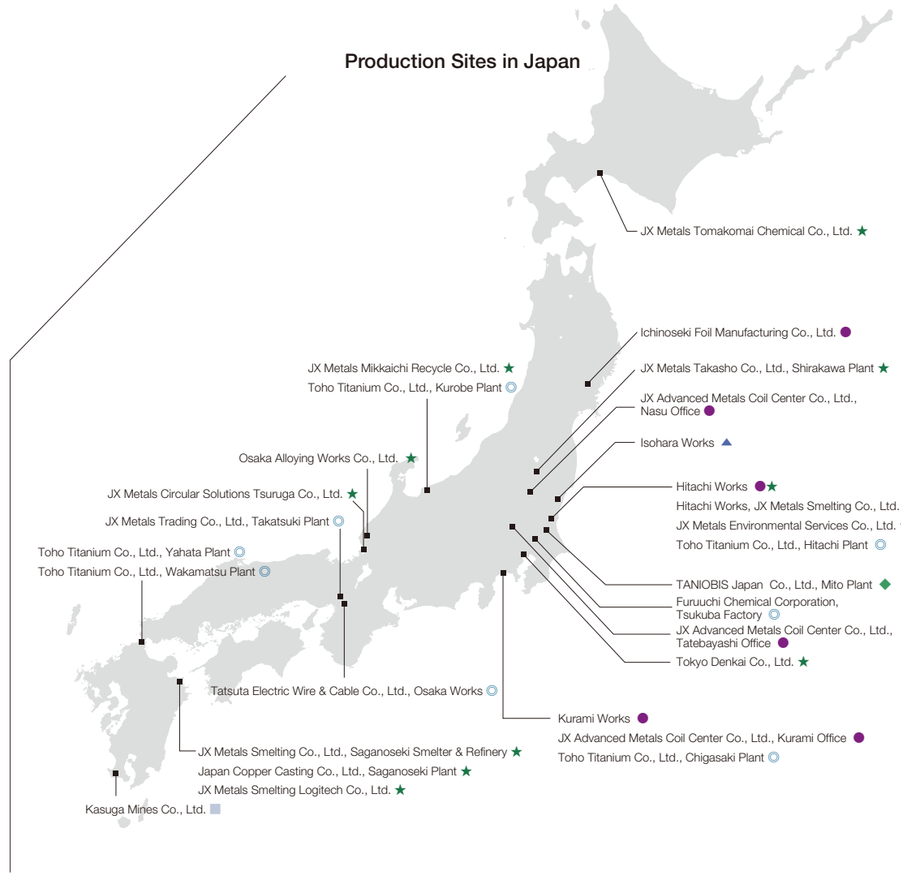
Global Network (as of August 31, 2024)

JX Advanced Metals Corporation 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.

Overseas Business Locations



Production Sites in Japan




JX Metals USA, Inc.


Nikko Metals Taiwan Co., Ltd.


TANIOBIS Co., Ltd.


JX Metals Korea Co., Ltd.

eCycle Solutions Inc.


Chile Office


Head Office


Hitachi Works


Isohara Works


Kurami Works


Saganoseki Smelter & Refinery


Toho Titanium Co., Ltd., Head Office

Section 2 Vision & Values

Long-Term Vision and Medium- to Long-Term Business Targets

In 2019, we formulated Long-Term Vision 2040 to transform from an equipment industry company to a technology-based company, aiming to become a global company contributing to the growth and innovation of society through advanced materials. We conducted a partial revision in May 2023 in response to the recent changes in the business environment and a clearer picture of the direction we want to pursue. We also recently revised our Medium-Term Management Plan for FY2023 to FY2025 (announced originally in May 2023) and formulated Medium- to Long-Term Business Strategies and Business Targets in May 2024.

The JX Advanced Metals Group Long-Term Vision 2040

Contribute to sustainable societies as a global leader in semiconductor and ICT materials

Management Policies

Under Long-Term Vision 2040, we aim to achieve profit growth that exceeds market growth by positioning our Focus Businesses, consisting of the Semiconductor Materials segment and the ICT Materials segment, as the core of our growth strategy, developing differentiated technologies in the advanced materials field, and creating markets. For our Base Businesses, consisting of the Metals & Recycling segment, we aim to support our Focus Businesses through the stable supply of copper and minor metals under an optimally sized business structure, while contributing to solve ESG issues.

Summary of Business Results

The pace of global economic recovery slowed due to concerns of an economic slowdown stemming from monetary tightening in response to inflationary pressures in Europe, the U.S., and other countries. The economic recovery in China has been delayed due to China's zero-COVID policy, real estate issues, and other factors. The prolonged Russian invasion of Ukraine and the military conflict between Israel and Hamas have increased the risk of a downturn in the global economy.

Meanwhile, despite the impact of rising prices on households and businesses and concerns about a downturn in the global economy, the Japanese economy continued to experience a gradual recovery, as economic and social activities normalized following the lifting of behavioral restrictions to prevent the spread of COVID-19.

The London Metal Exchange (LME) price for copper was 407 cents per pound at the beginning of fiscal 2023 and 373 cents at the end of the first half of 2023, averaging 382 cents for the period, which was down 10 cents from the same period last year. Sales remained sluggish, affected by concerns over the global economic slowdown and the delayed economic recovery in China.

The yen depreciated against the U.S. dollar amid a widening interest rate gap between Japan and the U.S.. The average exchange rate for the first half of 2023 was 141 yen to the dollar, 7 yen lower than the same period last year.

Focus Businesses
Semiconductor Materials Segment

Thin Film Materials Business

During the fiscal year ended March 31, 2024 ("fiscal year under review"), sales volume for each major product declined due to a negative reaction from the rise in remote-related demand due to the spread of COVID-19 and prolonged adjustments of excess inventory in the supply chain. Over the medium to long term, we expect a significant increase in demand for semiconductors due to the growth of generative AI and the spread of electric vehicles, etc. We are constructing the New Hitachi Factory in Ibaraki Prefecture in addition to expanding production capacity of sputtering targets for semiconductors at existing facilities.

We acquired a large site in Arizona, the center of the semiconductor industry in the U.S., to further strengthen our sputtering target business for semiconductors. The site is approximately 260,000 square meters, or approximately six times the size of the site responsible for downstream processing of sputtering targets for semiconductors already located in the state. The plant began operations in fiscal 2024, and will expand production capacity flexibly in response to customer needs. The site will be used not only for the manufacture of sputtering targets for semiconductors, but also as a base for new business development activities related to advanced materials in North America.

Focus Businesses
Semiconductor Materials Segment

Tantalum and Niobium Business

Sales volume in both of our major existing tantalum powder business for capacitor applications and tantalum powder business for sputtering target applications for semiconductors decreased due to sluggish demand.

We expect demand for high-performance tantalum powder for capacitor applications and sputtering target applications for semiconductors and other uses to be solid in the future. Group company TANIOBIS GmbH, which engages in the Tantalum and Niobium business, is working to expand market share through the Customer First Project, in which sales, R&D, and manufacturing work in unison to develop a customer-focused business model to respond quickly and accurately to customer technological needs. To meet the steady growth in demand for its products, the Company decided to invest in the expansion of high-purity tantalum powder production facilities at a production site in Thailand, increasing capacity significantly.

Focus Businesses
Information and Communication Materials Segment

Functional Materials Business

During the fiscal year under review, sales volume for each major product declined due to a negative reaction from the rise in remote-related demand caused by the spread of COVID-19 and prolonged adjustments of excess inventory in the supply chain.

As the data society advances over the medium to long term, we anticipate further expansion to accelerate in the markets for data centers, telecommunications infrastructure, power devices, various electronic devices, such as smartphones and tablets, and the electrification and automation of vehicles. We expect demand for high-performance metals to increase further with these developments. We built a new rolled annealed copper foil production facility at the Hitachi Works to increase production capacity to meet future market needs.

We also conducted a review of our business portfolio from the perspective of improving profitability. Based on this review, we transferred a majority stake in wholly owned JX Metals Precision Technology Co., Ltd. (JXPT) to Mercuria Japan Industrial Growth Fund II. A portion of the JXPT Nasu Works was excluded from this transaction and will be used to strengthen the Group's supply chain.

Titanium Business

Sales volume of titanium sponge for aircraft applications exceeded that of the previous fiscal year. This growth was mainly due to the delivery of products that had been postponed from the previous fiscal year. Demand for high-purity titanium for semiconductor applications remained strong. To meet the increasing demand for ultra-fine nickel powder for multi-layer ceramic capacitors (MLCCs), Toho Titanium Co., Ltd. decided to construct a new plant to increase production capacity. The plant is scheduled to start operation during the fiscal year ending March 31, 2026.

Base Businesses
Metals & Recycling Segment

Metals & Recycling Business

During the fiscal year under review, the Metals & Recycling business endeavored to increase the processing of recycled raw materials, which contribute to high margin and resource recycling, and to strengthen competitiveness by improving the operational efficiency of each manufacturing site.

In August 2022, we acquired shares of eCycle Solutions Inc., Canada's largest e-waste collection and processing company. The Company has seven locations in Canada and takes advantage of a robust collection network to separate collected e-waste into copper, precious metals, iron, aluminum, plastics, and other materials for sale. Materials are also supplied to the Saganoseki Smelter & Refinery of group company JX Metals Smelting Co., Ltd. The Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd. is engaged in large-scale and efficient recycling of metal resources, using heat generated during ore processing. As stated in our Sustainable Copper Vision, we aim to increase the ratio of recycled materials to 50% by 2040 through Green Hybrid Smelting and other means. As stated in the recently formulated Sustainable Copper Vision, we aim to increase the ratio of recycled raw materials to 50% by 2040 through Green Hybrid Smelting.

Mineral Resources Business

In July 2023, we transferred a 51% interest in the Caserones Copper Mine (Chile) to Lundin Mining Corporation (Lundin), a major Canadian copper mining company. In July 2024, we conducted an additional sale of 19%. We will work with Lundin to improve the mine's productivity and cost competitiveness, as well as to pursue the possibility of efficient, long-term operations through further development of the area.

As for new mine development projects, in the interest of securing stable raw materials for downstream businesses, we established a cross-divisional project team to evaluate and study specific projects, focusing on tantalum and titanium. We began participation in the Mibra mine in Brazil in January 2023, and under a joint venture invested by JX Advanced Metals and AMG Brasil SA (AMG), we intend to produce tantalum concentrate from ore produced at the Mibra mine operated by AMG, supplying this product to TANIOBIS GmbH, a major subsidiary in the tantalum and niobium business.

Medium- to Long-term Business Targets

In May 2023, the Group announced our medium-term management plan for fiscal 2023 to fiscal 2025. In light of recent initiatives and changes in the business environment, the Group reviewed this plan and formulated *Medium- to Long-term Business Strategies and Business Targets*[*1].

Medium- to Long-term Business Targets

These numerical targets and assumptions may be revised due to changes in the business environment in the future. Actual results shown above are the Company's unaudited consolidated figures and may be revised in the future.

		Results (fiscal year ended March 31, 2023)	Results (fiscal year ended March 31, 2024)	(FIscal year ending March 31, 2028)
Operating income	Consolidated	Approximately 72 billion yen	Approximately 86 billion yen	CAGR 10% to 15% (fiscal year ended March 31, 2024 to fiscal year ending March 31, 2028)
	Focus Businesses	Approximately 55 billion yen	Approximately 27 billion yen	CAGR 35% to 40% (fiscal year ended March 31, 2024 to fiscal year ending March 31, 2028)
Operating margin	Consolidated	Approximately 4.5%	Approximately 5.5%	12% to 17%
	Focus Businesses	Approximately 15%	Approximately 8.5%	15% to 20%
	Semiconductor Materials segment	Approximately 23%	Approximately 21%	25% to 30%
	Information and Communication Materials Segment	Approximately 9.5%	Approximately 0.5%	8% to 13%
Profit composition ratio	Focus Businesses[*2]	Approximately 65%	Approximately 25%	67% or more
	Semiconductor Materials segment[*2]	Approximately 40%	Approximately 25%	45% or more
ROE		Approximately 7%	Approximately 17%	10% or more
Net Debt/EBITDA[*3]		Approximately 4.0x	Approximately 2.6x	Less than 1.5x

*1 The targets shown above are based on an assumed exchange rate for the fiscal year ending March 31, 2025, of 140 yen per U.S. dollar; an assumed exchange rate during and after the fiscal year ending March 31, 2026, of 135 yen per U.S. dollar; and an assumed copper price in and after the fiscal year ending March 31, 2025, of 380 cents per pound.
*2 This figure is calculated based on the operating income of the Focus Businesses (Semiconductor Materials segment and ICT Materials segment) and the Base Businesses (Metals & Recycling segment), excluding common costs. The operating income of the Focus Businesses is the simple sum of the operating income of the Semiconductor Materials segment and the ICT Materials segment.
*3 This figure is calculated by dividing net debt (interest-bearing debts – cash and cash equivalents (including ENEOS Holdings group short-term loans)) by EBITDA (operating income + depreciation expense).

In the fiscal year ended March 31, 2023, the Company recorded a valuation loss of 74.2 billion yen following the transfer of 51% of the shares of SCM Minera Lumina Copper Chile (MLCC), operator of the Caserones Copper Mine, to Lundin Mining Corporation. The figures above for consolidated operating income, consolidated operating margin, profit composition ratio for Focus Businesses, profit composition ratio for the Semiconductor Materials segment, ROE, and Net Debt/EBITDA above include the effects of this transaction.

The loss before totalization arising from the transfer of shares of MLCC, etc., in the fiscal year ended March 31, 2024, was adjusted out of profit or loss through the group relief system, resulting in a settlement of the total tax effect amount. As a result, net income for the year ended March 31, 2024, rose, while ROE improved temporarily.

Medium- to Long-Term Business Strategies

Focus Businesses
Semiconductor Materials Segment

By leveraging our strengths in technologies, such as high purification, composition and microstructure control, surface treatment, and analysis and evaluation, the Company has established strong relationships with semiconductor manufacturing equipment manufacturers, thereby ensuring a stable supply of high-quality products. As for sputtering targets for semiconductors, which is our main product category, we enjoy the No.1 global market share* in several products, such as copper, tantalum, and titanium. We will continue to develop and propose materials that meet customer needs, and will make expansive investments to capture market growth.

In addition, we intend to strengthen our broad lineup of next-generation semiconductor materials. The crystal materials sector is expected to grow due to the increase in the number of data centers, the rise in mobile traffic, etc. We are working to make the crystal materials business a pillar of next-generation earnings based on expected growth in the crystal materials field. In April 2024, the Company established the Crystalline Material Business Promotion Department in the Technology Group to rapidly and steadily expand our business scale in the fields of InP (indium phosphorus), which is used for light emitting and receiving elements, and CdZnTe (cadmium zinc telluride), which is used in applications, such as radiation detectors.

* Based on a survey conducted by an external research organization at our request (2023 results based on the Company's share of the semiconductor target market excluding AI-related products; based on sales value).

Focus Businesses
ICT Materials Segment

To date, the Company has expanded business by taking advantage of production technologies for copper foils with excellent flexibility, vibration resistance, and other attractive qualities, and by implementing a market-oriented development approach that proposes materials directly to end users. Our main product, rolled annealed copper foil for FPC, holds the world's No. 1 market share*.

Going forward, we will capture the needs for advanced functionality and miniaturization in existing applications, expanding our business to take advantage of opportunities for increased demand in wearables, mobility, industrial machinery, robots, and other fields.

We will also develop products in new business areas by leveraging our core technologies, such as rolling, surface treatment, and electrolysis, and build a business structure that is resilient to fluctuations in demand by means such as utilizing outsourced processing, reviewing production shifts, and introducing multi-functions to facilities.

Source: *Electronics Mounting New Materials Handbook 2023*, Fuji Chimera Research Institute (2022 results; FPC only; based on shipping volume)

Base Businesses
Metals & Recycling Segment

To ensure the stability of mineral resources that are necessary raw materials used by the Group, we are considering developing not only copper mines but also mines for minor metals, such as tantalum and titanium. At the same time, we pursue the optimal business scale in the combination of mineral materials development business and recycling business.

We will make efforts to achieve the Sustainable Copper Vision, which we established in 2022. Specifically, we aim to achieve a stable supply by utilizing copper concentrates and recycled raw materials. We also pursue CO_2 emissions reduction, resource recycling, and responsible procurement through alliances with external companies and universities.

Through these efforts, we expect to offer high-value-added electrolytic copper. Furthermore, we announced the cooperation of the Company and our customers in resource recycling and decarbonization, introducing 100% recycled electrolytic copper produced through the mass balance method.

To achieve a circular economy that continues to reuse, rather than discard, mined resources, the Company joined with Mitsubishi Corporation (MC) to establish a new company for the reuse of waste home appliances, waste electronic equipment, and waste automotive lithium-ion batteries, etc. The new venture, JX Metals Circular Solutions Co., Ltd., began operations in July 2024. We aim to strengthen our recycled material collection and coordination throughout the supply chain, as well as minimize the disposal of non-ferrous metal resources, such as copper and minor metals.

Capital Allocation Policy

To capture growing semiconductor demand for advanced nodes, etc., as well as to supply high-quality materials in a stable manner, we will give the highest priority to growth investment in the Semiconductor Materials segment and reduce interest-bearing debts in parallel. We plan to invest approximately 270 billion yen over the next three years, each investment to be made after careful examination of necessity and investment efficiency.

Our main investment target is the New Hitachinaka Factory. After another close examination based on the recent necessity of investment in each product, we have decided to forgo certain investments and focus on semiconductor-related investments, such as sputtering targets for semiconductors, which are highly profitable and expected to see a rapid increase in demand. As a result, we estimate the total investment beginning with the fiscal year ended March 31, 2023, to be approximately 150 billion yen instead of the approximately 200 billion yen originally planned.

Structural Reform

In May 2023, we formed the Structural Reform Team to lead in reorganizing our Base Businesses, improving working capital, optimizing capital investment, growing sales, reviewing selling prices, and optimizing organization-wide costs, including overhead.

In terms of reorganization, we reduced interest-bearing debt by approximately 200 billion yen in the fiscal year ended March 31, 2024 (compared with the end of the previous fiscal year) by transferring a portion of our equity interest in Pan Pacific Copper Co., Ltd. As a result of this reorganization, we expect our Focus Businesses to account for a larger share of consolidated operating profit beginning with the fiscal year ending March 31, 2025. We also expect consolidated operating margin to increase significantly. In addition, we continue to improve profitability and capital efficiency by optimizing inventory standards and accounts receivable/payable sites, as well as by reviewing capital investments, procurement costs, and subcontracting expenses.

In the fiscal year ended March 31, 2024, we improved operating profit by approximately 3 billion yen year on year. We also improved working capital by approximately 20 billion yen year on year and reduced investments by approximately 55 billion yen (versus budget). We aim to improve operating income by the same amount or more for the fiscal year ending March 31, 2025. We will continue to improve working capital and optimize investments.

Strategy by Segment

Semiconductor Materials Segment
Thin Film Materials Business

Employing nonferrous metal manufacturing technologies to enhance purity and density, we are a supplier of a wide variety of sputtering targets including for semiconductor applications, 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 digital transformation (DX) to achieve greater manufacturing efficiency

Review of Fiscal 2023

Each product in the Thin Film Materials business remained in an adjustment phase in fiscal 2023 due to declining demand from the previous year and subsequent customer inventory adjustments. Demand recovery for our products was sluggish despite the end of customer inventory adjustments in the second half of fiscal 2023. This result was due to the slow recovery of sluggish for semiconductors in smartphones, PCs, and other consumer products.

The Thin Film Materials business worked to increase production capacity in Japan and overseas despite this challenging business environment. We built a flexible supply system for semiconductor sputtering targets, anticipating medium- to long-term growth driven by rising generative AI server demand and IoT progress. We completed construction of the Hitachi-Kita Works in Hitachi, Ibaraki Prefecture, which had been under construction, in October 2023, and constructed the majority of the new processing facility for semiconductor sputtering targets in Mesa, Arizona, the U.S. Both factories aim to launch operations in fiscal 2024.

We also work to further expand our existing products by maintaining and acquiring competitive advantages and reallocating resources to growth areas. At the same time, we strive to strengthen our efforts, create, and commercialize new products, including those under development.

Outlook for Fiscal 2024

We expect demand to gradually recover in fiscal 2024 due to stronger replacement demand for smartphones, PCs, and other consumer electronics. We also expect the increase in high-performance semiconductors for generative AI, for which demand began emerging in fiscal 2023, to boost demand. Demand recovery for general data centers is still lagging in certain sectors, but is likely to strengthen in the second half of the fiscal year.

The Thin Film Materials business will continue to build a flexible supply system in response to market conditions, focusing on future market expansion. As securing raw materials remains a critical long-term challenge, we will strengthen supply chain resilience by utilizing Group resources actively and recycling in light of geopolitical risks, including the intensifying trade friction between the U.S. and China and the prolonged Russia-Ukraine conflict.

Additionally, we will strive to expand sales of existing products while developing new products for early market launch. To do so, we will leverage customer channels to strengthen our marketing for extended and peripheral areas of current products and collaborate inside and outside the company.

TOPICS Green Enabling Partnership With Intel Corporation

In August 2023, we established a Green Enabling Partnership with Intel Corporation, a leading company in the semiconductor industry and an advanced company in sustainability. This partnership aims to advance and promote our Sustainable Copper announced in August 2022. Under this partnership, we work with Intel to encourage the resource recycling of copper, a decarbonized resource, to achieve a circular economy.

We also have received the Intel Corporation EPIC Distinguished Supplier Award for four consecutive years. JX Advanced Metals will continue to offer superior quality and business structures to strengthen our relationship of trust with Intel.

GREEN ENABLING PARTNERSHIP

Sustainable copper logo

Semiconductor Materials Segment
Tantalum and Niobium Business

Germany-based Group company TANIOBIS GmbH (hereinafter “TANIOBIS”) is one of the world’s leading manufacturers of tantalum and niobium materials, with manufacturing and sales locations all around the globe. The Group, TANIOBIS, and Tokyo Denkai Co., Ltd., a refiner and processor of tantalum and niobium, work together to contribute to the development of IoT and AI in society by being reliable suppliers of high-quality materials such as metal powders used in capacitors and semiconductor materials, high-purity oxides for SAW devices and optical lenses, chlorides for semiconductors, and superalloy additives.

Key Strategies

- Implement structural reform of TANIOBIS (thorough cost reduction and inventory reduction, etc.)
- Create resilient supply chains featuring diversified raw material sources, stable procurement, etc.
- Leverage specific features and strengths of each site to increase productivity and improve quality
- Create and commercialize new products to expand our business base

Review of Fiscal 2023

Sales for our main existing business supplying high-purity tantalum powder used in capacitors and sputtering targets for semiconductors were sluggish in fiscal 2023, as our period of adjustment persisted throughout the fiscal year due to the effects of the downturn in the electronics sector.

In this difficult business environment, we implemented measures to mitigate the impacts of the market downturn and respond to the steady growth in demand for our products after the market recovery. Such measures included measures to improve profitability, including cost reductions and inventory reductions at TANIOBIS and Tokyo Denkai, as well as capital investment measures to increase the production capacity of high-purity tantalum powder at a TANIOBIS subsidiary (in Thailand). We aimed to expand our global market share by continuing to promote our Customer First Project, a project in which our people in sales, R&D, and manufacturing are working together to develop a customer-focused business model.

Outlook for Fiscal 2024

We expect the recession in the electronics sector to have bottomed out in 2023. We believe that inventory adjustments will run their course from fiscal 2024 and demand for our mainstay product of high-purity tantalum powder, used in capacitors and also in sputtering targets for semiconductors, will shift to recovery as a result.

Under these circumstances, we continue measures to improve profitability and execute approved investment projects to further strengthen our competitiveness. Furthermore, we endeavor to steadily strengthen our vertically integrated supply chain of sputtering targets for semiconductors from raw materials to finished products by participating in the tantalum concentrate production business of the Mibra Mine in Brazil and Tokyo Denkai, which possesses superior technologies and production capabilities in melting and refining metals with high-melting points.

In addition, we will strengthen our new business development system, not only in our tantalum and niobium business, but also across the entire range of minor metals. We will also strengthen initiatives to quickly make new businesses profitable.

TOPICS The Launch of Equipment to Produce Metal Powder for AM: EIGA at TANIOBIS GmbH.

While tantalum, niobium, and other such alloys are traditionally used in aerospace and other fields, attention has shifted in recent years to focus on uses in technology to create even finer and more complex shapes through additive manufacturing (AM) using 3D printers. Focusing on this metal powder for use in AM, TANIOBIS introduced Electrode Induction Melting Gas Atomizer (EIGA) at the Goslar Plant and worked to develop manufacturing technologies and markets. TANIOBIS makes active efforts to submit papers and make presentations at conferences concerning such topics and received the Ekeberg Prize in 2023 from TIC, an international organization focused on tantalum and niobium. This award recognized our paper on niobium alloys, developed in collaboration with Alloyed Limited, a British company partially owned by JX Advanced Metals. The value of TANIOBIS AM powder (AMtrinsic®) shipments, have increased by over 60% to 100% per year over the past three years, mainly for niobium alloys in the aerospace market.

EIGA main unit

Information and Communication Materials Segment
Functional Materials Business

JX Advanced Metals possesses technology and alloy development expertise cultivated through years of integrated production, from melting, casting, rolling, heat treatment, and slitting, to surface treatment. We employ such technologies as a global supplier of treated rolled copper foils used in flexible printed circuit boards, as well as high-performance copper alloys and foils, including titanium copper and Corson alloys, which are used in connectors and semiconductor lead frames.

Key Strategies

- Expand business to seize demand opportunities for rolled copper foil and high-performance copper alloys and foils
- Advance product portfolios by shifting to high-value-added products
- Establish a flexible and resilient business structure to respond to volatile demand fluctuations

Review of Fiscal 2023

The global economic slowdown and sluggish consumer demand, particularly in China, Europe, and the U.S., and the resulting inventory adjustments in each supply chain took longer than expected, resulting in significantly lower sales volumes of major products than in the previous year. Inventory adjustments were largely completed in fiscal 2023, and we expect sales to recover gradually in fiscal 2024.

We developed and began promoting four new high-performance copper alloy products to contribute to developing highly functional products in the information communication and mobility fields going forward. These products have excellent electrical conductivity and heat resistance, and can be made into thin foils.

We also focused actively on the selection and concentration of management resources to further improve product profitability in growth fields. Our efforts included acquiring additional shares of Osaka Alloying Works Co., Ltd. to strengthen our supply chain in procuring raw materials needed to produce high-performance copper alloys. We intend to utilize these shares to ensure a stable supply of our advanced materials and develop new products going forward. On the other hand, we resolved to concentrate management resources in the advanced materials field, a Company strength. To this end, we transferred Company shares of JX Metals Precision Technology Co., Ltd., which was involved in High Precision Stamping and Plating.

Outlook for Fiscal 2024

We believe demand in the Functional Materials business will begin to recover in fiscal 2024. Product demand is likely to grow over the medium to long term, driven by the spread of high-speed communications, the miniaturization and functionality improvements of advanced devices, and the growth of the mobility field, in which CASE* is progressing.

However, difficulties in securing stable earnings for products in this business due to short-term volatile demand fluctuations is a major pressing issue for our business. In light of such business characteristics, we reexamined the ideal future state of this business and determined it necessary to build a resilient business structure that secures a certain level of earnings, even when demand is sluggish. To this end, we launched new initiatives to improve the structure and capital efficiency of our business.

Specifically, we endeavor to curb large capital investments, as made in the past; optimize our product portfolio, sales prices, and inventories; implement flexible production shifts; establish an optimal production system utilizing DX; and improve operational efficiency. Through these efforts, we strive to maximize the capacity of Kurami Works, our main manufacturing center, for the production of high-value-added products to increase business profitability.

*CASE: Connected, Autonomous, Shared & Services, and Electric

TOPICS Construction of the New Rolling Mill in Hitachi

As the advancement of the data society is expected to continue going forward, we anticipate that demand for high-performance metallic materials used in various IT fields will continue to grow. We constructed a new mill in Hitachi City, Ibaraki Prefecture, to capture this growing demand in a timely manner and supply sufficient products. The new mill incorporates a portion of the rolling process production line, previously handled solely by Kurami Works (Kouza-Gun, Kanagawa Prefecture), to increase production capacity and strengthen our BCP structure. We anticipate demand for our rolled copper foil to grow over the medium to long term, driven by the spread of high-speed communications, the miniaturization and increased functionality of various advanced devices, and the growth of flexible printed circuit boards for use in robots and mobility, in which CASE is progressing. We are committed to responding to future growth in demand through the operation of this new mill and the strengthening of production systems at our existing plants in Japan and overseas.

Rolling mill

Information and Communication Materials Segment
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).

Key Strategies

- Expand titanium business margins
- Identify and respond to the timing of market recovery in the catalyst and chemical businesses
- Generate and pursue new businesses

Review of Fiscal 2023

Sales of titanium for aircraft applications remained strong, while sales for general industrial applications remained flat compared to the previous year. Demand for high-purity titanium for semiconductor applications also slowed while also showing signs of recovery in certain areas. Profits decreased from the previous year, despite passing on higher raw ore copper concentrates, electricity, and indirect material costs to sales prices. This result is mainly due to lower profits from product inventory sales before cost increases, which contributed to profits in the previous year. Sales of Toho High Efficiency Catalysts (THC catalysts) declined due to ongoing significant production cutbacks in neighboring countries as a result of softening demand stemming from the Chinese economic recession and overcapacity caused by new polyolefin production facilities in China. Sales for ultra-fine nickel powder decreased from the previous year due to ongoing declines in demand for multilayer ceramic capacitors (MLCCs), the main application for this powder. This lower demand is a result of the rising interest rates in the U.S. and the prolonged economic stagnation in China.

Outlook for Fiscal 2024

We expect titanium sales to continue to remain firm from fiscal 2023 due to increased demand for titanium in aircraft applications and a recovery in demand for titanium in semiconductor applications. Demand for THC catalysts is likely to remain soft for the time being, as we anticipate polyolefin plant utilization rates will gradually recover and that customers will adjust inventories in the second half of fiscal 2024. The recovery of MLCC demand is slow, and we expect a full-scale increase in sales volumes of ultra-fine nickel powder in fiscal 2025, despite resolutions in inventory adjustments of smartphones and other telecommunications applications.

We expect profits to decrease significantly despite anticipation of increased sales volumes and price corrections of titanium and THC catalysts compared to fiscal 2023. This forecast mainly factors in the disappearance of transitory factors that boosted profits (realized gains on hedging of nickel raw materials), as well as our plans to adjust production of ultra-fine nickel powder in line with demand trends.

TOPICS Analysis Center Construction Completed

Toho Titanium Co., Ltd completed the construction of the analysis center building to improve infrastructure and install state-of-the-art analytical equipment for future technological development. Introducing analytical equipment that enables advanced analysis and evaluation enables the company to analyze the microstructure required for product development, mechanisms behind current phenomena, and extremely small quantities. In doing so, the company improves its analysis and evaluation technologies and offers customers greater, more reliable product assurance than ever before.

Analysis center building

Metals & Recycling Segment
Metals & Recycling Business

We are able to efficiently use our smelting processes to take copper concentrate and recycled raw materials and supply high-quality metal products such as copper and precious and minor metals. These products are then offered through a stable supply in Japan and parts of Asia. Under the Green Hybrid Smelting process, which utilizes surplus heat from copper concentrate processing, we will work to build a sustainable recycling-oriented society with the goal of increasing the ratio of recycled raw materials (either in raw material input or in product content) to at least 50% by 2040.

Key Strategies

- Promote measures to increase the collection and processing of recycled materials to achieve Green Hybrid Smelting
- Implement measures to evolve and spread sustainable copper
- Establish a profitable and capital-efficient business through reinforcement of smelting facilities and structural reforms in the copper smelting business

Review of Fiscal 2023

In fiscal 2023, we reinforced smelting facilities, implemented structural reforms, and increased the collection and processing of recycled raw materials, endeavoring to establish a profitable and capital-efficient business. We also worked to reduce costs through efficiency improvements, improve raw material procurement and product sales conditions, reduce inventories, and maximize the effects of these efforts as part of the company-wide structural reform project. Other efforts included large-scale scheduled repairs at the Saganoseki Smelter & Refinery in November 2023 to repair deterioration and improve problematic facilities. We achieved record-high collection volumes through our efforts to increase the collection of recycled materials, despite metal prices remaining at high levels. At the end of March 2024, the Company transferred 20% of our shares in Pan Pacific Copper Co., Ltd. ("PPC"), in which we hold a 67.8% stake, to Marubeni Corporation. PPC became an equity-method affiliate of the Company as a result, improving the profitability and financial position of the Group significantly.

Our business calculated the carbon footprint of the electrolytic copper produced by the Group to achieve our Sustainable Copper Vision and verified results through third-party assurance. We also formed Green Enabling Partnerships (GEP) with companies and other parties supporting our vision, working to accelerate the transition to a decarbonized, recycling-oriented society.

Outlook for Fiscal 2024

We expect the procurement environment for copper concentrates to remain challenging due to the operation of new smelters in Asia and the blockade of the largest mine in Central America. We also expect the collection of recycled raw materials to become more challenging due to restrictions on the transboundary movement of e-waste and e-scrap following the revision of the Basel Convention. In the face of these expected changes in the business environment, we will strive to maximize earnings and improve capital efficiency through key strategies. In April 2024, we split off operations of the Company and JX Metals Trading Co., Ltd. related to copper and precious metal recycling and automotive lithium-ion battery recycling as part of our efforts. We worked with Mitsubishi Corporation to establish JX Metals Circular Solutions Co., Ltd., pursuing further resource recycling. By utilizing the cross-industry global network and knowledge of Mitsubishi Corporation, we will strengthen the collection of recycled raw materials and collaborate with recyclers in Japan and abroad to reform and digitize recycling processes.

We will also strengthen GEP partnerships based on our Sustainable Copper Vision as we enhance activities to improve recycled raw material ratios and reduce CFP to establish a structure that supplies high value-added products with high recycling rates and low CFP.

TOPICS *Cu again* Project

In January 2024, the Company explored optimal copper supply schemes for the market from multiple perspectives, including resource recycling, decarbonization, security of supply, improved traceability of raw materials, and economic rationality. As a result, we announced our plans to sell 100% recycled electrolytic copper using the mass balance method as a way to supply the copper needed throughout society. The *Cu again* project refers to our activities aimed at the social implementation of this product. The name *Cu again* conveys the idea that electrolytic copper (Cu) is recycled as scrap after its initial use to support society once again in the future. Our design reflects our vision of infinite (∞) circulation, with everyone involved in the life cycle of copper. We are committed to working with customers to solve social issues regarding resource recycling and decarbonization.

Cu again design

Metals & Recycling Segment
Mineral Resources Business

The Mineral Resources Business supports the long-term, stable procurement of raw materials for use in advanced materials handled by our Group. To do so, we participate in overseas copper and minor metal mines, and operate domestic auriferous silica ore mines. We manage investment-backed mines while also engaging in active exploration activities for new projects and technology development.

Key Strategies

- Expand upstream areas of the minor metals business by acquiring mining interests (titanium, tantalum, etc.)
- Inherit and expand our technical capabilities cultivated in operating mines

Review of Fiscal 2023

We transferred our 51% stake in SCM Minera Lumina Copper Chile, an operating subsidiary of the Caserones Copper Mine (Chile), to Lundin Mining Corporation (Canada) on July 13, 2023. The participation of Lundin Mining Corporation as a management partner of the Caserones Copper Mine is expected to generate many synergies, including mine productivity improvements and enhanced cost competitiveness. We also transferred 3.27% of our indirect 15.79% mining interest in the Los Pelambres Mine (Chile) to Marubeni Corporation on March 29, 2024, as part of the structural reform of our Base Businesses.

Copper production at the Caserones Copper Mine was generally in line with our plan, increasing from the previous year when operations were restricted due to snowmelt following heavy snowfall. Despite delays in the completion of the desalination plants and the expansion of mineral processing equipment, copper production increased at the Los Pelambres Mine compared to the previous year, when production was affected significantly by water restrictions and other factors.

As for new mine development projects, we evaluated and studied specific projects, focusing on titanium, in the interest of securing a stable supply of raw materials for downstream businesses.

Outlook for Fiscal 2024

On July 2, 2024, the Company transferred an additional 19% of our 49% stake in the Caserones Copper Mine to Lundin Mining Corporation. We strive to work with Lundin Mining Corporation, a company that has an excellent mine operating capacity, to strengthen our competitiveness while exploring the possibility of extending mine life through the integrated development of a nearby Lundin Group exploration project. For the Los Pelambres copper mine, we are committed to focusing on the stable operation of the desalination plants and mineral processing equipment introduced in projects to increase production, the subsequent construction of new concentrates conveyor pipes, and the enhancement of the desalination plants. We dispatch our employees to a joint venture with AMG Brasil (Brazil), a tantalum concentrate producer, and leverage evaluation opportunities to acquire mining and ore dressing technologies in minor metal mining projects. Through such activities, we will strive to expand our knowledge of minor metal operations.

In terms of exploration, we are conducting surveys in Japan and overseas for titanium, tantalum, copper, and silicate ore to ensure a stable supply of raw materials for our downstream businesses, aiming to commercialize these projects. We will also conduct basic research on diverse types of metallic mineral, including rare earths, and study raw material acquisition schemes to meet future needs.

TOPICS Establishment of New Overseas Exploration Sites and Restructuring of Existing Sites

We are conducting exploration activities across a wide range of regions to discover promising minor metal projects, mainly in African countries, Australia, and Brazil. We opened a new office in Johannesburg, South Africa, in August 2023, and launched activities aimed at discovering minor metal projects and building networks. In September of the same year, we relaunched the operations of an exploration company in Melbourne, Australia, and assigned a representative to the company. Our current efforts include discovering and investigating lithium-tantalum projects that enable us to acquire tantalum concentrates; investigating copper projects that involve minor metal by-products and contribute to green hybrid smelting; and strengthening our network with mining and exploration companies. We are also building a cooperative framework with existing exploration companies in Chile and Peru to gather information and conduct on-site surveys for tantalum projects in Brazil.

Johannesburg office building

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

The JX Advanced Metals Group has identified six materialities for priority action in order to realize our 2040 Long-Term Vision. KPIs have been set for each materiality, and the ESG Committee, chaired by the president, administrates this system, measuring and assessing levels of achievement for these KPIs.

	Materialities	Initiatives	Fiscal 2023 KPIs	Related SDGs
Environmental	Contributing to Environmental Conservation P.37	Contribute to global environmental conservation by creating a carbon-free and recycling-oriented society.	Increase Percentage of Recycled Raw Materials/ Expand the Breadth of Recycled Materials to be Treated	12, 13, 15
			Total in-house CO_2 emissions: Promoting initiatives to achieve net zero CO_2 emissions in fiscal 2050 and 50% reduction in fiscal 2030 (vs. fiscal 2018)	
			Landfill disposal rate: Less than 1% in fiscal 2023	
Social	Provide Advanced Materials That Support Lives and Lifestyles P.59	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	
	Create Attractive Workplaces P.75	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.	Implement initiatives to revitalize people and organizations	3, 8, 10
			Increase annual leave utilization rate: 80% or more in fiscal 2023	
			Maintain and improve hiring rate for persons with disabilities: 2.3% or more in fiscal 2023	
			Reduce serious occupational accidents: 0.70 or less accidents (four days or more of lost work time) per 1,000 workers in fiscal 2023	
			Initiatives for health promotion: Cancer screenings for 70% of employees or more in fiscal 2023	
	Respect Human Rights P.85	Conduct business activities that respect the human rights of all throughout the supply chain, including local community residents, customers, employees, and business partners.	Conduct survey of human rights in supply chains	5, 10
			Percentage of employees taking human rights training (100% in fiscal 2023)	
	Coexistence and Co-Prosperity With Local Communities P.91	Foster relationships of trust with local communities through community-based social contribution activities and communications in every business location in Japan and abroad.	Continuing dialogue with local communities	11, 15
Governance	Strengthen Governance P.99	Ensure sound, transparent business management via thorough compliance and risk management activities.	Compliance training tailored to business characteristics and social movements, etc.	–
			Steady operation of group-wide risk management	

Materiality Identification Process

The following steps were taken to identify Group materialities, based on global social issues and the goals set forth by the SDGs, as well as international guidelines (GRI, ISO 26000, etc.), initiatives in Japan and overseas, and trends among industry peers. The identified materialities will be periodically reviewed in accordance with future changes in social conditions and needs, management strategies, and other factors.

STEP 1 Evaluate Group business activities → STEP 2 Identify stakeholder expectations and requests → STEP 3 Prioritize issues to be addressed → STEP 4 Define materialities and establish KPIs

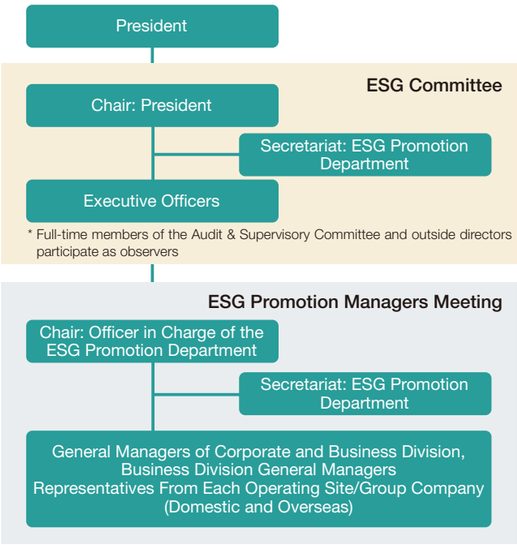
ESG Promotion System

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 and with participation by outside directors as observers. This committee meets twice a year in principle. In addition, in order to promote and permeate ESG activities throughout the Group, we have established the ESG Promotion Managers Meeting as a subordinate body to this committee, consisting of the ESG promotion managers from each of the Company's departments and each Group company. Important ESG-related matters are discussed and reported to the Board of Directors and the Executive Council as appropriate.

In fiscal 2023, we held ESG Committee meetings in June and November to discuss activity policies for each priority issue and report on the status of activities.

ESG Promotion System



Permeating ESG Management

The Group aims to deepen understanding about the importance of ESG and our activities. To do so, we distribute information on ESG using the Group intranet and internal newsletters. We also hold internal trainings and e-learning programs. In 2023, we conducted training for employees at each of our major business locations from May to August to further spread ESG activities. These trainings featured AI voice narration for the first time, receiving positive feedback from 84% of the participants.

In addition, we distribute the Sustainability Report each year and conduct questionnaires available via paper and online to survey employees. Surveys cover the penetration of ESG and CSR mindsets and status of employee involvement in practicing ESG and CSR. In fiscal 2023, 4,443 of 5,626 eligible employees responded to the survey, resulting in a response rate of 79%.

Training slide materials

Excerpt of Questionnaire Responses

Q: Do you understand our ESG management initiatives?
- Yes ····· 81.1%
- Unsure ····· 16.2%
- No ····· 2.6%
- No answer ····· 0.1%

Q: Do you understand and agree with the JX Advanced Metals Group Code of Conduct?
- Yes ····· 92.6%
- No ····· 6.6%
- No answer ····· 0.8%

Q: Do you think materialities are well understood in your organization and workplace?
- Yes ····· 73.5%
- No ····· 25.4%
- No answer ····· 1.1%

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

Responding to International Norms and Initiatives

The JX Advanced Metals Group will contribute to achieving a sustainable society by complying with social demands such as international norms and initiatives. To this end, we are actively participating in initiatives. We also participate actively in nonferrous metals and other various industry associations, incorporating the knowledge gained through opinion exchanges and information sharing in our business activities.

Communication With Industrial Associations

Name of Association	The Role of JX Advanced Metals in FY2023	Activity Content
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 Planning and Management Committee, contributing to the management of the association. 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)	Chairman	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 Advanced Metals sits on the Compound Semiconductors Subcommittee and the Target Subcommittee 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 Advanced Metals also sits on the Safety Committee to contribute to the improvement of health and safety throughout the industry.
Japan Mining Industry Association (JMIA)	Director	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 JX Advanced Metals Group served as the director of the association in fiscal 2023.
Japan Catalyst Recovering Association (JCRA)	Chairperson	Comprising of companies engaged in the reuse of catalysts, JCRA was established to promote the recycling of precious and minor metals through the 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. We serve as the chairperson of the association and are also involved in the publication of survey reports as well as the management of general meetings as a member of the PR Committee.
The Sulphuric Acid Association of Japan	Vice-Chairman	This association aims for the sound development of the sulfuric acid industry in Japan. JX Advanced 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.

Related Initiatives

United Nations Global Compact

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.

COMMUNICATION ON PROGRESS

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.

WEB UN Website
https://www.unglobalcompact.org/

Task Force on Climate-related Financial Disclosures (TCFD)

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

The TCFD is an organization established by the Financial Stability Board (FSB) that recommends 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, the Group is moving to disclose information in line with the aims of these recommendations.

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

CDP

CDP DISCLOSURE INSIGHT ACTION

The CDP 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 engages in the disclosure of information on climate change and water safety, which the CDP has identified as priority issues. We also disclose information through questionnaires to our business partners.

WEB CDP Website
https://www.cdp.net/en

Challenge Zero

Challenge Zero

Challenge Zero is an initiative established by Keidanren, in partnership with the Japanese government, to encourage companies and organizations to innovate toward creating decarbonized societies. The JX Advanced Metals Group announced our participation in June 2020.

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

GX League

GX League

The GX League, led by the Ministry of Economy, Trade and Industry (METI), is a framework for industry, government, and academia to collaborate in the challenge of Green Transformation (GX) with a view to achieving carbon neutrality by 2050 and reforming Japan's entire economic and social system. In addition to expressing our support for the GX League Basic Concept, we also announced our participation in Phase 1 from fiscal 2023 to fiscal 2025.

WEB GX League Website
https://gx-league.go.jp/en/

The Copper Mark

THE COPPER MARK | RESPONSIBLY PRODUCED COPPER

The Copper Mark is a framework established in 2019 to demonstrate the contributions made by the copper industry to responsible production and the SDGs advocated by the United Nations. In December 2022, Saganoseki Smelter & Refinery and Hitachi Works, operated by JX Metals Smelting Co., Ltd., became the first plants in Japan to acquire Copper Mark certification. The Caserones Copper Mine (Chile), in which we hold a partial interest, also obtained certification in October 2023.

WEB Copper Mark Website
https://coppermark.org/

Circular Partners

Circular Partners

Circular Partners is a partnership established in 2023 by the Ministry of Economy, Trade and Industry (METI) to encourage collaboration between industry, government, and academia to achieve a circular economy. JX Advanced Metals has participated in this partnership as a manufacturer of non-ferrous metals since inception of the partnership.

WEB Circular Partners Website (Japanese Only)
https://www.cps.go.jp/

WIPO GREEN

WIPO GREEN is a framework for technology exchange launched by the World Intellectual Property Organization, a specialized agency of the United Nations. The aim of this organization is to spread the adoption of environmental technologies and promote innovation. Entities participate by registering environmental technology in the organization's database. WIPO then matches technology with individuals and organizations. We have registered intellectual property related to our proprietary copper-recovery technology, the JX-Iodine Process, in the database.

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

Partnership Development Declaration

The Partnership Development Declaration is an initiative that aims to increase added value throughout the supply chain by having corporate leaders declare supply chain-wide coexistence and coprosperity, that new partnerships will transcend size, affiliation, etc., and that participants will engage in desirable business practices with subcontractors. We announced our participation and declaration in April 2022.

WEB Partnership Development Declaration Portal Site (Japanese Only)
https://www.biz-partnership.jp/

White Logistics Movement

The White Logistics Movement is a movement promoted by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) to encourage an understanding among companies and the public regarding sustainable logistics. We announced our participation in April 2020, and our Logistics Department leads company-wide efforts in this area.

WEB White Logistics Movement Portal Site (Japanese Only)
https://white-logistics-movement.jp/

Responsible Business Alliance (RBA)

The RBA is an industry association consisting mainly of electronics manufacturers and suppliers of electronic components. Many of our customers are members of the RBA. The JX Advanced Metals Group pursues stronger ESG initiatives by conducting activities in accordance with the code of conduct established by the RBA.

WEB RBA Website
https://www.responsiblebusiness.org/

Keidanren Initiative for Biodiversity Conservation

The Keidanren Initiative for Biodiversity Conservation is a group of companies and organizations that endorse the Keidanren Declaration for Biodiversity and Guideline and declared their commitment to biodiversity for the future. JX Advanced Metals announced our participation in July 2024.

WEB Keidanren Initiative for Biodiversity Conservation Website
https://www.keidanren-biodiversity.jp/logo_en.php

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 ● Invitation to SQUARE LAB	● Stable supply of highly-functional products ● Improvement of economic efficiency and added value of products ● Improvement of environmental performance of products ● Appropriate disclosure of product information
Shareholders and investors Currently, we disclose information in a timely and appropriate manner through ENEOS Holdings. However, as we prepare for a potential listing, we will establish an independent system for timely disclosure.	● 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 ESG Handbook and the Handbook for Supporting Balancing Childcare or Nursing Care ● Implementation of self-assessment system ● Holding online workshops ● Dialogue between labor unions and management ● Various employee training and education programs	● Prevention of occupational accidents ● Penetration of Group ESG activities ● Achieving diverse work styles ● Enhancement of training system ● Fair and equitable personnel evaluation ● Maintaining and promoting 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 (CSR Procurement Questionnaire) ● 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 coprosperity 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 ● Conducting briefings for local residents ● Participation in local volunteer activities	● Strengthening cooperation with local communities for their revitalization ● Cultivation of a new generation and educational support ● Reduction of 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.	● Implementation of business practices that support the SDGs ● Response to TCFD / Endorsement of Challenge Zero / Participation in GX League	● Establishment of a resource-recycling society ● Climate change adaptation and mitigation ● Progress in the Digital Society

Outside Directors Roundtable Discussion

On June 11, 2024, the Company held a roundtable discussion with Chairman Murayama and five outside directors. The discussion focused on issues related to the sustainable growth of the JX Advanced Metals Group and strengthening the group's governance structure.

A Outside Director
Itoh Motoshige

Awarded a Ph.D. in economics from the University of Rochester in 1979. After serving as a professor in the Graduate School of Economics at the University of Tokyo, chair of the Nippon Institute for Research Advancement, and professor in the Faculty of International Social Science at Gakushuin University, he assumed his current post as professor emeritus at the University of Tokyo in June 2016. Mr. Itoh served as a member of the Council on Economic and Fiscal Policy for six years beginning in 2013. He has been an outside director of the Company since April 2022.

B Outside Director (Audit & Supervisory Committee Member)
Futamiya Masaya

Joined Sompo Japan Insurance Inc. in 1974. Named president and chief executive officer of Nippon Koa Insurance Co., Ltd. and chair of Sompo Japan Nipponkoa Insurance Inc. (currently Sompo Holdings, Inc.). Named chair of the Japan Network for Public Interest Activities in 2018 (to present). Named senior advisor, Sompo Holdings, Inc. in 2022 (to present). He has been an outside director of the Company since June 2023.

C Outside Director
Tokoro Chiharu

Named assistant professor at Waseda University, School of Science and Engineering in 2004. Named professor, Faculty of Science and Engineering, Waseda University, in 2015 (to present). In 2016, she became a project professor at the University of Tokyo, Institute of Industrial Science (to present). In 2021, she was named professor at the University of Tokyo, Graduate School of Engineering (to present). She has been an outside director of the Company since April 2021. In September 2022, she was appointed associate director of the Waseda Institute for Advanced Study and associate director of the Waseda Center for a Carbon Neutral Society (to present).

D Representative Director and Chairman, JX Advanced Metals Corporation
Murayama Seiichi

E Outside Director (Audit & Supervisory Committee Member)
Kawaguchi Rika

Registered as an attorney in 1997. Member of the Dai-Ichi Tokyo Bar Association Committee for Labor Laws (to present). Vice president of the Dai-Ichi Tokyo Bar Association, executive director of the Kanto Federation of Bar Associations, and other posts. In 2021, Ms. Kawaguchi became a family mediator of the Tokyo Family Court, acting president of the Dai-Ichi Tokyo Bar Association Promotion for Gender Equality Headquarters, member of the Japan Federation of Bar Associations Promotion for Gender Equality Headquarters, and controller of the Japan Philanthropic Association (to present). She has been an outside director of the Company since June 2023.

F Outside Director (Audit & Supervisory Committee Member)
Sakuma Soichiro

Joined the predecessor to the current Nippon Steel Corporation in 1978. Served as representative director and executive vice president of Nippon Steel Corporation. In addition to serving currently as an executive advisor of NS Solutions Corporation, Mr. Sakuma also performs other duties as chair of the Public Interest Commission of the Cabinet Office of Japan, president of the Japan International Dispute Resolution Center, president of the Global Industrial and Social Progress Research Institute, and vice-chair of the OECD-BIAC Responsible Business Conduct Comittee. He has been an outside director of the Company since June 2022.

Progress Toward an Initial Public Offering

Murayama: We launched a five-member team exactly one year ago in June 2023. Fiscal 2023 was a turbulent year for our company, beginning with our preparations for an IPO. I am encouraged and gratified to have your advice as outside directors at such a time as this. How do you view the Company's activities over the past year?

Itoh: The past year has been very meaningful in the sense that we were able to reaffirm the source of the Company's competitiveness as you prepare to go public.

Kawaguchi: The Company engaged in several fundamental measures, including a review of the business portfolio. Seeing everyone unite and make the utmost effort in their respective positions has been inspiring.

Sakuma: Another major measure was the decision to deconsolidate the Caserones copper mine, which has been a core resources business in terms of profits, even more than revenue. At the same time, we see major structural reforms underway. The Company is charting a course to make advanced metal materials a pillar of earnings.

Futamiya: I think the Company is aware of its role in terms of the issues facing Japan, so-called economic security, and sustainable growth. I see that you are addressing these issues with confidence. In addition, you are very focused on fostering a corporate culture that values new ideas and challenges, creating a space for innovation to occur.

Tokoro: We have held many discussions in the past year about the big IPO event and the ideal vision for the company. I think you are steering the ship based on choices that are as close to optimum as can be, considering the current situation.

Growth Strategy and Risk Management

Murayama: Changes in society and the market are becoming more dramatic. How should the Company identify and respond to the coming risks and opportunities?

Tokoro: In your case, the balance between Base and Focus businesses is very important. I believe you have reached the best balance heading into the IPO, but this balance may not necessarily be optimal in the future. A flexible structure might serve best.

Itoh: As you say, this is an era of uncertain prospects. Technologies could be replaced easily, as many industries themselves. The ability to respond quickly to change will be essential.

Futamiya: Today, society is making strong demands in various forms regarding the value of a company's existence. This is particularly true in Europe, where these demands take the form of regulations. We must all keep a close eye on these regulatory trends and respond preemptively.

Sakuma: In terms of governance, the Company changed to a company with an Audit & Supervisory Committee in fiscal 2023. Since then, you have increased the number of outside directors and established a Nomination and Compensation Advisory Committee. I think JX Advanced Metals has put a system in place that is appropriate and sufficient for a publicly traded company. The test now will be whether the system functions effectively.

Futamiya: From a risk perspective, the question is how to create products that follow on from the mainstay sputtering targets for semiconductors and treated rolled copper foil. There is always a risk that there will be no follow-on product. In this regard, the company must strengthen measures that include investing in startups, M&A, other approaches to gaining access to the technological capabilities of other entities, and open innovation.

Sakuma: I don't know how the world will change in the future, but what I do know is that cost-push factors will increase and competition will intensify. These developments increase the likelihood of a double punch—higher costs and lower selling prices. So, what can the company do? It will do what it must. In other words, the manufacturing floor must reduce costs, the development department must ensure technological advancement, and the sales department must be courageous in implementing pricing policies. These areas must be seen through to the end.

Kawaguchi: On a cost-related note, the cap on overtime work in the transportation industry became effective in April 2024. JX Advanced Metals also transports materials and products, so the labor of people involved and the associated costs cannot be ignored. Structural reform in the transportation industry has not progressed well, particularly in Japan. Dealing with risks related to transportation costs in the future will be important.

Itoh: In any case, there is no doubt that the world economy and global trends are undergoing major changes. The perspective of leveraging change as a source of growth is becoming more critical. For example, while a conflict between the U.S. and China is not desirable, such conflict could change the supply chain and enhance the company's value. A company must always be thinking about what it can do when change occurs.

Tokoro: In that sense, the opportunities for the company, without a doubt, are carbon neutrality and circular economies. Carbon neutrality is an area JX Advanced Metals can take advantage of through technological capabilities in any aspect of electrification, digitalization, consolidation, high functionality, and miniaturization. In the case of circular economies, today's conventional linear economy is a one-way street: materials are processed into advanced materials. The ability to create a recycling cycle, however, should become a major strength of the company.

Green Transformation (GX) Initiatives

Murayama: JX Advanced Metals pursues environmental initiatives based on the three pillars of decarbonization, resource recycling, and nature-positive. How do you view our measures to date?

Futamiya: The company created a framework for communicat-

ing the role of copper in society through the Sustainable Copper Vision and the Green Enabling Partnership. This framework is very significant. For example, many companies face difficulties in complying with Scope 3. If more people become aware that JX Advanced Metals technology can make a contribution in this area, I am sure there will be a large influx of people wanting to use the company's products.

Sakuma: Coming from a background in the steel industry, I inevitably compare copper to steel. However, copper is in a very privileged position in an electrified society, where its characteristics allow for both business and GX. This is another area of strength for the company. At the same time, the world's understanding of copper is not as advanced as it should be. Getting this message out will require more effort by the company and the industry as a whole.

Kawaguchi: I think the same as Mr. Sakuma about the three pillars of decarbonization, resource recycling, and nature-positive. In other industries, these three would be considered separate. In the case of copper, I think the company is in a very fortunate position to achieve these three pillars through regular business activities. For this reason, I would like to see the company leverage its IPO as an opportunity to tell the world even more that JX Advanced Metals is on the leading edge of GX.

Tokoro: There is no doubt that the company is becoming a leader among its peers in Japan in terms of environmental initiatives. However, the three areas of decarbonization, resource recycling, and nature-positive are not necessarily reciprocal in the sense that extensive efforts in one will have a positive impact on any other. I think the demands of society for balance change constantly, and the company is entering a phase in which it must determine quantitatively how it will strike a balance among these three factors.

Itoh: In the past, a company's primary purpose was to create jobs, make a profit, and contribute to the wealth of society. In addition, companies must now take a stance on issues as citizens of our communities, including stances on environmental and human rights issues. The level of difficulty may be challenging, but opportunities await those who strive to the end. This is a major point for the company.

Initiatives Related to Human Capital Management

Murayama: We are investing more aggressively than ever in human resources to achieve sustainable growth. What challenges do you see regarding our organizational culture and human resources development?

Tokoro: I work in a university setting, so I understand the difficulty of human resources development in these times of change. Innovation requires new thinking and ideas, including those that are a bit outside the box. The larger and more technologically advanced a company, the more susceptible it is to a kind of homogeneity. Staying inside the box can be a strength as well, so the balance is not easy. It's not always a good idea to think outside the box...

Kawaguchi: My impression of the organizational climate is one of vertical separation by division. This structure might be due to the history of the company. I understand you are working to improve in this area, including exchange personnel across divisions, but stepping up these exchanges to a new level could be an opportunity for innovation, as Ms. Tokoro mentioned.

Futamiya: The company needs people who understand ESG and the SDGs as a matter of course. People who can put these concepts into action as a foundation for business. The company needs talent who can think of new ideas beyond conventional common sense and aspire to new challenges without fear of failure. Of course, that would be a luxury for any company.

Itoh: Japanese society as a whole has been very slow to invest in human capital over the past 20 years. For one, the wage structure has changed little. By so many measures, the use of money for human resources has been very limited. JX Advanced Metals is really no exception to this rule. Conversely, if the people aren't in place to take on new developments in the future, it's all just so many castles in the air. In this sense, the company must think carefully about investments in human capital.

Sakuma: As a manufacturer engaged in advanced manufacturing, the group enjoys many people who think extremely scientifically and rationally. The trick, however, is to embody this thinking as an organization. Since the company is under a parent, it doesn't necessarily work completely independently and proactively. I get the impression that this attitude is mirrored ultimately in each individual. When JX Advanced Metals becomes a publicly traded company and gains more independence, thinking and acting independently will become even more important.

Expectations and Roles of the JX Advanced Metals Group

Murayama: I appreciate your comments and the fact that they represent varied professional standpoints. Last, looking beyond the IPO, what are your expectations for the JX Advanced Metals Group?

Sakuma: For the time being, the main is to go public, but going public is only just a start. In the case of your company, the most important thing is to be technology-based and contribute to society through that technology. I come from a similar metals industry background, so I feel the challenges are common. I hope to offer advice in the future based on my experience.

Futamiya: As a corporate executive myself, I hope to offer advice based on my knowledge and experience—both positive and negative—of compliance, governance, and sustainability. Yours is a very traditional and proud company, so there will be both positive aspects and challenges. As a business person in a different industry, I hope to share some of my observations and questions.

Tokoro: I specialize in the technical aspects of resource recycling, and I also work in a university setting, so I think my role is to provide opinions on the direction of the enterprise from a long-term perspective. In connection with the topic of human resources development I mentioned earlier, I think I can contribute in this area by offering effective access to academia.

Kawaguchi: A company is made up of people, so it cannot survive unless it offers workplaces where people want to work. At the moment, everyone is working toward the single goal of an IPO. Once things settle down, the company needs to focus on encouraging employees to think independently and work under their own initiative. I want to provide feedback in terms of the company's vision, mission, and future challenges.

Itoh: In the world of economists, the expressions *bird's eye*, *bug's eye*, and fish's eye come up. A bird's eye view is seeing the movement of the world on a macro scale. The bug's eye view looks closely at the details. The fish's eye view looks at changing trends. As an outside director, speaking from a bird's eye view comes across as if one is writing a book on economics. We must listen to the bug's eye view arguments while speaking from a bird's eye view. The fish's eye view is also important. As you mentioned today, many things are moving rapidly, and I hope to provide solid input about how changes are occurring and how those changes affect corporate management.

Murayama: Thank you today for your many fresh insights from an outside perspective. I know we as management will take these comments seriously and apply them to how we guide the company. I look forward to your continued advice and support.






Section 3 **ESG Initiatives**

E 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. Furthermore, as we execute business, we seek to reduce our environmental impact at every stage of the supply chain.

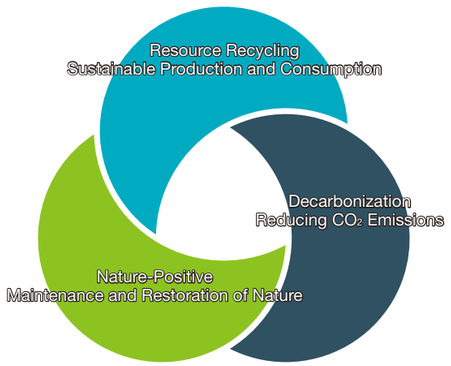
KPIs and Progress

Assessment: ☺ Achieved / Steady Progress ☹ Not Achieved

KPI	FY2023 Results/Progress	Assessment
Increase percentage of recycled raw materials: Expand the breadth of recycled materials to be treated	We have been working to increase the percentage of recycled raw materials used in copper smelting (input ratio of raw materials or content ratio in products) to 50% or more by 2040 by expanding our facilities and by researching and testing new processes for better treatment of recycled materials and improving logistics efficiency.	☺
Total in-house CO_2 emissions: Promoting initiatives to achieve net zero CO_2 emissions in fiscal 2050 and 50% reduction in fiscal 2030 (vs. fiscal 2018)	We continued our activities through the Carbon Free Committee, which was launched to achieve these targets, and promoted a variety of initiatives for decarbonization, including the introduction of CO_2-free electricity at each of our sites and the creation of roadmaps per division toward net zero emissions.	☺
Landfill disposal rate: Less than 1% in FY2023	We have set a goal of keeping our landfill disposal rate at no more than 1% in order to cut down on waste with the aim of minimizing our impact on the environment. Our landfill disposal rate in fiscal 2023 was 0.99%.	☺

The Three Pillars of Global Environmental Conservation

Themes such as decarbonization, resource recycling, and nature-positive are interconnected in the context of environmental conservation. Therefore, a more integrated approach, rather than a single initiative, is needed to comprehensively address environmental and sustainability challenges. Our Group has established decarbonization, resource recycling, and nature-positive as the three pillars of our initiatives for global environmental conservation, promoting them in an integrated manner under our environmental management system.



Resource Recycling

▶ P.39

The Group has been engaged in the refining and recycling of copper, precious metals, and minor metals through our smelting business for many years. In recent years, efforts related to resource recycling have become increasingly important from the perspectives of reducing environmental impact and stable resource availability. In 2022, the Company announced our Sustainable Copper Vision. Since then, we have been promoting various initiatives, including resource recycling, in collaboration not only with our own operations but also with copper producers and customers. Currently, in response to requests from customers, we are developing a scheme related to horizontal recycling of copper and the supply of electrolytic copper with a high recycling ratio and low carbon footprint. This initiative is part of the project *Cu again*, which aims to implement these strategies.

Decarbonization

▶ P.45

The Group's business focuses on expanding the utilization of recycled materials and promoting resource recycling efforts, which contribute to a reduction in CO_2 emissions across the entire supply chain, including Scope 3 emissions. Additionally, our products are characterized by their reduced carbon footprint. We have formulated a decarbonization vision that focuses on the compatibility of resource recycling and decarbonization, and promotes five initiatives. The Carbon Free Committee is playing a central role in studying and implementing measures to achieve reductions in Scope 1 and Scope 3 CO_2 emissions, following the prior reduction of electricity-derived CO_2 emissions (Scope 2).

Nature-Positive

▶ P.53

The Group's business activities, including mining, smelting, and metal processing, significantly impact the environment. We also rely on natural resources such as water and forests to mitigate risks from natural disasters. Nature is essential to the Group's sustainable growth. The Group recognizes efforts toward a decarbonized society and the establishment of a circular economy as initiatives that can avoid and reduce effects on nature. We will further accelerate these efforts while aiming to create positive impacts on nature, contributing to the achievement of nature-positive. Through these initiatives, we will fulfill our responsibility as a company to address biodiversity issues, which have been the focus of increasing international attention in recent years.

Other Initiatives for Environmental Conservation ▶ P.57

Environmental Management ▶ P.58

Resource Recycling

The Group aims to achieve resource circulation across the entire supply chain by efficiently developing and producing a diverse range of products from limited resources without waste, while promoting recycling to reduce environmental impact.

Sustainable Copper Vision

In August 2022, the JX Advanced Metals Group formulated our Sustainable Copper Vision. This vision reflects our recognition that copper is an essential material for achieving carbon neutrality and describes our policy for the supply and ongoing evolution of sustainable copper.

Green Hybrid Smelting Achieves Dual Missions

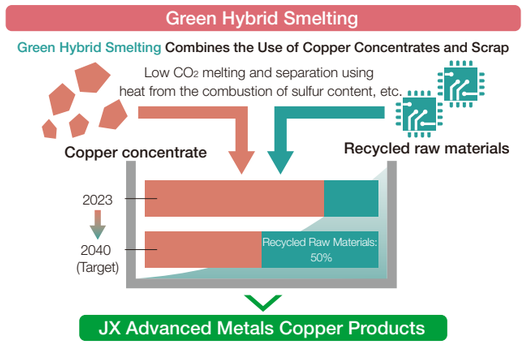
We offer copper products using Green Hybrid Smelting. Both copper concentrates and scrap can be used as raw materials. The heat generated by the copper concentrates itself can be used to melt recycled materials, making fossil fuels virtually unnecessary.

Green Hybrid Smelting has been selected as one of the 26 most noteworthy examples of Japan's circular economy initiatives in Case Studies (2022) published by the Japan Partnership for Circular Economy, which was established by the Ministry of the Environment, the Ministry of Economy, Trade and Industry, and Keidanren.

Achieving Dual Missions

Building a stable supply structure which supports increasing demand	Establishment of production and supply chain focusing on ESG, such as decarbonization and resource recycling

Green Hybrid Smelting



Four Key Initiatives to Develop and Disseminate Sustainable Copper

1 Reduce CFP	2 Increase Recycling Ratios	3 Promote Responsible Procurement and Other Measures	4 Form Green Enabling Partnerships
Reduce CFP in Copper concentrates mining and the transportation value chain ● Convert construction equipment used in mines to electric power ● Use electricity derived from renewable sources ● Improve efficiencies and optimize transportation, etc.	**Develop technologies to increase the ratio of recycled raw materials for copper products and bolster raw materials collection systems** ● Develop technologies to increase the ratio of recycled raw materials ● Increase efficiency and optimization of transportation, such as by increasing the capacity of facilities for the increased collection of recycled materials, etc.	**Engage in a wide range of ESG measures, including sustainable sourcing, and certification acquisition** ● Pursue measures that consider and encourage global environmental conservation, human rights, and contributions to local communities ● Acquire Copper Mark and other certifications that meet ESG standards set by the International Copper Association (ICA)	**Evolve and gain wider use of sustainable copper** ● Form partnerships with companies that work together to promote sustainable copper, and accelerate the transition to decarbonized and circular economies ● Engage in product and scrap collection, raw materials reuse, and joint technology development with partners, etc.

Reduce CFP

The Group is promoting a joint decarbonization project with the leading mining company BHP Group Limited and wind power propulsion auxiliary equipment manufacturer Norsepower Oy, Ltd. to install rotor sails on the KORYU, an ore and sulfur carrier. Rotor sails are a type of ship propulsion mechanism that uses the Magnus effect to convert pressure differences generated by the rotating cylinders on the hull into dynamic lift. We expect this mechanism to reduce CO_2 emissions by 5% as a result of fuel savings.

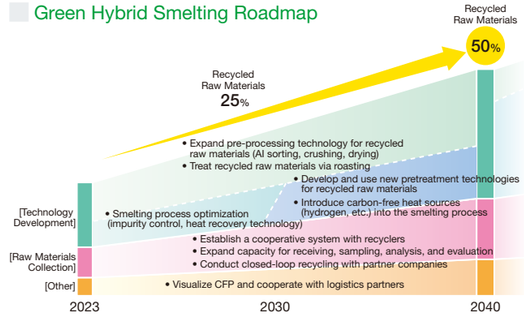
In July 2024, the installation of the rotor sails was completed and the vessel began its voyage. Moving forward, we will verify the fuel reduction effect and explore further CO_2 emission reduction measures.

The KORYU after the installation of rotor sails

Increase Recycling Ratios

Our flash smelting furnace process not only uses the reaction heat of the raw copper concentrates efficiently to dissolve raw materials, but also uses the excess reaction heat to melt the recycled raw material, eliminating the need for fossil fuels or other resources. We pursue the optimal combination of copper ore and recycled materials through our Green Hybrid Smelting to achieve sustainable production of copper. Here, we aim to evolve Green Hybrid Smelting that uses 50% or more recycled raw materials (input ratio of raw materials or content ratio in products) by 2040. The table on the right shows specific issues and measures.

Green Hybrid Smelting Roadmap



Promote Responsible Procurement and Other Measures

The Saganoseki Smelter & Refinery and Hitachi Works are engaged in responsible production activities. In December 2022, these facilities were the first in Japan to receive The Copper Mark, a highly credible assurance framework that demonstrates the copper industry's commitment to the green energy transition.

The Copper Mark is a certification program established in 2019 requiring compliance with 32 standards, including standards for the environment, human rights, community, and governance. Both of the business sites will continue to undergo evaluations based on the various standards established under The Copper Mark.

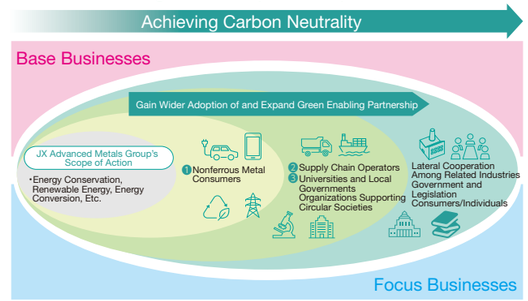
In October 2023, the Caserones Copper Mine (Chile), in which we hold a partial interest, obtained The Copper Mark. With this certification, all concession-holding copper mines and copper smelting and electrorefining plants are now certified. As international demands for ESG initiatives increase, we will continue efforts to strengthen the competitiveness of sustainable businesses.

Form Green Enabling Partnerships

We form Green Enabling Partnerships (GEP) with companies who work together to promote sustainable copper. Through these partnerships, we accelerate the transition to decarbonized, circular economies as well as engage in product and scrap collection, raw materials reuse, and joint technology development. Through GEP, we engage in communication with diverse stakeholders and gather feedback on their needs, resulting in the initiatives outlined on the next page.

Next Page

Green Enabling Partnerships Concept



Our Efforts to Promote Recycling

Co-Creation of Resource Recycling With Customers

In order to promote resource recycling, it is essential that we not only promote our own initiatives as an individual company, but also to cooperate with our customers, including manufacturers of products that use copper, and consumers of final products. By proposing new recycling schemes that are attractive and reliable for users, we can achieve a balance between corporate activities and resource recycling. To that end, we proposed a new copper supply scheme with the aim of co-creating resource recycling with our customers.

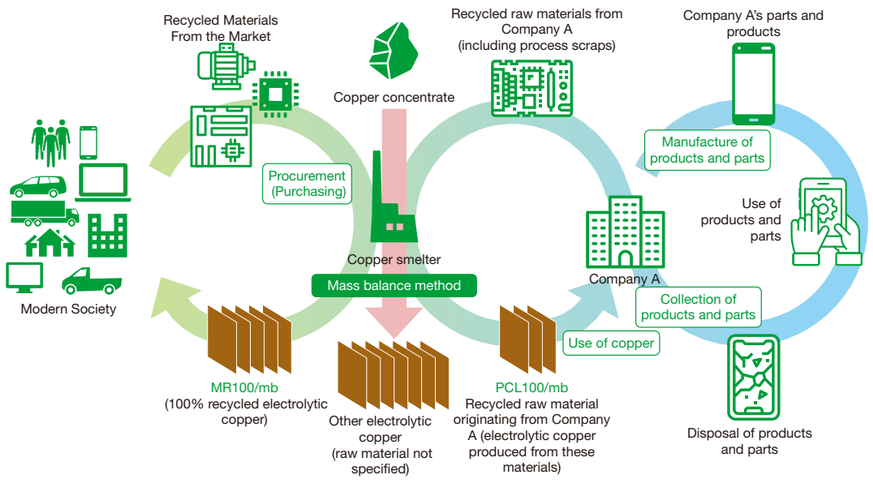
Our Proposed New Recycling Scheme

In January 2024, we announced the launch of two types of 100% recycled electrical copper using the mass balance method: The Partnered Closed Loop 100% mass balance method (PCL100/mb) and the Mixed Recycle 100% mass balance method (MR100/mb)," which will be launched during the fiscal 2024. One of the new schemes, the PCL100/mb, involves using recycled materials from customers (Company A in the diagram) that have collected used products or generated process scrap in their factories. The product is returned to customers as 100% recycled electrolytic copper with a guaranteed origin (which means to ensure the copper is sourced from Company A).

In the actual copper smelting process, recycled raw materials from Company A are mixed with other recycled raw materials and copper concentrate for smelting treatment. This makes it impossible to extract only copper originating from recycled raw materials from Company A.

However, by using the mass balance method, it is possible to link the electrolytic copper to the recycled material. We accurately analyze the volume of copper contained in the recycled materials from Company A and will strictly manage the electrolytic copper produced to ensure it does not exceed that amount, thereby designating it as copper sourced from Company A. In July 2024, the validation of this management system (CoC management system) was completed by a third party. On the other hand, in the case of MR100/mb, the origin of the raw material is not separately linked to the electrolytic copper.

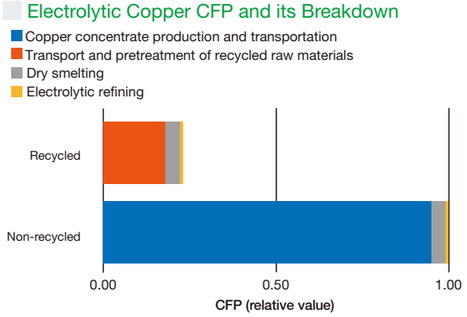
The management of the recycled materials collected from the market and their copper content will enable us to supply 100% recycled electrolytic copper using the mass balance method.



Carbon Footprint (CFP) of Recycled Electrolytic Copper

In 2023, we obtained third-party certification for the calculation of CFP values, and we are actively engaged in calculating the CFP for various product categories. Our CFP calculation shows that the CFP of recycled electrolytic copper is approximately 25% that of non-recycled products. This is primarily because the CFP resulting from raw materials are very different. With this in mind, the Company has determined that it is essential to further increase the recycling rate and reduce emissions associated with the procurement of copper concentrates from copper ore and their transportation. We are prioritizing efforts in green hybrid smelting, collaboration with mining companies through the Green Enabling Partnership, and reducing emissions from the transportation of copper concentrates, as outlined on pages 39-40.

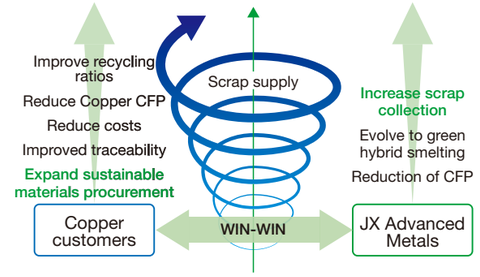
Electrolytic Copper CFP and its Breakdown



Spiral Model With Customers

The combination of increasing recycling ratios and utilizing mass balance methods can produce a variety of benefits. PCL100/mb, for example, contributes to our ability to secure a stable supply of recycled raw materials with the cooperation of our customers. There are benefits for customer (copper consumers) as well, such as the potential to obtain recycled electrolytic copper at quality and cost levels similar to traditional materials, improved raw material traceability, and a reduction in the CFP of procurement materials. Moreover, focusing on the collection of waste products and process scrap produced by customers, which serve as the raw materials for PCL100/mb, not only facilitates the procurement of recycled electrolytic copper but also has the potential to contribute to the promotion of resource recycling throughout society. In this way, our proposed model for supplying 100% recycled electrolytic copper provides various benefits through interaction between our customers and us, fostering a win-win relationship. We have launched activities aimed at social implementation of this product (PCL100/mb) as the *Cu again* project, and discussions are underway with stakeholders from various industries.

Spiral Model With Partner Companies



Cu again design

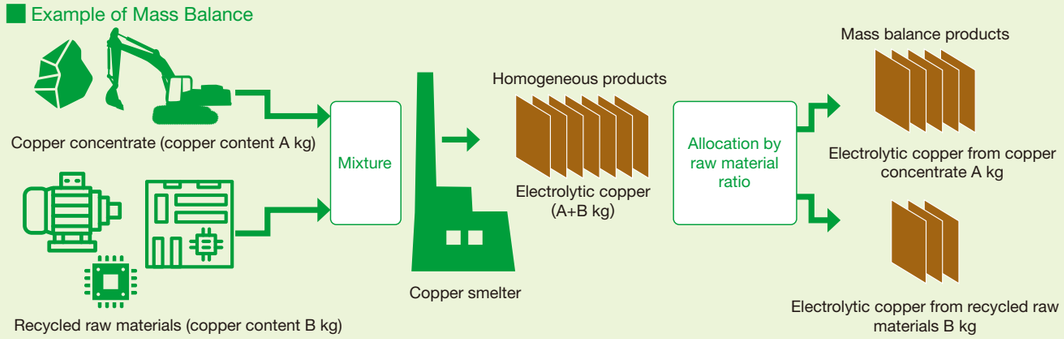
Initiatives to Increase Collection of Recycled Raw Materials (Cyclic Sectors)

We are advancing the establishment of systems for increased collection and processing of recycled raw materials as we aim to achieve the Sustainable Copper Vision. To strengthen our collection system for recycled raw materials, we acquired shares in eCycle Solutions Inc., a Canadian recycler, in August 2022. In April 2024, in collaboration with Mitsubishi Corporation, we established JX Metals Circular Solutions Co., Ltd. to promote the reuse of waste electrical appliances, discarded electronic devices, and end-of-life automotive lithium-ion batteries, officially commencing operations in July of the same year. By leveraging Mitsubishi Corporation's cross-industry global network and expertise, we aim to expand the collection of recycled raw materials and enhance collaboration across the entire supply chain, with the goal of increasing the recycling of non-ferrous metal resources such as copper and minor metals.

TOPICS Mass Balance Method Concept

The mass balance method is used when raw materials with differing properties and origins are mixed during the manufacturing process, resulting in products that cannot be distinguished based on their raw materials. This approach allocates specific properties to a portion of the product based on the input ratio of raw materials with those properties.

Example of Mass Balance



Other Initiatives for Environmental Conservation

Closed-Loop Recycling of Automotive Lithium-Ion Batteries (LiB)

Minor metals such as nickel, cobalt, and lithium used in LiB are not produced in Japan, but are rather concentrated in a specific set of countries and regions. Reducing the environmental impact and supply chain risk associated with the use and securing of these mineral resources has become a serious social issue.

In 2020, we established a closed-loop recycling process to recover minor metals from end-of-life automotive LiBs, reusing these metals as raw materials for automotive LiBs in continuous processing bench-scale test equipment installed at Hitachi Works.

Scaled-up versions of this process are being gradually introduced at JX Metals Circular Solutions Tsuruga Co., Ltd. In addition to the inauguration of a high-purity nickel sulfate recovery facility in 2021 and a high-purity cobalt sulfate recovery facility in 2022, we have started operations for a high-purity lithium carbonate recovery facility in April 2023, and are demonstrating our recycling process there. Going forward, we will provide high-purity recycled metal salts to our business partners and demonstrate closed-loop recycling for automotive LiB through the supply chain.

In 2022, our project for the Development of Technology for Closed-Loop Recycling for Automotive LiB was selected for funding by the Green Innovation Fund of the New Energy and Industrial Technology Development Organization (NEDO). Utilizing this fund, we will further advance recycling technology toward the social implementation of closed loop recycling for automotive LiB in collaboration with universities and public research institutions. Through this initiative, we aim to strengthen the LiB supply chain and contribute to the establishment of a circular economy.

Bench scale equipment for LiB recycling

Inauguration of R&D Facility for Automotive Lithium-Ion Battery Recycling (Germany)

JX Metals Circular Solutions Europe GmbH, a member of the JX Advanced Metals Group, has established an R&D facility for automotive LiB recycling at the TANIOBIS GmbH location in Goslar. The facility is based on hydrometallurgical processes developed by the Group and by using this facility we will demonstrate closed-loop recycling for automotive LiB under the HVBatCycle consortium. This consortium includes German companies, such as the Volkswagen Group, research institutions, and academic institutions, and receives support from the German Federal Ministry for Economic Affairs and Climate Action (BMWK). At this facility, we will focus on optimizing processes to recover high-purity battery materials with high yield from black mass (battery power) provided by the Volkswagen Group.

Tour of R&D facilities at the inauguration ceremony

Acquisition of Certification for Recycling and Reuse Operators Under the Basel Convention

The JX Metals Smelting Co. Ltd., Saganoseki Smelter & Refinery received certification as a recycling and reuse operator under the Law for the Control of Export, Import, and Others of Specificized Hazardous Wastes and Other Wastes (Basel Convention) on August 23, 2023.

The so-called Basel Law establishes rules to ensure the precise and smooth implementation of the Basel Convention, the international framework for regulating the transboundary movement and disposal of waste. Recycling and reuse operators are business operators that are able to recycle and reuse waste appropriately and in a manner that preserves the environment. The recent certification indicates that the efforts in the Metals & Recycling Business at the Saganoseki Smelter & Refinery have been evaluated as meeting the requirements for certification.

Co-Hosted Workshop on Proper Disposal and Resource Recovery of E-Waste (Vietnam)

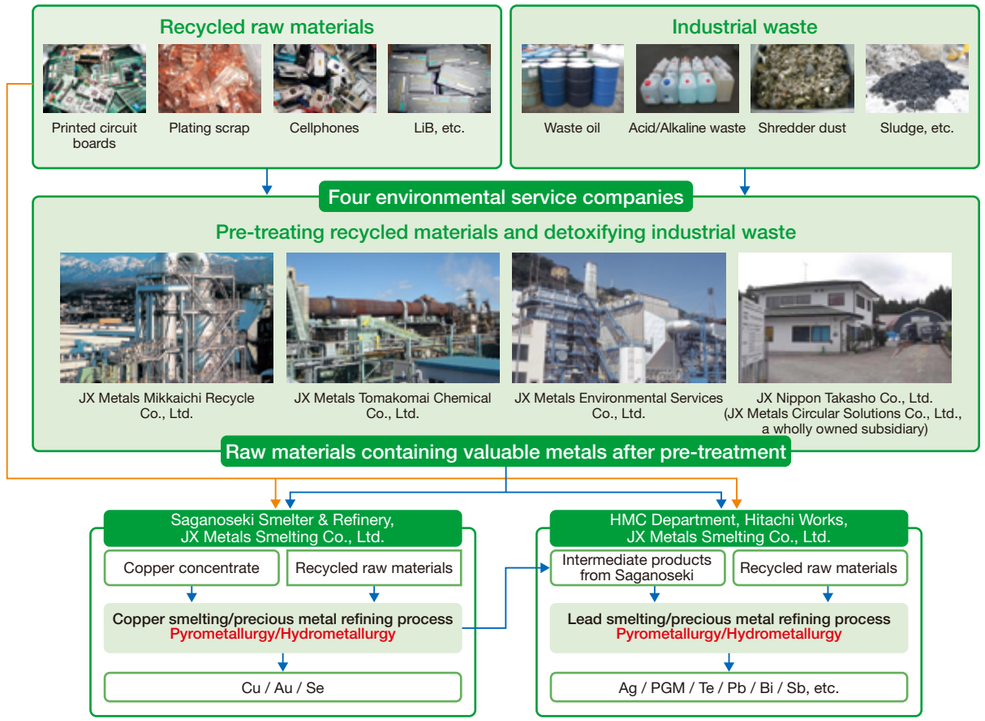
On December 15, 2023, we co-hosted a workshop titled Current Status of E-waste and Solutions for Building Recycling and Processing Systems with the Media Center of the Ministry of Natural Resources and Environment (MONRE) in Vietnam. The workshop was conducted as part of the Appropriate Treatment of E-waste in Hanoi or Ho Chi Minh City and Examination of Metal Resource Recovery in Japan project. This project was approved by the Ministry of the Environment of Japan under its initiative to promote the overseas development of Japan's circular economy industries. On the day of the workshop, representatives from key stakeholders in Vietnam's industry, education, and government sectors participated, including the MONRE, Hanoi University of Science and Technology, the Vietnam Waste Recycling Association, and the Vietnam Electronic Industries Association. Additionally, Japan's Ministry of the Environment participated online.

During the workshop, the Company shared the expertise we have gained from years of operating in the smelting and recycling industry. We highlighted the potential for reducing environmental impacts through technical support and discussed our contributions to achieving metal resources recycling. From the Vietnamese side, there were presentations on the country's environmental protection laws, rules regarding E-waste collection and treatment, and the current status and future prospects of E-waste generation and processing. The presentations led to lively discussions in the second half of the workshop, focusing on the challenges and considerations for commercializing E-waste recycling in Vietnam.

Workshop held in Hanoi, Vietnam

Initiatives for Zero Emissions

Our Smelting, Refining, and Recycling Business generally buries secondary waste (incinerated ash, incineration residue, etc.) generated during the treatment of industrial waste as the final method of disposal. Pursuing the notion of never discard, never bury, the JX Advanced Metals Group strives for zero emissions by combining our environmental and recycling businesses to build and operate a system to recycle these secondary wastes and the valuable metals contained therein. Affiliated companies involved in our Environmental Business work with the Metals and Recycling Business sites to achieve a recycling-oriented society.



Decarbonization

The JX Advanced Metals Group views climate change as an urgent issue that must be resolved on a global scale, and in order to contribute to the resolution of this issue, we have set the ultimate goal of achieving net zero CO_2 emissions and are further accelerating our efforts to achieve this goal.

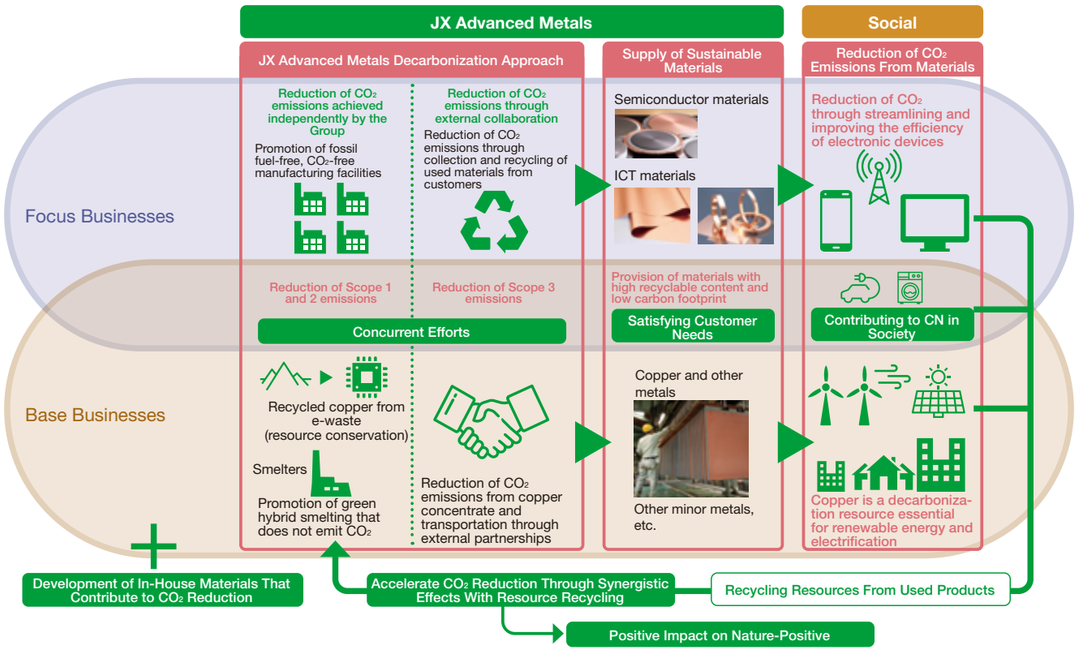
Decarbonization Vision

The Group's businesses focus on resource recycling, particularly through recycling materials, aiming to reduce CO_2 emissions, including Scope 3 emissions, and the carbon footprint of our products (CFP). We are committed to meeting customer needs while advancing both resource circulation and decarbonization. In June 2024, we developed a vision for decarbonization consisting of five initiatives.

Decarbonization Vision

We will promote decarbonization activities that simultaneously fulfill customer needs, provide integrated solutions to social challenges, and enhance the appeal of our products through the following five initiatives.

1. Reduction of CO_2 emissions centered on resource recycling
2. Reduction of CO_2 emissions throughout the entire supply chain through external collaboration
3. Simultaneous reduction of Scope 1, 2, and 3 emissions aimed at reducing the CFP of our products
4. Reduction of CO_2 emissions by utilizing our own materials technology
5. Contribution to nature-positive through CO_2 reduction and evaluation



Disclosure Based on the TCFD Recommendations

In accordance with the TCFD's recommendations, the Group will strive to proactively disclose information based on the disclosure framework of Governance, Risk Management, Metrics and Targets, and Strategy. We will also take concrete measures to address climate change.

TCFD | TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

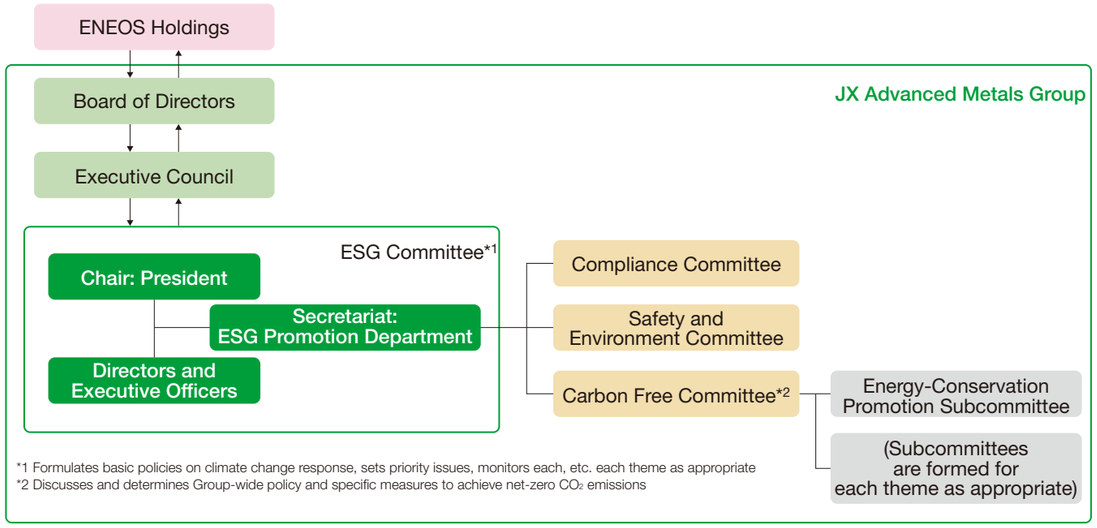
Governance

The ESG Committee, an advisory body to the president, is responsible for formulating basic policies regarding the Group's response to climate change, setting priority targets, and monitoring these targets. The ESG Committee is chaired by the president of the Company, with members from the Executive Council and with participation by outside directors as observers. This committee meets twice a year in principle. Matters deliberated and decided are discussed at and reported to the Executive Council and the Board of Directors as appropriate, depending on the content.

Risk Management

At the Group, the ESG Promotion Department works with each department to assess and identify risks and opportunities related to climate change, including scenario analysis, in accordance with the framework of the TCFD recommendations. The department recently collected and analyzed information for scenario analysis of a wide range of risk factors associated with climate change impacts, including regulations and business impacts. We also began to identify our own risks and opportunities related to climate change response, as well as medium- to long-term business strategy measures. The results of the analysis and the status of measure implementation are shared with management through the ESG Committee and other channels. Based on this, each department takes action in these areas in cooperation with the ESG Promotion Department.

Systems for Climate Change Action



*1 Formulates basic policies on climate change response, sets priority issues, monitors each, etc. each theme as appropriate
*2 Discusses and determines Group-wide policy and specific measures to achieve net-zero CO_2 emissions

Metrics and Targets

The Group has established our in-house CO_2 emissions (Scope 1 and 2) as an indicator of climate change and aims to achieve net-zero emissions by fiscal 2050. We have set an interim target of a 50% reduction by fiscal 2030 versus Scope 1 and 2 total in-house emissions in fiscal 2018, based on backcasting from our fiscal 2050 goal.

The JX Advanced Metals Group's Decarbonization Target

Reduce total in-house CO_2 emissions by 50% by fiscal 2030 versus fiscal 2018, achieve net zero by fiscal 2050

Strategy

1. Recognition of Climate Change-Related Risks and Opportunities

<Analysis of climate change-related risks and opportunities>

In identifying the risks and opportunities that climate change poses to our Group and businesses, and in considering strategies to address risks and capture opportunities, we referenced the International Energy Agency's (IEA) World Energy Outlook (WEO). Furthermore, we analyzed global warming scenarios from the United Nations Intergovernmental Panel on Climate Change (IPCC).

<Identified risks and opportunities>

Assuming a transition to a decarbonized society in the wake of climate change, the Group's businesses will play a major role in shifting the power generation mix to renewable energy sources, transforming power use in ways such as electrification, and achieving social implementation of the circular economy, and opportunities for increased product demand and evolution of our offerings are expected.

On the other hand, there are risks such as increased costs associated with the Group's own efforts to become carbon neutral on a global basis and lost opportunities due to delays in this process. In addition, there are potentially increased physical risks of extreme weather events damaging production facilities and logistics networks at operating sites in Japan and overseas, resulting in shutdowns.

Identified Risks and Opportunities

Category	Impact	Risk/Opportunity	Measures
Transition Risks	Policies and Regulations	Increased costs to achieve net-zero CO_2 emissions	● Reducing costs through the use of transition finance, energy-conservation activities, etc.
		Introduction and strengthening of carbon taxes, etc. in Japan and abroad	● Conversion to electricity derived from renewable energy sources, conversion to low-carbon footprint (low-CFP) and/or decarbonized fuels, and creating innovation and improvements in manufacturing processes
	Reputation	Loss of opportunity due to delayed action toward decarbonization and environmental impact reduction	● Developing technology and making capital investments for decarbonization and reduction of environmental impact ● Disseminating and achieving the Sustainable Copper Vision through the formation of cross-industry partnerships
Physical Risks	Acute	Damage to facilities and shutdowns due to extreme weather events	● Enhancement of our business continuity plans (BCPs) and regular training ● Establishing a Business Continuity Management (BCM)
Opportunities	Products	Increased demand for nonferrous metals needed for a decarbonized society (Base Businesses)	● Making businesses more resilient through portfolio review ● Establishing a stable supply system through the evolution of Green Hybrid Smelting ● Establishing a stable supply system by promoting resource recycling through the use of Green Hybrid Smelting ● Supplying of copper products with low CFP
		Increased demand for high-end electronic materials (Focus Businesses)	● Making capital investments to meet demand ● Engaging in open innovation through industry-academia collaboration and investment in startups
	Circular Economy	Realizing circular economy	● Making efforts to evolve Green Hybrid Smelting by increasing the recycling raw materials ratio ● Achieving resource recycling and decarbonization through the formation of cross-industry partnerships
		Increased demand for and mandated recycling of automotive LiBs	● Developing technologies, making capital investments, and engaging in industry-academia-government collaborations for LiB (lithium ion battery) closed-loop recycling ● Developing a system to improve resource efficiency by linking together the entire supply chain involved in the product lifecycle

2. Scenario Analysis

Assuming a transition to a decarbonized society in the wake of climate change, the Group's businesses will play a major role in shifting the power generation mix to renewable energy sources, transforming power use in ways such as electrification, and achieving social implementation of the circular economy. Opportunities for increased product demand and the evolution of our offerings are also expected.

On the other hand, there are risks such as increased costs associated with the Group's own efforts to become carbon neutral on a global basis and lost opportunities due to delays in this process. In addition, there are potentially increased physical risks of extreme weather events damaging production facilities and logistics networks at operating sites in Japan and overseas, resulting in shutdowns.

1. Transition Risks

① Increased costs to achieve net-zero CO_2 emissions

Electricity accounts for approximately 60% of our Group's total CO_2 emissions (Scope 1 and 2), and we are switching to CO_2-free electricity at our major operating sites in Japan and overseas. We are also considering measures to generate renewable energy on our own and to address energy sources other than electricity used in our manufacturing processes.

Although additional costs are incurred in the necessary initiatives to achieve this, in the form of capital investment, R&D expenses, and the price difference (premium) between CO_2-free electricity and traditional electricity, we will steadily move toward decarbonization through the use of transition financing, a first in the nonferrous metals industry, and by reducing costs through energy-conservation activities.

② Introduction and strengthening of carbon taxes, etc. in Japan and abroad

Carbon taxes are being considered for introduction in Japan and abroad. If these or other systems are introduced, there is a risk of cost increases based on CO_2 emissions. If a carbon tax is introduced, the annual cost increase is expected to be approximately 7 billion yen.

The Group has established a roadmap toward carbon neutrality and is steadily implementing various initiatives to reduce CO_2 emissions, so the cost burden is expected to be relatively insignificant.

* Fiscal 2018 Scope 1 and 2 emissions x 50% (2030 target): CO_2e x USD50/t- CO_2e x assumed exchange rate

③ Loss of opportunity due to delayed action toward decarbonization and environmental impact reduction

If CO_2 emission reductions do not proceed according to the roadmap or if other environmental impacts increase, there is a risk that the Group may suffer harm to our social credibility. In addition, delays in responding to climate change-related requests from customers could result in reduced sales opportunities.

The Group pursues steady decarbonization initiatives and responds to individual customer requests. We also develop technologies and make capital investments to reduce our carbon footprint (CFP) and increase the percentage of recycled raw materials in accordance with the Sustainable Copper Vision. We are also building partnerships with external parties to achieve and disseminate the Sustainable Copper Vision.

2. Physical Risks

① Damage to facilities and shutdowns due to extreme weather events

Extreme weather conditions, including intensifying typhoons, increase the risk of domestic and international production sites, suppliers, and logistics networks being affected, leading to potential disruptions in normal operations. The Group has conducted analyses using hazard maps and other data at our major operating sites in Japan and confirmed that the risk of damage from extreme weather events is low. In addition, we have established business continuity plans (BCPs), and conduct periodic training and reviews to promote the establishment of Business Continuity Management (BCM). We believe that these measures will keep the impact on our business to relatively minor levels even if the risk of damage to facilities or shutdowns due to extreme weather events materializes.

3. Opportunities

① Increased demand for copper needed for a decarbonized society (Base Businesses)

Needs for renewable energy and electrification of mobility are expected to grow significantly toward the realization of a decarbonized society, and copper will be increasingly used in these areas. This growing demand is expected to provide opportunities for further sales and revenue growth for the Group. The Group is working to strengthen our business through portfolio reviews, and is taking various measures to increase the input recycling raw materials ratio and reduce our CFP in Green Hybrid Smelting, which utilizes both copper concentrate and recycled raw materials, in order to establish a stable supply system.

The supply of electrolytic copper and electronic materials with a high ratio of recycled raw materials and low CFP realized through these efforts will contribute not only to the realization of a resource-recycling society but also to the strengthening of our business competitiveness.

② Increased demand for high-end electronic materials (Focus Businesses)

In addressing climate change, it is essential to significantly improve energy use efficiency using technologies such as IoT, AI, and 5G/6G. Many high-end electronic materials are used in these fields, and demand for these materials is expected to continue to grow. The Group has a product lineup with a strong global market share in the electronic materials field, including sputtering targets and treated rolled copper foil for FPC.

Currently, we are constructing several new plants and increasing capacity to meet strong demand. In addition, we are working to construct a new plant in Hitachinaka City, Ibaraki Prefecture, and in and Mesa City, Arizona, the U.S., in anticipation of further growth in demand. In addition to these capital investments, from a longer-term perspective, the Advanced Technology & Strategy Department is taking the lead in open innovation through industry-academia collaboration and investment in startups.

③ Realizing circular economy

Though demand for copper will continue to grow over the long term as the world moves toward a decarbonized society, the supply of copper ore and recycled raw materials from existing mines is limited.

The Sustainable Copper Vision we have established aims to build a stable supply system to support growing copper demand through Green Hybrid Smelting that utilizes both copper ore and recycled raw materials. As one of our measures to evolve and gain wider use of sustainable coppers, we are working on technological development to increase the recycled raw materials ratio (input ratio of raw materials or content ratio in products) to 50% or more by 2040. To this end, it is essential to enhance our system for collecting and processing recycled raw materials. Here, we will not only strengthen the supply chain through capital investment and M&A, but also form Green Enabling Partnerships with companies, local governments, universities, and research institutions who work together to promote sustainable copper. Through these partnerships, we engage in product and scrap collection, raw materials reuse, and joint technology development.

By utilizing not only our own resources but also the global network and knowledge of our partners, we will strengthen the collection of recycled raw materials and collaborate with recyclers in Japan and abroad to reform and digitize recycling processes.

④ Increased demand for and mandated recycling of automotive LiBs

Electric vehicles (EVs) are expected to become widespread as part of a decarbonized society. This will increase demand for lithium, cobalt, and nickel used in lithium-ion batteries (LiBs) in EVs. There are also concerns about geopolitical risks and rising resource nationalism surrounding these resources. Future large-scale disposal of LiBs is also expected, requiring their efficient recycling.

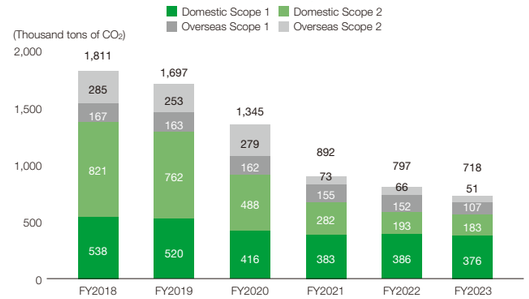
The Group is working to develop technologies, conduct demonstration trials, and establish a resource recycling system throughout the supply chain with the aim of realizing closed-loop recycling to extract the aforementioned metals from automotive LiBs reaching end of life (EoL) in as automotive battery materials.

Current Status of CO_2 Emissions

Reduction of CO_2 Emissions (Scope 1 and 2)

Toward our goals of reducing our total in-house CO_2 emissions by fiscal 2030 and fiscal 2050, we are working on the introduction of CO_2-free electricity, generation of renewable energy, promotion of zero energy loss activities, and fuel switching and technology development toward decarbonization. Our in-house CO_2 emissions in fiscal 2023 (total of Scope 1 and 2) were 718 thousand t- CO_2.

JX Advanced Metals Group Scope 1 and 2 Emissions



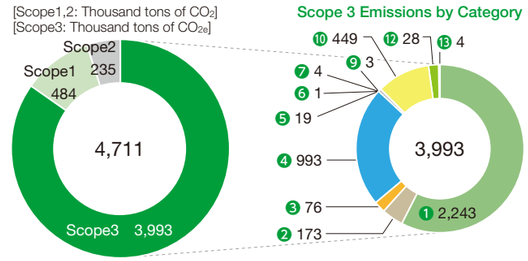
Calculation of CO_2 Emissions (Scope 3)

In addition to existing data for Scope 1 and 2 CO_2 emissions, in fiscal 2021, the Group began calculating indirect Scope 3 emissions in order to determine the overall CO_2 emissions generated by our operations and products. We are currently studying ways to improve calculation methods and accuracy for each category, as well as to establish and implement the emission reduction roadmap.

Scope 3 Categories

❶ Purchased goods and services ❷ Capital goods ❸ Fuel- and energy-related activities not included in Scope 1 or 2 ❹ Upstream transportation and distribution ❺ Waste generated in operations ❻ Business travel ❼ Employee commuting ❽ Upstream leased assets ❾ Downstream transportation and distribution ❿ Processing of sold products ⓫ Use of sold products ⓬ End-of-life treatment of sold products ⓭ Downstream leased assets ⓮ Franchises ⓯ Investments

Scope 1, 2, and 3 Emissions (FY2023 results)



Scope 1 and 2 emissions are calculated for operating sites of high quantitative importance. Scope 3 emissions are calculated mainly for operating sites where production activities are conducted, and the scope of calculation is different for each category.
* Due to obtaining third-party assurance for Scope 3, some numerical data has been revised. (Updated in March 2025)
* For details on the calculation criteria for Scope 3, please refer to P125.

TOPICS Introduced EV Buses for Commuting to Isohara Works

In October 2023, we introduced a new EV bus at the Isohara Works (Kitaibaraki City, Ibaraki Prefecture) as part of our efforts to reduce Scope 3 emissions.

The Isohara Works is located in the northern part of Ibaraki Prefecture, an area where commuting by car is the norm. We have been encouraging employees who drive their own cars to work to use public transportation to reduce CO_2 emissions and ease traffic congestion on surrounding roads. Starting in April 2023, we implemented a policy to provide special fare allowances for commuting on the JR Joban Line. We are also working to reduce CO_2 emissions while commuting by introducing an EV bus as a means of transportation between the Isohara Works and JR Isohara Station, the nearest station to the Isohara Works. In response to increased demand during work commutes, an additional EV bus of the same model was added to the fleet in April 2024, so that two buses are currently in operation.

These efforts have led to a reduction in CO_2 emissions that fall under Scope 3, Category 7. In addition to being used for commuting, the buses are also used to take visitors to and from the plant, and in the future, we plan to use the buses for a variety of other purposes inside and outside the plant, including at local events.

EV buses introduced at the Isohara Works

Examples of Initiatives Toward Achieving Net Zero

Initiative① Activities of the Carbon Free Committee

The Carbon Free Committee was established in fiscal 2022 as an organization to discuss and decide on company-wide policies and specific measures to achieve net zero CO_2 emissions. The committee is led by the ESG Promotion Department and includes executives from each business division and production site, the Technology Group, and management from each Group company. Since its establishment, the committee has been considering decarbonization and resource recycling measures that contribute to enhancing our business competitiveness and added value from a comprehensive and strategic perspective toward achieving CO_2 net zero. We are accelerating our efforts with a focus on the early realization of Carbon-Neutral Plants (achieving net zero for Scope 1 and Scope 2 emissions at production sites). Specifically, we are considering electrification of steam boilers, utilization of hydrogen and ammonia as alternatives to city gas, early introduction of biofuels, and introduction of CO_2 capture and utilization facilities.

In addition to these measures, the Carbon Free Committee is also working to reduce Scope 3 CO_2 emissions to realize the JX Advanced Metals Group's Decarbonization Vision.

Initiatives at Each Site to Realize the Decarbonization Vision

Operating sites	Theme [Progress]
Isohara Works	Electrification of steam generation [Consideration of equipment specifications and installation space requirements]
Kurami Works	Hydrogen and ammonia alternatives to city gas [Consideration of collaboration with external organizations and companies]
Saganoseki Smelter & Refinery, JX Metals Smelting Co., Ltd. Hitachi Works	CO_2 capture and utilization (CCUS) [Consideration of collaborators for CO_2 concentration measurement and capture, equipment specifications, and installation space requirements]
Kasuga Mines Co., Ltd.	Decarbonization of heavy equipment [Research on electric heavy equipment and testing of biofuels as an alternative to diesel]

Initiative② Initiatives for Decarbonized Electricity

Since approximately 60% of the Group's in-house CO_2 emissions (Scope 1 and 2) come from electricity, we began introducing CO_2-free electricity*1 in fiscal 2020. In fiscal 2023, the switch to CO_2-free electricity was completed at most operating sites in Japan and overseas. We are also engaged in generating our own renewable energy.

To date, we have introduced hydroelectric, and solar power generation facilities at our operating sites in Japan and overseas. In April 2023, we implemented solar power generation using an off-site PPA model*2 for Kurami Works. This is the first time for the Group to adopt an off-site model outside a plant site. We expect power generation on the order of 9,000 kW (solar panel basis), making it one of the largest single-facility, off-site PPA model solar power generation systems in Japan.

In April 2024, we launched the largest on-site PPA solar power generation system within the Group at JX Metals Tomakomai Chemical Co., Ltd. The company is in the recycling business and contributes to resource recycling by using renewable energy created through the effective utilization of idle land at its business sites.

*1 CO_2-free electricity: Electricity derived from virtually non-fossil-fuel power sources, etc., that does not result in CO_2 emissions, with an adjusted CO_2 emission factor of 0.00 t- CO_2/kWh. This may include nuclear power as well as renewable energy such as hydro, wind, solar, etc.
*2 PPA: Power Purchase Agreement. A system in which a company or other facility owner leases its premise, roof, or other space, a power company installs a solar power generation system, and the facility owner uses the power generated and pays a fee

Solar power generation system installed by a PPA operator

Renewable Energy Facilities and Total Electricity Generation (Fiscal 2023) (Thousands of kWh)

Site	Method	Generated
Kakinosawa Power Plant, JX Advanced Metals Corporation,	Hydroelectric	23,336
JX Advanced Metals Corporation, Kurami Works (Off-Site)	Solar	6,142
Kurami Works	Solar	25
Isohara Works	Solar	280
Wakamatsu Plant, Toho Titanium Co., Ltd.	Solar	367
Nikko Metals Taiwan Co., Ltd.	Solar	218
Nippon Mining & Metals (Suzhou) Co., Ltd.	Solar	66
JX Metals Korea Co., Ltd.	Solar	146
Japan Copper Casting Co., Ltd.	Solar	6

Initiatives③ Promotion of Zero Energy Loss Activities

As a Group that operates electricity-intensive businesses, we have been promoting energy conservation activities at every stage of our business activities for some time. However, we believe it is now necessary to promote zero energy loss activities from new angles in order to achieve net-zero CO_2 emissions. For example, the Energy-Conservation Promotion Subcommittee is leading initiatives to achieve zero energy loss, such as updating facilities with a focus on CO_2 reduction that goes beyond cost reduction, and fundamentally reviewing facility operation methods.

Initiative④ Fuel Switching and Technology Development Toward Decarbonization

In addition to electricity, our business processes use heavy oil, coke as a reducing agent, and other energy sources, and we are working to reduce CO_2 emissions from these sources. One candidate to achieve this is fuel switching. Industry is developing technologies for new fuels such as hydrogen and ammonia, and we are also considering their utilization within our Company.

In 2023, we conducted a demonstration test for the marine transportation of copper slag*2 using biodiesel fuel*1—marking the first such initiative in the domestic non-ferrous metals industry—in collaboration with our group companies, Pan Pacific Copper Co., Ltd. and Iino Kaiun Kaisha, Ltd. The voyage was successfully completed as scheduled on September 10. On this voyage, copper slag handled by Pan Pacific Copper Co., Ltd. was loaded onto Bright Hope, a cargo ship operated by Iino Kaiun. It was then transported from a smelter in Japan to Malaysia, using biodiesel fuel refined from waste cooking oil and renewable fats and oils. The use of this biodiesel fuel contributes to the reduction of greenhouse gas emissions generated during the Well to Wake (from production well to voyage) *3 process.

In May 2024, we launched a demonstration test of mixing biofuel*4 with fuel (diesel oil) for in-house power generation equipment used at Kasuga Mines Co., Ltd. Based on the results of the demonstration test, we will consider applying the technology to heavy machinery used by the company and operating with 100% biofuel. The silicate ore produced by the company is used at the JX Metals Smelting Co., Ltd. Saganoseki Smelter & Refinery. This not only reduces the company's CO_2 emissions, but also contributes to reducing the carbon footprint (CFP) of electrolytic copper.

*1 In this demonstration test, we used biodiesel fuel that has received the International Sustainability & Carbon Certification (ISCC), specifically Fatty Acid Methyl Ester (FAME), blended at approximately 24% with low-sulfur heavy fuel oil (VLSFO)
*2 A byproduct of the copper smelting process, it has a low CO_2 load and is recycled as a raw material for cement and sandblasting materials
*3 Emissions generated throughout the fuel consumption cycle, meaning the process of fuel production, transportation, and use on board ships
*4 In this demonstration test, approximately 20% hydrogenated vegetable oil (HVO) was mixed with diesel oil

Cargo ship *Bright Hope*

Initiative⑤ Developing a Transition-Linked Loan Framework as the First Such Endeavor in the Japanese Nonferrous Metals Industry

Currently, expectations are growing for transition-linked loan frameworks (TLL) to serve as a mechanism to support the implementation of long-term transition strategies by industries with significant GHG emissions, and rules are being developed in Japan and overseas to this end.

In June 2022, the JX Advanced Metals Group became the first in the Japanese nonferrous metals industry to develop a transition-linked loan framework (TLLF) with support from Mizuho Bank, Ltd. Based on the framework we have formulated, the Company entered into a TLL agreement with Joyo Bank, Ltd. in June 2022. This is the first TLL project in the domestic non-ferrous metals industry.

Initiative⑥ Full Participation in the GX League

The GX League, led by the Ministry of Economy, Trade and Industry (METI), is a framework for industry, government, and academia to collaborate in the challenge of Green Transformation (GX) with a view to achieving carbon neutrality by 2050 and reforming Japan's entire economic and social system. We participate in GX activities, and we expressed our support for the GX League Basic Concept. We announced our participation in Phase 1, covering fiscal 2023 to fiscal 2025.

Phase 1 will include proof-of-concept tests and dialogues regarding three initiatives: (1) A platform for the future vision, (2) A platform for market creation and rulemaking, and (3) A platform for carbon credit exchange. JX Advanced Metals will participate actively in discussions and information exchange toward the achievement of GX.

Initiative⑦ Introduction of Internal Carbon Pricing

The Group operated the ESG Investment Framework program during the two-year period from fiscal 2021 to fiscal 2022. The program introduced the concept of internal carbon pricing with the main objective of encouraging manufacturing site-driven ESG investments (investments that contribute to reducing CO_2 emissions, resource recycling promotion, and energy conservation). As a result of soliciting ideas widely within the Group, about 50 ESG-related investments totaling several billion yen have been implemented.

Based on the recognition that bottom-up ESG investment has progressed and run its course to a certain degree, the Group is working on technological research, idea aggregation, and priority evaluation for ESG investment from a company-wide perspective. Our aim is early realization of a carbon-neutral plant, as defined by the Carbon Free Committee mentioned above.

Nature-Positive

The Group is committed to various initiatives aimed not only at conserving the natural environment but also at halting the loss of ecosystems on Earth and putting them on a path to recovery, in line with our goal of achieving Nature-Positive.

Nature-Positive Vision

We have re-evaluated our previous efforts and created the following Nature-Positive Vision and roadmap as a guiding framework to further advance our initiatives aimed at achieving nature-positive.

Nature-Positive Vision

We recognize that the Group's business activities depend on and impact nature. We are committed to promoting initiatives that reduce negative impacts and create positive ones.

1. Understand the relationship between the Group's business activities and nature, and respond adaptively to improve those business activities
2. Actively promote initiatives to create a decarbonized, recycling-oriented society that contributes to nature-positive
3. Appropriately disclose nature-related information pertaining to the Group
4. Promote initiatives for the conservation and restoration of biodiversity through dialogue and collaboration with stakeholders

Relationship Between Business Activities and Nature

In order to specifically advance our efforts to achieve nature-positive, we qualitatively assessed and evaluated the relationship of the Group's business activities with nature, utilizing existing tools such as ENCORE*. As a result, we recognized that the Group's direct operations impact nature through land use, water intake, and discharge in operations and the supply chain, while also relying on ecosystem services.

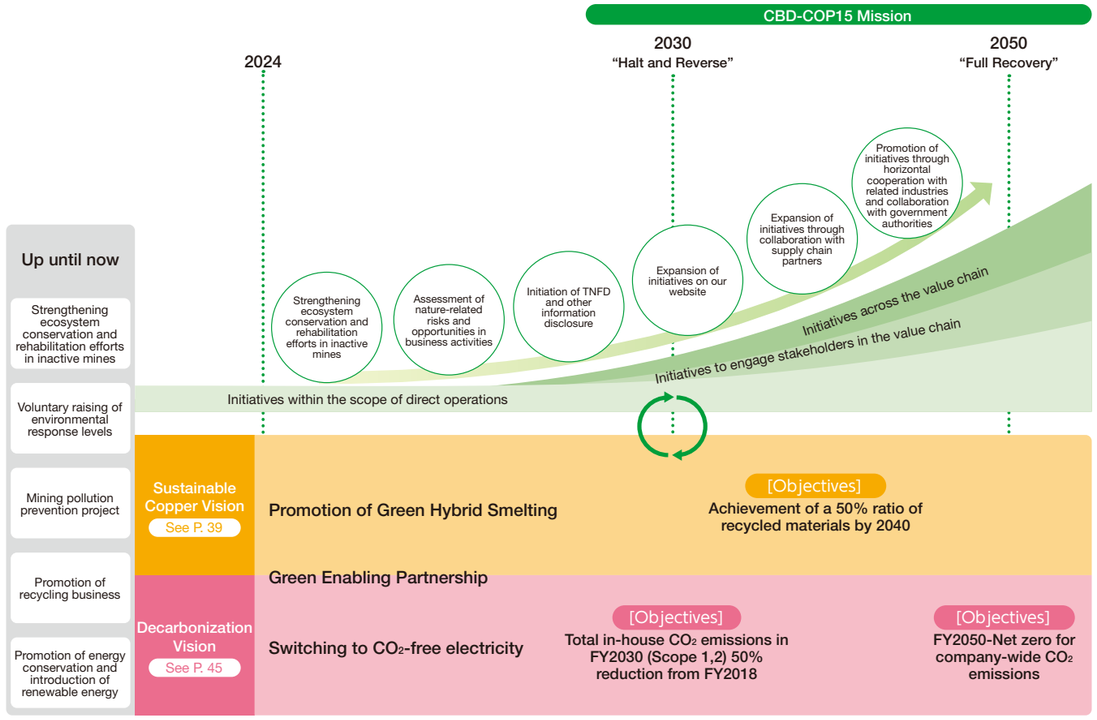
Considering our ongoing forest management activities and other initiatives, we comprehensively evaluated the significance of our relationships with nature. We determined that the connection through the management of inactive mines is the most substantial. Going forward, we will focus our efforts on achieving nature-positive primarily through activities related to inactive mines. Additionally, we will work on identifying business activities and nature-related challenges using location-specific data, setting targets, and ensuring appropriate information disclosure in line with the final recommendations of the TNFD.

*Exploring Natural Capital Opportunities, Risks and Exposure (ENCORE): A tool developed by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) that visualizes dependencies and impacts on natural capital

Roadmap for Achieving Nature-Positive Across the JX Advanced Metals Group

First, we will build a model for ecosystem conservation and restoration efforts in inactive mines. We will then expand our efforts to all of our business activities to disclose information in line with the TNFD and other disclosure frameworks. Furthermore, we aim to provide materials with low CFP and low impact on the natural environment by expanding the use of recycled raw materials, in conjunction with our efforts under the Sustainable Copper Vision and the Decarbonization Vision. Through these activities, we will work to manage the impact on nature throughout the entire materials supply chain.

Roadmap for Achieving Nature-Positive Across the JX Advanced Metals Group



Significance of Initiatives at Inactive Mines

It is essential to maximize the functions of ecosystems through the conservation and restoration of biodiversity in order to achieve nature-positive. The Group's inactive mines, which occupy a vast area of Group-owned land, are predominantly covered by forest. They play a vital role in the local ecosystem by serving as a water source and habitat for various plant and animal species. Therefore, we believe that there is great potential to contribute to the conservation and restoration of biodiversity through appropriate management of inactive mines as ecosystems. We will first implement our efforts in the field at inactive mines.

Forests around the Hitachi Mine where vegetation has recovered

Autumn leaves around Toyoha Mine

Achieving Nature-Positivity in Inactive Mines

Reassessment of Natural Assets That Contribute to the Achievement of Nature-Positive

While we have supported the Japanese economy through our mining operations, we are aware that our business activities have had an impact on the ecosystem. Aware of this issue, the Group has actively pursued environmental measures since launching operations. Even after closure of the mines, we have implemented proper management practices, such as treating mine wastewater, along forest restoration activities.

As the conservation and restoration of ecosystems become increasingly recognized as global challenges, the Group is re-evaluating the potential of inactive mines as natural capital. We will not only continue established practices such as wastewater treatment and forest management, but also actively promote initiatives aimed at biodiversity conservation, vegetation management, and the contribution to solving local issues through leveraging natural functions.

Through these initiatives, we aim to redefine our inactive mines as a Positive Legacies that contribute to a nature-positive approach for the community and society, while promoting the recovery of ecosystems.

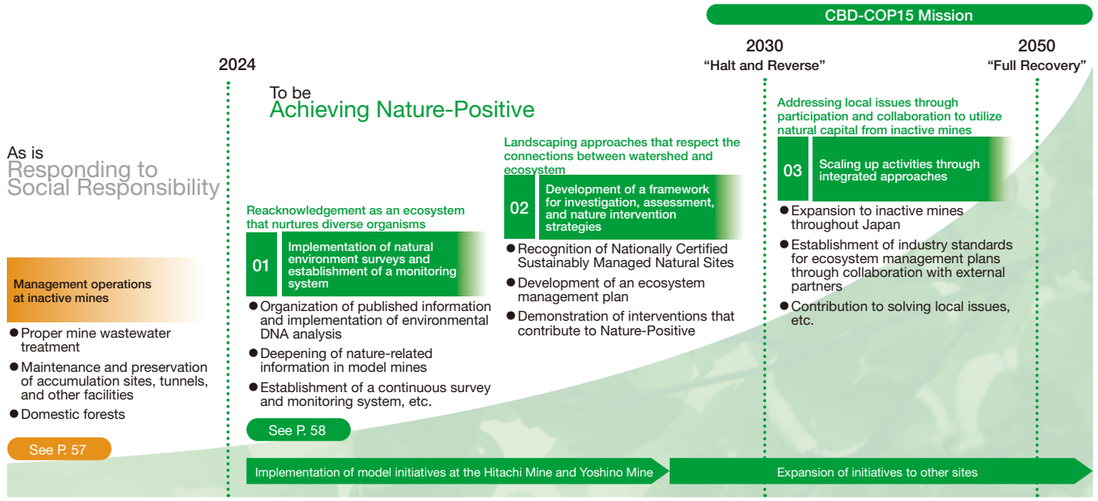
Past and Future Progress at Inactive Mines

Roadmap to Achieve Nature-Positive

While continuing our previous efforts, we will focus on achieving nature-positive by first targeting Hitachi Mine and Yoshino Mine as model sites. We will evaluate the ecosystems and ecosystem services in the watersheds where these closed mines are located. Building on the initiatives at the model sites, we will create an ecosystem management plan that systematically outlines the desired states of the ecosystems in the inactive mines and the actions required to achieve that. This will mark the start of our comprehensive efforts to manage ecosystems in these inactive mines.

In the future, we will scale up our efforts to address local issues by leveraging the ecosystem services at the inactive mines, working collaboratively with regional stakeholders. At the same time, we aim to create a more positive impact on the natural environment by expanding the initiatives from the model sites to other mines.

Roadmap for Achieving Nature-Positive at Inactive Mines



Initiatives From FY2023 to Today

Evaluation of Inactive Mines From a Biodiversity Perspective

The ecosystem of an inactive mine consists mainly of terrestrial ecosystems, such as forests and grasslands, and aquatic ecosystems, such as streams and rivers. To achieve nature-positive, we first analyzed the terrestrial ecosystem condition from a vegetation perspective at 19 inactive mines for which location-area information was available. As a result, the inactive mines evaluated this time were broadly classified into three types: (1) natural forests, (2) natural forests and planted forests, and (3) planted forests and grasslands.

The vegetation map from the Ministry of the Environment was organized using the national standard land use map legend of Ogawa et al. (2020), integrating it into four categories: natural forests, planted forests, grasslands, and other.
Ogawa Mifuyu, Matsuzaki Sayoko, Ishihama Fumiko (2020). Creation of a Legend for Nationwide Standard Land Use Mesh Data Corresponding to the Ministry of the Environment's 1/25,000 Vegetation Map Legend. Conservation Ecology Research, 25: 117-122.
https://doi.org/10.18960/hozen.1908

Implementation of Environmental DNA Analysis at Model Sites (Yoshino Mine and Hitachi Mine)

Next, to implement initiatives aimed at achieving nature-positive, we selected two model sites: Yoshino Mine and Hitachi Mine. This decision was based on an assessment of the state of terrestrial ecosystems, such as forests, the area of the inactive mines, and the feasibility of proposed initiatives. To gain a more multifaceted understanding of the ecosystem at the model site, we conducted an environmental DNA analysis of the aquatic ecosystem.

As a result, in the Miyata River basin where Hitachi Mine is located, 6 orders, 11 families, and 22 species of fish were identified. Fish species that thrive in relatively good water quality (Salvelinus Cottus pollux etc.), as well as migratory fish (Sicyopterus japonicus and Rhinogobius), were also identified. This suggests that the ecosystem in the Miyata River basin may be showing signs of recovery.

In the Yoshino River basin where the Yoshino Mine is located, 24 species of fish in 5 orders and 9 families, including endangered species, were identified. It has been confirmed that the ecosystem in this river basin supports a fish fauna typical of the upper reaches of the Mogami River system.

*Please note that the water sampling was conducted at multiple sites and multiple times during the spring and summer, but the results and interpretations are provisional. Moving forward, we will establish monitoring methods for the ecosystems surrounding the inactive mines using environmental DNA analysis. By aiming for the conservation and restoration of these ecosystems, we will contribute to achieving nature-positive in the region.

Organisms Found in the Water Samples


A species of Appasus japonicus


Zhangixalus arboreus


Calopteryx atrata


Hydrophilus acuminatus

Water Sample Extraction (Yoshino Mine Area)

How Environmental DNA Aquatic Life Surveys Work

What is Environmental DNA?
DNA that is released into the environment by organisms such as fish, amphibians, birds, and mammals.

Methods of Investigation Using Environmental DNA
Extraction and detection of Environmental DNA from water collected at the target site. Detection methods can be broadly classified into those that target only a single species and those that detect specific taxonomic groups (e.g., fish) collectively.


Source: Pacific Consultants Co., Ltd.

Other Initiatives for Environmental Conservation

The Group recognizes that our daily business activities are supported by the natural environment and the benefits of ecosystems, and we are committed to proactive environmental conservation efforts.

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. 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. Each manufacturing site has established voluntary standards that are stricter than the emission standards specified by laws and ordinances, and appropriately manages operations to ensure that the standards are not exceeded.

Water Risk Assessments at In-House Plants

The Group assesses and confirms how water risks, such as water shortages, water pollution, and flooding associated with climate change, affect each production site. We use Aqueduct Water Risk Atlas, a water risk assessment tool provided by the World Resources Institute (WRI), to identify what water risks are present. In fiscal 2023, we assessed six of our main production sites in Japan. None of the sites were found to have high water risk in the assessment.

Proper Management of Chemical Substances

The Group has voluntarily established chemical substance management standards, and we strive to mitigate the harmfulness of these substances by 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 treating low-concentration PCBs, which helps to neutralize hazardous waste.

We are also proceeding with treatment of Group-owned high-concentration PCB equipment at the Japan Environmental Storage & Safety Corporation (JESCO). We plan to complete the treatment of this equipment by the prescribed deadline. In addition, we are planning the disposal of equipment with low-concentration PCBs through licensed low-concentration PCB treatment contractors such as JX Metals Tomakomai Chemical Co., Ltd.; this disposal is scheduled to be completed by fiscal 2024, two years before the disposal deadline.

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

Management Operations at Closed Mines

Since our founding in 1905, the JX Advanced 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. In Japan, 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 preserve the natural environment.

JX Nippon Mining Ecomanagement, Inc. oversees the closed mines managed by the Company. The work mainly consists of detoxifying acid mine drainage (AMD) 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 copper concentrates remaining after the mine is closed or the rubble and slag of tailings dams. Since AMD contains metals and is highly acidic, treatment facilities have to operate 365 days a year. As for tailings dams, construction is underway to handle the recent flooding in areas of frequent rainfall and to adapt to large earthquakes. Through the management of these closed mines, we are striving to preserve the natural environment.

The drainage canal of the Toyoha Mine Ishiyama tailings dam, completed in FY2022

Environmental Management

JX Advanced Metals Group Basic Environmental Policy

As a comprehensive manufacturer of nonferrous metals and advanced materials, the JX Advanced 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 2023, 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.

Establishing an Environmental Management System

The JX Advanced 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 2023.

Operating Sites That Have Obtained ISO 14001 Certification (as of March 31, 2024) **39 offices (23 in Japan, 16 overseas)**

Environmental and 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 Department of the Head Office. Audits were conducted at 17 business sites in fiscal 2023. 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.

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. These guidelines contain requirements with which we ask our business partners to comply. These conditions apply to all suppliers. We confirm supplier compliance with these guidelines through our CSR Procurement Questionnaire survey.

Materiality 2

S Provide Advanced Materials That Support Lives and Lifestyles

Copper and a variety of minor and precious metals have supported the evolution of electronic devices. The JX Advanced 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.

Contributing to Sustainable Societies Through Advanced Materials ▶ P.60
Pursuing Digital Transformation (DX) ▶ P.65
Pursuing Open Innovation ▶ P.68
Building a Development Framework and Fostering Development Personnel ▶ P.70
Efforts to Cultivate the Next Generation ▶ P.73

KPIs and Progress

Assessment: ☺ Achieved / Steady Progress ☹ Not Achieved

KPI	FY2023 Results/Progress	Assessment
Develop advanced materials needed by the IoT/AI society	We made changes and improvements to the organizational structure to promote the development and commercialization of crystal materials, which are attracting attention for their use in next-generation semiconductor materials and information and communication applications. Furthermore, we pursued open innovation by investing in startups and conducting joint research with universities to develop advanced materials necessary for an IoT/AI society.	☺
Build a framework to support technology-based management	With the goal of continuously generating innovative technologies and products for technology-based management, we have advanced our initiatives for creating new development themes and advancing commercialization. In addition, we worked on cultivating research and development talent capable of creating new innovations and promoting diversity in our workforce.	☺

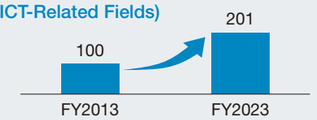
Contributing to Sustainable Societies Through Advanced Materials

Develop Niche Top Products in Line With Next-Generation Trends

The JX Advanced Metals Group pursues the development of niche top in line with next-generation trends, leveraging a robust R&D structure and elemental technologies cultivated over more than 100 years since our founding. We also endeavor to identify new market needs based on strong relationships with customers.

Sources of New Product Development Capabilities

Strong R&D Structure: Number of Patents Held (Semiconductor and ICT-Related Fields)



* Indexing the number of patents held in fiscal 2013 as 100

×

Elemental technologies cultivated over more than 100 years since our founding
- Purification, surface design, composition, analytical evaluation, etc.

×

Identifying new market needs based on strong relationships with existing customers

Major Product Lines in Focus Businesses

Sputtering Target for Semiconductors

Treated Rolled Copper Foil for FPC

High Performance Copper Alloys

High-Purity Tantalum Powder

Products Expected to Become Next-Generation Profit Pillars

Crystal and Photonics Materials

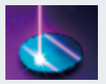
InP Wafer

CdZnTe Substrate

Next-Generation Semiconductor Materials

CVD/ALD Materials for Semiconductors

Materials for Lithography and Photomasks



Two Core Products Supporting the Foundation of Society

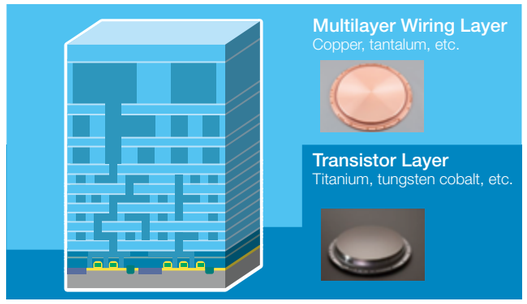
① Sputtering Target for Semiconductors

This material is used to form fine wiring within semiconductor devices such as logic and memory devices. We offer a wide variety of sputtering targets, including copper, tantalum, titanium, tungsten, and cobalt, all of which hold the world's No. 1* market share.

Semiconductors are becoming increasingly advanced every year, and consequently, there is a demand for high-quality sputtering targets that can form finer wiring. We have established strong relationships built on trust with semiconductor manufacturers and semiconductor equipment manufacturers through the stable supply of high-quality products, and further growth in the scale of our business is anticipated in the future.

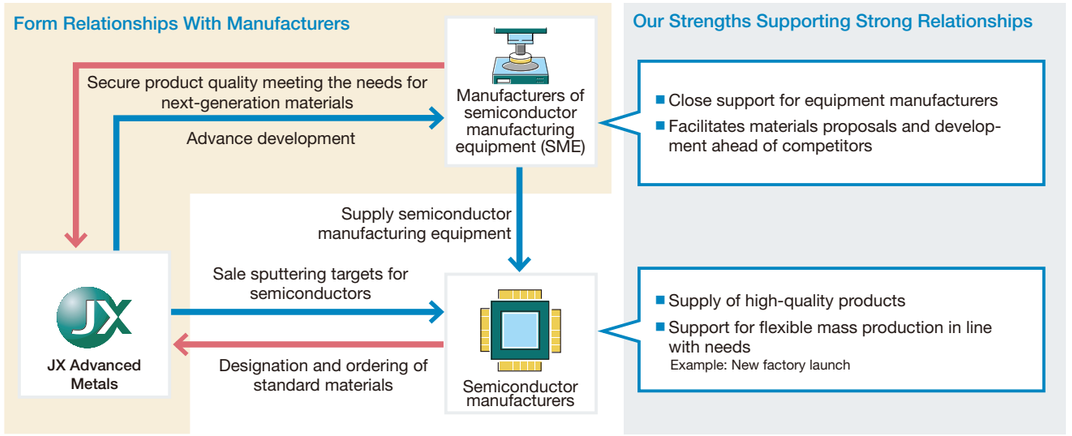
* We prepared this information based on a survey conducted by an external research organization at our request (2021 results based on the sales value of the Company's share of the semiconductor target market).

Schematic Diagram of Sputtering Target Adoption (Cross-Sectional View of Logic Semiconductor)



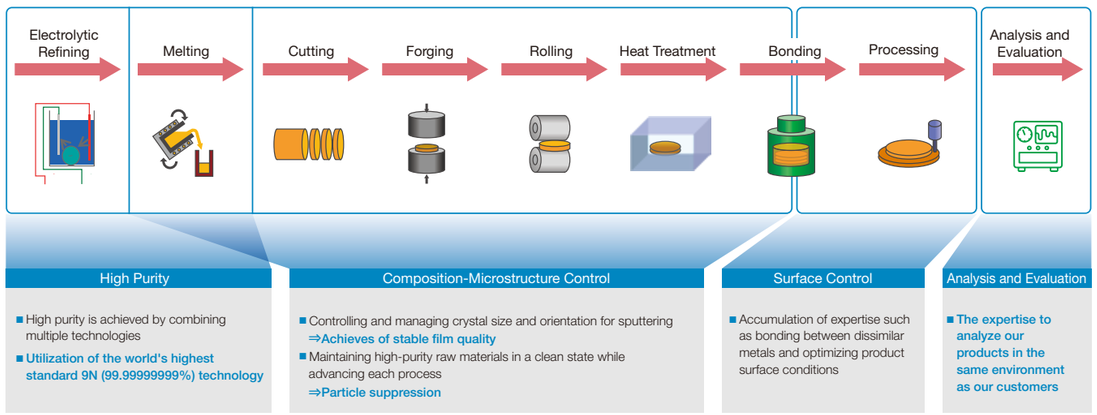
Point 1 Strong Relationships With Semiconductor and Semiconductor Equipment Manufacturers

Business Model Diagram of Sputtering Targets for Semiconductors



Point 2 Superior Technology Used to Manufacture Sputtering Targets for Semiconductors

Manufacturing Process for Semiconductor Sputtering Targets

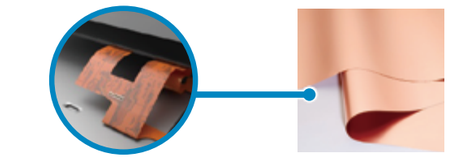


② Treated Rolled Copper Foil for FPC

Treated rolled copper foil is used in flexible printed circuit boards (FPC). This copper foil is a wiring material that can be bent to connect components inside smartphones, contributing to miniaturization and longer life. In the future, in addition to the further advancement and miniaturization of components for smartphones and PCs with the incorporation of AI, the use of these components is expected to expand through peripheral devices such as smartwatches and smart glasses. We have secured our position as a leading vendor, maintaining a competitive advantage through a market development approach that allows us to launch products ahead of competitors by identifying development needs quickly based on strong relationships with end users.

Source: *2023 Handbook of New Materials for Electronics Implementation*, Fuji Chimera Research Institute (2022 results; FPC only; based on shipping volume)

Example of the Adoption of Rolled Annealed Copper Foil



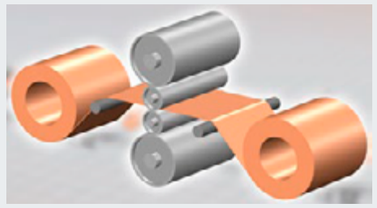
Point 1 The Superior Bending Resistance of Our Treated Rolled Copper Foil

Manufacturing Process

Copper ingots are rolled and heat-treated repeatedly to produce extremely thin copper foil.

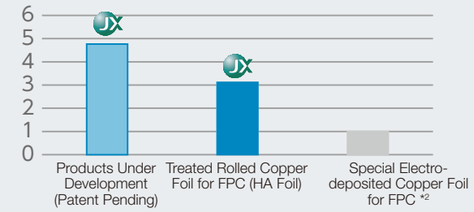
Advantages

Compared to electrodeposited copper foil, which is commonly used for rigid circuit boards, etc., it is more resistant to flexion.



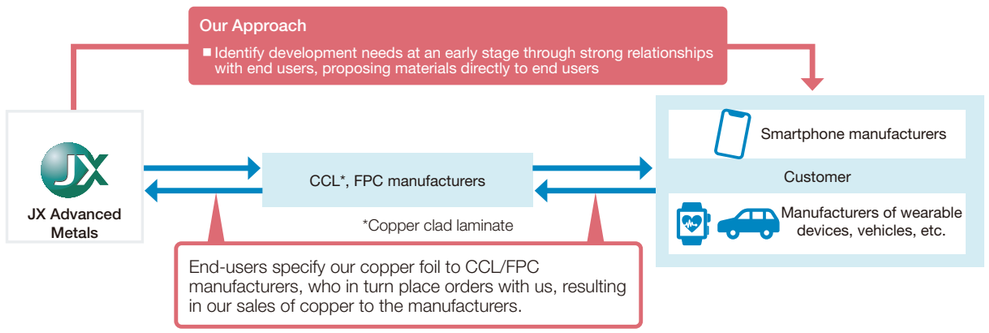
Excellent Flexibility of Treated Rolled Copper Foil

Number of bending cycles until fatigue life based on bending test *1 (indexed with special electrodeposited copper foil as 1)



*1:Standard test method for FPC bending resistance in accordance with the standards set by IPC *Association Connecting Electronics Industries* (a printed circuit industry organization in the U.S.) and JIS standards.
*2:Electrodeposited copper foil that corresponds to Grade 10 *Electro-deposited low temperature annealable* of the IPC standard IPC-4562A, *Metal Foil for Printed Board Applications*, which is the most widely used standard in the printed circuit industry globally.

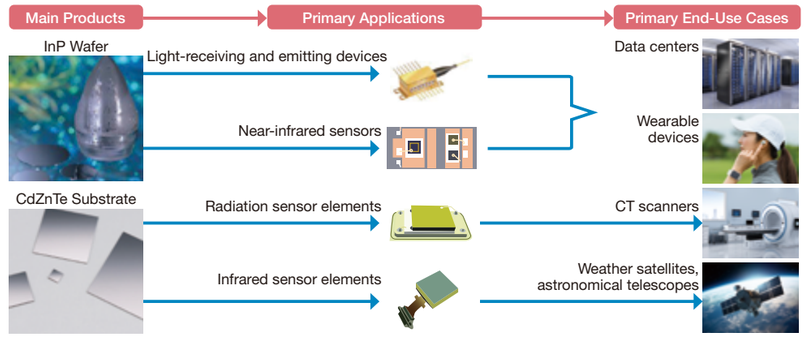
Point 2 Market Development Approach for Early Identification of Development Needs



Crystal Materials Expected to Become Next-Generation Earnings

The crystal materials sector is expected to grow due to the rapid proliferation of generative AI, which has led to an increase in the number of data centers, rising mobile communication volumes, and advancements in sensing technology. By leveraging our high-purification, compositional control, and temperature control technologies to supply the market with high-quality crystal materials, we are working to make crystal materials the pillar of the Group's next-generation earnings. As part of this initiative, we established the Crystal Material Business Promotion Office under the Technology Group in April 2024. This department is focused on strengthening our capabilities in areas such as InP (Indium Phosphide) wafers used in light-emitting and receiving devices for data centers, as well as CdZnTe (Cadmium Zinc Telluride) wafers used in applications like infrared detectors and radiation detectors.

Crystal Materials Business



Toward Further Business Expansion in the Advanced Materials Area

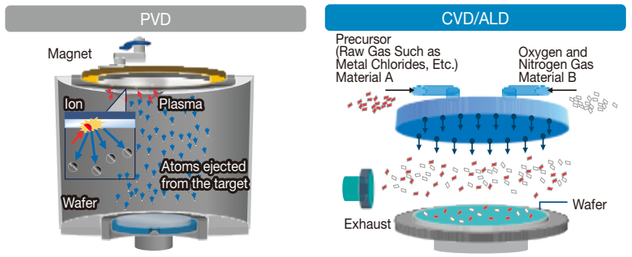
With the rapid spread of generative AI, the demand for data computation is expected to increase dramatically. In the semiconductor industry, attention is focused on technological innovations in cutting-edge areas such as Graphic Processing Units (GPUs) and High Bandwidth Memory (HBM), which support AI data centers. Given our advanced technological capabilities in handling a variety of metal materials, we believe there are new business opportunities available to us in this area. As a leading player in the sputtering targets for semiconductors, we have deepened our partnerships with semiconductor manufacturers. Moving forward, we will leverage the network we have developed over years of doing business to expand our lineup in the advanced materials sector.

Semiconductor Manufacturing Processes and Our Related Products

Initiative 1 Capturing New Thin Film Deposition Opportunities

As semiconductor miniaturization and multilayering advances, we anticipate an increasing demand for thin film formation using methods such as Chemical Vapor Deposition (CVD) and Atomic Layer Deposition (ALD), in addition to Physical Vapor Deposition (PVD). We are working toward the early commercialization of materials used in these applications under the CVD/ALD Materials Business Promotion Office, part of the Advanced Technology & Strategy Department, Technology Group established in February 2024.

Comparison of PVD and CVD/ALD Methods

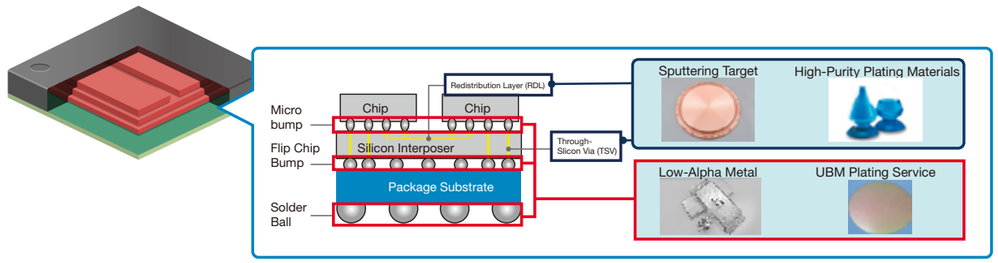


Advantages	Stable film can be formed efficiently	Uniform deposition is possible even in narrow and deep areas
Our Products	Sputtering targets	CVD/ALD Materials for Semiconductors

Initiative 2 Packaging and Assembly

Discussions about the limitations of enhancing semiconductor performance as an extension of conventional technologies continue. As a result, there is growing attention on post-processing innovations such as chiplets, which significantly increase processing speed through high-density integration of multiple chips with different functions—such as CPUs and memory—on a single substrate. Demand for our sputtering targets is expected to grow as a material for wiring that connects chiplets both vertically and horizontally. The need for new materials, such as high-purity plating materials, is also expected to expand for these applications. Furthermore, an increase in demand for our materials is also anticipated in applications such as materials for mounting semiconductors onto circuit boards.

Cross-Sectional Diagram and Examples of Our Expected Materials and Services



Reinforcement of Production System

In anticipation of future growth in demand for semiconductor and ICT materials, we are actively expanding production capacity for advanced materials in Japan and overseas, with Ibaraki Prefecture being the center of this expansion.

① New Hitachinaka Works

We have acquired a large site in Hitachinaka City, Ibaraki Prefecture, and are constructing a new plant.

The new plant will be responsible for the production of semiconductor materials, mainly sputtering targets for semiconductors, in anticipation of a significant increase in future demand. Ultimately, it is projected to become one of our core facilities, employing over 500 people.

Location	● Shinko-Cho, Hitachinaka City, Ibaraki Prefecture
Area	● Approx. 240,000㎡
Products	● Semiconductor materials, etc., with a focus on sputtering targets for semiconductors
Operation Launch	● FY2025 (projected)

② New Plant in Arizona

In our new plant located in Arizona, an area of growing concentration in the semiconductor industry, we will flexibly expand production capacity for semiconductor sputtering targets in response to customer requirements. Additionally, we plan to utilize this facility as a base for new business development, establishing it as a hub for advanced business sectors in North America.

Location	● Mesa, Arizona, the U.S.
Area	● Approx. 260,000㎡
Products	● Semiconductor materials, etc., with a focus on sputtering targets for semiconductors
Operation Launch	● FY2024

③Two New Plants in Hitachi City, Ibaraki Prefecture

To enhance production capacity for semiconductor sputtering targets and treated rolled copper foil, we are constructing two new plants in Hitachi City, Ibaraki Prefecture.

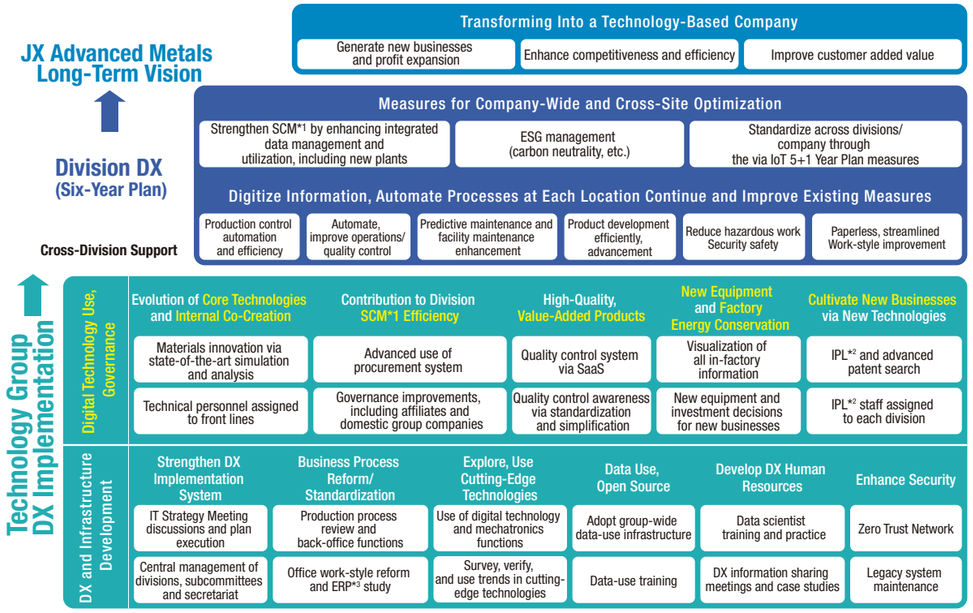
Location	● Shirogane-Cho, Hitachi City, Ibaraki Prefecture
Area	● 8,001.77m²
Products	● Treated Rolled Copper Foil
Operation Launch	● FY2024

Location	● Sunazawa-Cho, Hitachi City, Ibaraki Prefecture
Area	● 23,348.04m²
Products	● Sputtering targets for semiconductors
Operation Launch	● FY2024 (plan)

Pursuing Digital Transformation (DX)

We pursue DX through measures to optimize and automate every division and corporate department, aiming to establish a foundation to achieve the ideal stated in JX Advanced Metals Group Long-Term Vision 2040 of becoming a technology-based company. We leverage new technologies in each department of the Technology Group that supports these efforts and engage in company-wide measures to achieve this technological transformation.

JX Advanced Metals DX Structure

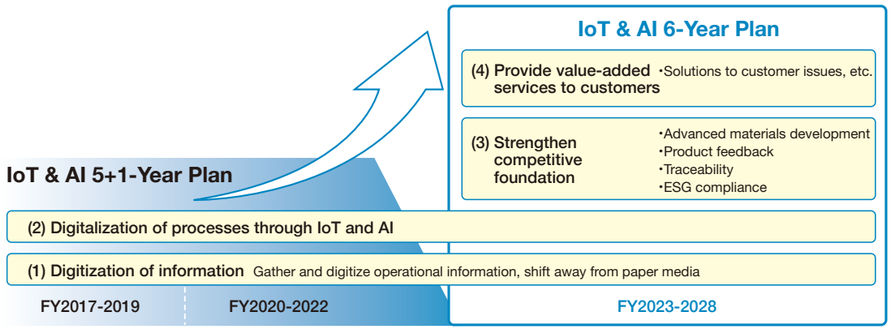


*1 SCM (Supply Chain Management): A management method to optimize all processes through the central control of everything from raw materials procurement to manufacturing and sales.
*2 IPL (Intellectual Property Landscape): Utilizing IP information analysis for management.
*3 ERP (Enterprise Resource Planning): A concept that aims to improve and optimize overall management efficiency through the integrated management of human, physical, and financial resources.

IoT & AI 6-Year Plan Implementation

Since 2017, we have pursued an IoT & AI 5+1-Year Plan. In fiscal 2023, we formed a new IoT & AI 6-Year Plan to advance DX across the Group. This plan includes the digital input of information and processes to date (digitization) and the digital conversion of information and processes (digitalization). In addition, the plan calls for optimizing the entire supply chain in light of changes in our businesses, strengthening our competitive foundation, creating value for customers, and addressing ESG issues such as decarbonization, etc.

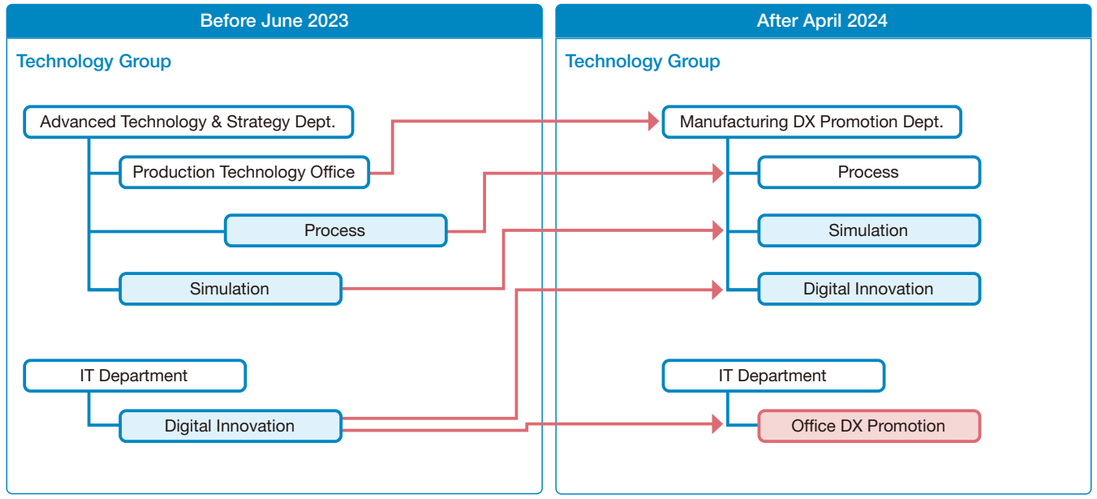
IoT & AI 6-Year Plan



Strengthening DX Promotion System

By leveraging and deploying production technology across the group, we aim to optimize production processes and improve associated cash flow. To this end, we established the Production Technology Office in June 2023 and have begun initiatives to enhance productivity at our production sites. In April 2024, we integrated the data analysis and automation technologies previously managed by the IT Department with the simulation technologies overseen by the Advanced Technology & Strategy Department to establish a new Manufacturing DX Promotion Department. This will allow our Group to centrally consolidate the technical resources developed across various businesses, further enhancing resilience and efficiency in each. In addition, an office DX promotion function will be established within the IT Department to drive improvements in productivity for sales and administrative operations, as well as to enhance business processes through the use of generative AI.

DX Promotion System



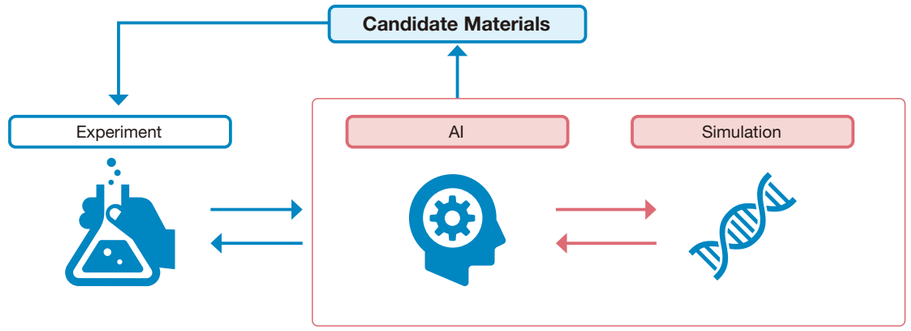
Foundation Supporting DX

Using simulation technology, AI, and ultrasonic sensing technology, etc., we are continuously working to verify the latest technologies and consider their applicability to our operations.

Case 1 Materials Informatics Using Materials Simulation

By integrating experimental data, AI, and material simulations, materials with desired properties can be efficiently identified without the need for repeated experiments, as was the case in the past.

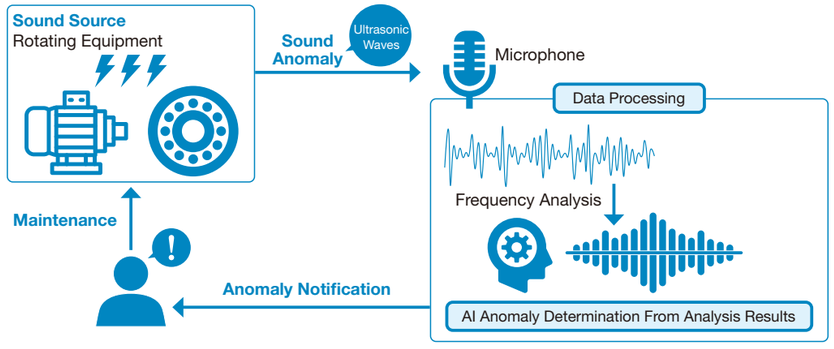
Candidate Material Exploration Using Material Simulations, AI, and Experiments



Case 2 Demonstration Test for Predictive Detection of Equipment Anomalies Using Ultrasonic Sensing Technology

Using ultrasonic microphones and edge terminals, sounds outside the audible range are processed using AI technology to detect equipment abnormalities at an early stage, reducing their impact on equipment and quality and improving productivity.

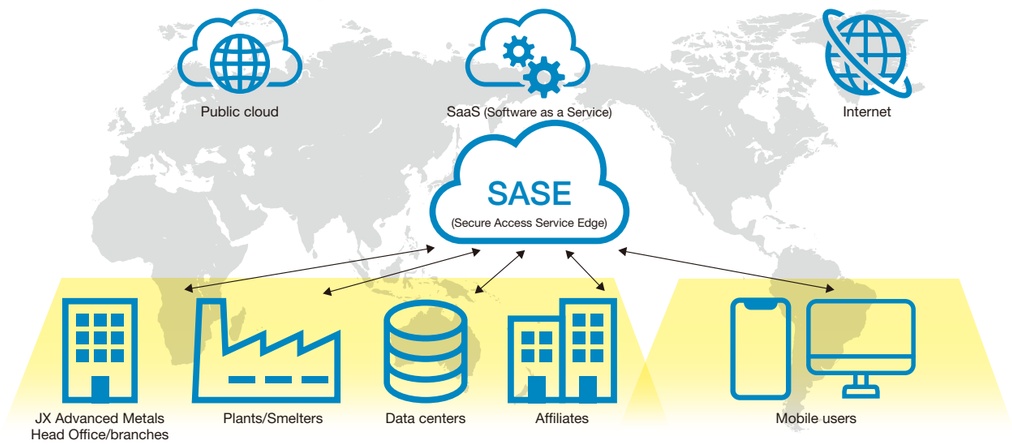
Predictive Maintenance for Rotating Equipment Using Ultrasonic Sound



Strengthening DX Infrastructure (Zero Trust Network)

To protect our critical information assets from increasingly sophisticated and advanced cyber threats, our group is upgrading the group network based on the concept of zero trust. By utilizing state-of-the-art cloud-based security services and implementing two-factor authentication and device authentication, we are uniformly raising the security level across the entire Group and responding to security measure requests from business partners who are part of our supply chain.

Next-Generation IT Infrastructure Using a Zero Trust Model



Develop DX Human Resources

Beginning in fiscal 2019, we have been working to enhance our digital resources and strengthen their training. In data scientist education, we have expanded our training programs according to the level of each employee, such as beginner programs for young employees and intermediate programs for mid-career employees. We began literacy training for all employees in fiscal 2022 and launched workshops at operating sites in fiscal 2023. Starting in fiscal 2024, we will add elective DX training and expand mandatory e-learning for new hires.

We are also working to improve the level of our DX education by strengthening collaboration with educational institutions, such as conducting joint research with Tohoku University and dispatching employees to the Shiga University Graduate School of Data Science.

Pursuing Open Innovation

We are 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 aim to build a system for generating new technologies and value.

Collaboration for the Social Implementation of Innovative Semiconductor Fabrication Technology

We have invested in Gaianixx, a start-up company from the University of Tokyo, and have started collaborating with them to explore new developments in the crystal materials business.

Semiconductor devices such as power semiconductors that have revolutionized the power supply systems of electric vehicles use crystal materials consisting of functional thin films layered on a single-crystal substrate. However, to achieve even higher performance and added value, addressing the strain that occurs between the single-crystal substrate and the functional thin film has become a key challenge. Gaianixx aims to address this challenge with its proprietary Multi-Functional® interlayer technology. The practical application of this technology is expected to lead to a revolutionary improvement in the performance, reliability, and yield of semiconductor devices. With this investment, we plan to jointly develop of materials such as sputtering targets used for functional thin films and high-purity metals, as well as stacked crystal materials.

Accelerating the Social Implementation of Printed Electronics

Through collaborative research with the National Institute of Advanced Industrial Science and Technology (AIST), we are advancing development of fine wiring technology for next-generation devices using printed electronics (PE). PE is a technology that forms wiring by printing ink containing conductive materials onto resin films or glass substrates. It is said to enable finer wiring than the wiring formation using copper foil etching methods, and it is expected to contribute to the further miniaturization and thinness of devices such as smartphones and wearables.

By combining our copper ink technology using copper micropowder with AIST's printing technology, we have made it possible to form fine copper wiring. Having achieved the formation of fine copper wiring with a line width of 6 μm, the finest level in the world using screen offset printing technology*, we have officially launched marketing activities aimed at social implementation. Moving forward, we will gather feedback through dialogue with our customers and continue to explore various applications.

*Screen Offset Printing Method: A technique where conductive ink is screen-printed onto a transfer medium, and then the printed conductive ink is transferred to a substrate for formation. The process is simple, large-area printing is easy, and the printing speed is fast.

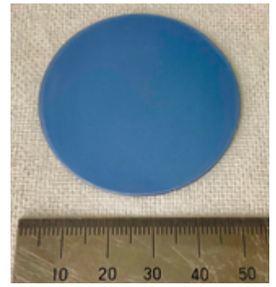
Copper ink produced by our company

Advancing Development of Semiconductor Material Mg2Si Single Crystal for Optical Sensing Technology

We are conducting joint research with Ibaraki University's College of Engineering on magnesium silicide (Mg2Si) single crystal, a semiconductor material that will be used in next-generation optical sensing technology. Optical sensing technology is expected to be used in a wide range of fields such as industrial inspection, healthcare, disaster prevention and security, and autonomous driving in automobiles.

The Mg2Si single crystal, which Professor Udono Haruhiko of the College of Engineering at Ibaraki University and our Company are working on developing, can detect light in a wide range of wavelengths from visible light to shortwave infrared. Additionally, because it utilizes a widely available material, it achieves a balance between performance and cost-effectiveness. In the collaborative research, we are working to increase the size and quality of Mg2Si single crystals.

We are promoting marketing activities aimed at the social implementation of this product, raising awareness of the product through exhibits at trade shows, etc., and fostering communication with manufacturers involved in the production and development semiconductor devices.



Mg2Si single crystal wafer
(48 mm in diameter. Cut from ingot)

Activities of the JX Metals Endowed Unit

Despite growing needs for a stable supply of nonferrous metal 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 Advanced Metals, in collaboration with the Institute of Industrial Science, 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 nonferrous metals while also developing the human resources responsible for the work in this field.

The unit began Phase 3 (five years) in January 2022. In Phase 3, we are developing activities to promote a further understanding and awareness of the importance and future of the nonferrous metals industry, as well as focus on activities for realizing the SDGs and for STEAM education* to nurture the next generation.

* STEAM education: An educational concept that combines the initial letters of five words: Science, Technology, Engineering, Art, and Mathematics. This concept aims to develop logical thinking and creative skills that lead to problem-solving in the real world

Appointed Faculty Members of the University of Tokyo and Relevant Executives of JX Advanced Metals attended the press conference which marked the start of Phase 3. From left to right: Executive Officer Suwabe, Senior Executive Officer Tani, Project Professor Kurokawa, Project Professor Tokoro, Vice-President Sugawara, Director General and Project Professor Okabe, Project Professor Sugano, Project Lecturer Ouchi (January 2022).

Symposium on Issues and Initiatives for Securing and Developing Human Resources in the Domestic Manufacturing Industry

On September 8, 2023, the Symposium on Issues and Initiatives for Securing and Developing Human Resources in the Domestic Manufacturing Industry was held at the Convention Hall of the Institute of Industrial Science at the University of Tokyo, hosted by the Endowed Research Unit for Nonferrous Metal Resource Recovery Engineering (JX Metals Endowed Unit).

The event was attended by a large number of participants and featured a lecture by Professor Kurokawa Harumasa on the current state of attracting talent in the nonferrous metal smelting and refining industry and initiatives for talent development and acquisition through collaboration between companies and universities. The event also included a panel discussion and a technology exchange session.

11th Symposium on Precious Metals

The JX Metals Endowed Unit held the special joint 11th Precious Metals Symposium Frontier of Extraction and Recycling Technology for Precious Metals on January 12, 2024. This symposium aims to expand personal exchanges through discussions in the field of precious metals extraction and recycling. Nakajima Kota, manager of the Precious Metals Section in the Manufacturing Department at the Saganoseki Smelter & Refinery, gave a presentation titled *Recovery of impurities as valuable resources in Precious Metals Refining Plant to make the Green Hybrid Smelting project successful*. Approximately 210 participants from industry, government, and academia, primarily from precious metals-related companies, attended the event, resulting in lively discussions.

JX Metals Endowed Unit

Members (FY2023) *Positions as of April 2024, reproduced from the website

Project Professor
Okabe Toru H.
- Vice President, The University of Tokyo
- Professor, Research Center for Sustainable Material Energy Integration, Institute of Industrial Science, The University of Tokyo

Project Professor
Tokoro Chiharu
- Professor, Faculty of Science and Engineering, Waseda University
- Professor, Graduate School of Engineering, The University of Tokyo

Project Professor
Kurokawa Harumasa
- Advisor, Sumitomo Metal Mining Co., Ltd.
- Outside Audit & Supervisory Board Member, Sumitomo Mitsui Construction Co., Ltd.

Project Professor
Sugano Tomoko
- Special Assistant to the President, Director, International Open Innovation Organization, Deputy Director General, Division of University Corporate Relations (DUCR) / Director, Office of Strategic Research Alliance, The University of Tokyo
- Patent Attorney

Project Professor
Yamanaka Shunji
- University Professor, The University of Tokyo
- Project Professor, Design-Led X Promotion Platform, Institute of Industrial Science, The University of Tokyo

Project Lecturer
Ouchi Takanari
- Lecturer, Institute of Industrial Science, The University of Tokyo
- Lecturer, Research Center for Sustainable Material Energy Integration, Institute of Industrial Science, The University of Tokyo

Main Activities in FY2023

- September 8, 2023 Symposium on Issues and Initiatives for Securing and Developing Human Resources in the Domestic Manufacturing Industry (organized by JX Metals Endowed Unit)
- November 24, 2023 108th Meeting of the Rare Metals Society / 7th Titanium Symposium (co-sponsored by the Rare Metals Society)
- January 12, 2024 (11th Precious Metals Symposium Frontier of Extraction and Recycling Technology for Precious Metals organized by JX Metals Endowed Unit)

Activities of the JX Metals Endowed Unit (Japanese Only)
http://www.metals-recycling.iis. u-tokyo.ac.jp/

Building a Development Framework and Fostering Development Personnel

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.

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 established the Idea Seed Bank as a platform for learning and overcoming challenges. 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

In promoting new development themes, we have introduced the Stage-Gate Process, which divides the development process into multiple stages. We use Stage-Gate Process for applications from discovery of medium-to long-term topics to commercialization for new products and technologies. The effective functioning of this Stage-Gate Process promotes activities that continuously generate innovative technologies and products, such as decarbonization technologies.

Development of Platforms for Generating Ideas

The Idea Seed Bank (ISB), one of the initiatives of the Advanced Technology & Strategy Department, acts as a platform for learning and overcoming challenges. It supports the creation of a collaborative community, encourages idea generation and proposals, and facilitates discussions among members from diverse backgrounds to refine and develop ideas. One of the ideas generated through the ISB has even been approved as a development theme for one of our divisions in February 2024. In addition to idea generation, a community has also been established where volunteers can deepen mutual learning through dialogue on specific themes. This provides a place for exchange that transcends offices, departments, and locations. Participating employees are encouraged by the community to deepen their learning and work on creating, proposing, and realizing ideas.

Fostering a Corporate Culture and Developing Human Resources

In addition to fostering a corporate culture that encourages employees to overcome challenges through the Idea Seed Bank, the Advanced Technology & Strategy Department holds cross-organizational study groups. These groups help each individual member of the JX Advanced Metals Group understand products outside of their responsibilities and 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 advancing the development of human resources who can play an active role in finding potential co-creation partners, exploring new development themes, and further expanding existing businesses.

VOICE——Comments From an ISB Member

I operate a subcommittee where participants learn from each other about communicative skills and mindset, which are essential for business people. Starting the subcommittee required a bit of courage, but the ISB's credo, "Even a small step is okay... taking action will surely change your perspective," encouraged me along the way. I took the leap and challenged myself and now the subcommittee is very active and taking on meaningful activities. What stood out most were the connections that emerged from the meetings that transcended work things such as location, job type, and age. I am inspired by the dialogue amongst members from diverse backgrounds, which often leads to insights that I would not have had on my own. In addition to improving my skills on a given subject matter, I feel that broadening my perspective has a positive impact on my daily work.

JX Advanced Metals Corporation
Planning and Management Group,
Project Promotion Division
Hitachinaka Office
Shippo Risako

Basic Policy on Intellectual Property Strategy

Intellectual property is an important asset for the technology-based company that the JX Advanced Metals Group aims to be. In fiscal 2022, we formulated the JX Advanced Metals Group Basic Policy on Intellectual Property. Under this policy, we engage in intellectual property activities throughout the Group.

JX Advanced Metals Group Basic Policy on Intellectual Property

We, the JX Advanced Metals Group, recognize that intellectual property is an important asset and perform activities in accordance with the following policy in order to contribute to the development of a sustainable society as a technology-based firm.

1. We will reflect our management, business, and technical strategies in the performance of intellectual property activities through cooperation between all divisions including the management, the business division, the technology division, and the intellectual property division.
2. We will establish a competitive advantage in terms of technology by appropriately acquiring intellectual property rights and managing know-how.
3. We will promote co-creation with various external partners by cooperating with them in connection with intellectual property.
4. We will take appropriate measures, including asserting our rights, against any suspected infringement of intellectual property rights owned by us in order to protect our technologies and products.
5. We will respect the intellectual property of other parties and appropriately respond to the risk of infringing the intellectual property of other parties.

Specific Initiatives

Basic Policy 1-1 Intellectual Property System

Within the Technology Group under the President, we have established an Intellectual Property Department. Under the slogan of *three-in-one*, the department strengthens collaboration among management, business divisions, and technology divisions, and examines and implements intellectual property strategies that reflect our management, business, and technology strategies. The Intellectual Property Department has established multiple groups divided by business domain, collaborating with the relevant business divisions to implement optimized intellectual property activities tailored to each domain.

Starting in fiscal 2023, in addition to the groups responsible for each business division, we established a new group dedicated to supporting the creation of new business ventures. This allows us to quickly research and analyze intellectual property information related to new themes and ideas, thereby contributing to the creation of new businesses.

Basic Policy 1-2 Development of Intellectual Property

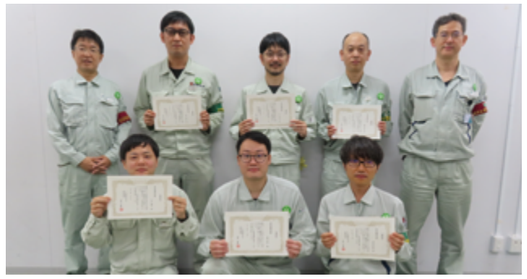
The development of intellectual property human resources is important to carry out our intellectual property activities. In the interest of the appropriate acquisition, protection, and utilization of intellectual property and management of intellectual property risks, the Group provides all employees, including clerical staff, with intellectual property education based on a systematic program and using our own teaching materials. To address intellectual property tasks that become more complex each year, the Intellectual Property Department encourages obtaining qualifications such as patent attorney certifications and Intellectual Property Analyst certified by Association of Intellectual Property Education (AIPE). Additionally, the department promotes the sharing of the latest intellectual property-related knowledge to enhance expertise.

Employee training conducted in FY2023

Basic Policy 2-1 Initiatives for Promoting Invention

In accordance with the Patent Act, the Group has established the Regulations Concerning Handling of Employee Inventions. In addition to incentives at the time of application and registration, we have established our own unique system to award inventors of profitable patents and inventors of outstanding inventions to encourage development and invention and promote activities as a technology-based company.

In fiscal 2023, four inventions were eligible for awards, including copper and copper alloys for electrodes, processing technology for compound semiconductor substrates, improved formability of copper alloys, and measures to reduce factory noise. In addition, we also recognize inventions that are kept secret as expertise, as well as patents.

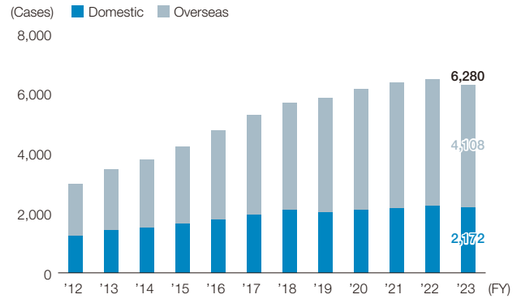


FY2023 award recipients (3 other groups in addition to those pictured)

Basic Policy 2-2 Status of Patent Ownership

Our Group is actively promoting research and development with the aim of becoming a technology-based company. In line with our business strategy, we conduct appropriate rights-acquisition activities in Japan and overseas for inventions generated in the course of research and development. On the other hand, for inventions that we choose to keep as trade secrets rather than patenting, we prepare documents in a specific format to clearly define the proprietary information and ensure its protection through rigorous confidentiality management.

Number of Patents Held



Basic Policy 3 Using Intellectual Property Information

The JX Advanced Metals Group regards intellectual property information (patent information, etc.) as big data useful for understanding technological trends. We utilize intellectual property information not only for the purpose of preventing infringement and determining patentability, but also for various other purposes. For example, as part of our IP landscape survey, we conduct research and analysis by integrating our own and competitors' patent information with business and market data. This enables us to anticipate shifts in customer needs and technology trends, thereby contributing to the formulation of business strategies, the creation of development themes, and the search for partners. We also encourage the use of intellectual property information by others besides personnel in charge of intellectual property directly.

In fiscal 2023, intellectual property and marketing personnel participated in a hands-on workshop led by an outside instructor. Specifically, we analyzed the actual themes under consideration for possible entry, and based on the results, we examined hypothetical entry scenarios and co-creation partners.

Basic Policy 4 Protection of Intellectual Property

When there are suspicions of infringement regarding our intellectual property rights, including patents, we will take appropriate measures, including asserting our rights, to protect our technologies and products. While our basic policy is to resolve any unfair infringement through discussion, we are also prepared to seek a ruling from third parties, such as the courts, if our group's intellectual property rights are not respected.

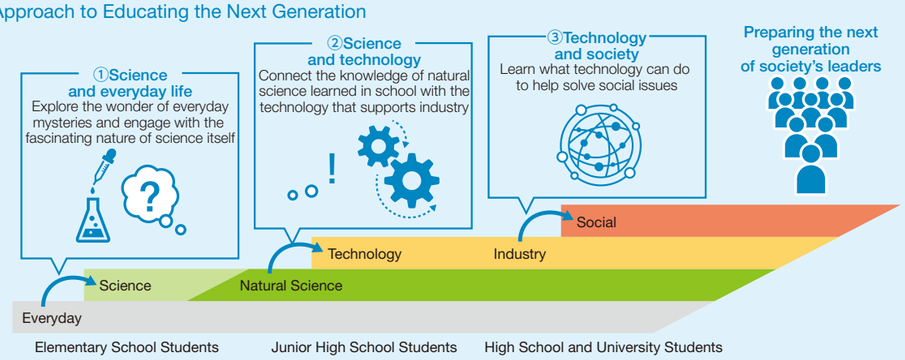
Basic Policy 5 Respect for the Intellectual Property of Others

We have established a system in which our business units, research and development department, and intellectual property department collaborate to address the intellectual property of others, including patents. At each stage of new business planning, product research and development, and product manufacturing and sales, we strive to understand patents that are related to our products and held by other parties. If patents or other intellectual property with a high degree of relevance to our products are identified, we conduct a detailed risk assessment and formulate a policy for countermeasures, gathering opinions from outside attorneys or patent attorneys as necessary.

COLUMN 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. The JX Advanced Metals group provides opportunities for young people, from elementary school to university age, to engage in a variety of hands-on and practical activities to create opportunities to learn about nonferrous metals.

Basic Approach to Educating the Next Generation



①Science and Everyday Life: Collaboration With the Minato Science Museum for *Minato Science Festa 2024*

Minato Science Festa is an annual science festival centered on science in daily life, bringing together people of all ages and backgrounds to gather and interact. It features contributions from various companies, organizations, research institutions, and public entities active in the Minato area, offering a wide range of content for attendees.

Our Company organized quizzes on the properties of copper and a thermal conductivity experiment where participants could learn about copper's high thermal conductivity through hands-on experience. Through these activities, we showed how copper's unique properties are used to support our daily lives. A total of two experimental classes were held, allowing many participants to explore the fascinating world of metals.


Heat conduction experiment being performed

②Science and Technology: Collaboration With the *Summer Vacation Company Bus Tour*, a Program Supporting Female Junior and Senior High School Students in Selecting Science-Related Career Paths

On August 28, 2023, we collaborated with the Summer Vacation Company Bus Tour, a program organized by Ibaraki University's College of Engineering to support female junior and senior high school students in pursuing science-related careers. We welcomed girls from the northern and central regions of the prefecture for a tour at our Hitachi Works. This program is an initiative of Ibaraki University's College of Engineering. It provides opportunities for female engineers to enhance interest and awareness in science and engineering among female students by offering them chances to visit companies and interact with female engineers.

The day included tours of the treated rolled copper foil manufacturing process and the silver recycling process, as well as job presentations and roundtable discussions lead by female engineers at each plant. In a friendly atmosphere, the participating students listened attentively to the presenters shared the excitement of working in the fields of science and technology and their reasons for pursuing these careers.


Touring the Hitachi Works

③Technology and Society: Head Office Tour for Students in the Department of Systems Innovation, Faculty of Engineering, the University of Tokyo

On December 21, 2023, we conducted a tour and workshop at our head office for students from the Department of Systems Innovation, Faculty of Engineering, the University of Tokyo. The department aims to develop individuals equipped with not only analytical skills related to fundamental engineering but also logical and systematic thinking, integration abilities, leadership, and coordination skills. One of our outside directors, Tokoro Chiharu, has been appointed as a professor in this department.

On the day of the event, 10 students and Associate Professor Yutaro Takaya visited the head office, toured the SQUARE LAB (showroom), and took a simulated virtual reality (VR) tour of the Saganoseki Smelter & Refinery to learn about the development of nonferrous metal materials. Additionally, we held a workshop themed around resource recycling, where we engaged in lively discussions on constructing resource recycling business models.

Students who participated in the workshop commented, “While conceptualizing a business model for achieving copper resource recycling, I was able to gain a bird’s eye view of the copper lifecycle and the entire supply chain, which was very informative,” and “I hope this kind of workshop is held in various locations.” It was a valuable experience for us as well, as we learned a lot from the earnest dedication of the students and their innovative thinking, which was not bound by existing ideas.


Discussions during the workshop

Installation of a Ball Coaster Exhibit at the Civic Center

We donated a ball coaster themed around Copper Resource Recycling to the Hitachi Civic Center Science Museum, Sakurie, located in Hitachi City, Ibaraki Prefecture. It illustrates the process of mining copper ore from copper mines, producing electrolytic copper at smelters, processing it into electronic materials used in semiconductors and smartphones, and finally recycling it from the end products.

On April 27, 2024, the Science Museum held an event to celebrate the opening of the new exhibit. At the event, we conducted a shiny 10-yen coin experiment using seasonings and a held quiz on copper so that local children could experience the properties of copper firsthand.


Ball coaster themed around the resource cycle of copper

JX Advanced Metals Prize 2023

In fiscal 2022, we established the JX Advanced Metals Prize to recognize outstanding students who will contribute to the next generation of metalworking artistry. This annual award is given to one student enrolled in the Department of Metal Casting at the Tokyo University of the Arts who achieves particularly outstanding academic results.

In fiscal 2023, the award was presented to Matsuki Kento, a second-year master's student at the Graduate School of Fine Arts, Tokyo University of the Arts. By supporting the development of the art of metal casting, we continue to spread an understanding of the appeal and importance of metals, contributing to the wider recognition of culture and the arts.

Award ceremony held on October 26, 2023


Artist: Kento Matsuki
Title: FULL BODY
I am captivated by the shapes that emerge from “stretching” and “solidification” of hammered copper plates. By capturing the energy embedded in the hammer, the expanded form of the human body may serve as a reflection of my existence.

S

Materiality 3

Create Attractive Workplaces

Dynamic workplaces where employees can be healthy in mind and body and demonstrate their unique capabilities are essential for any enterprise seeking sustained growth. The JX Advanced 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.

Human Capital Management

▶ P.76

Promote Diversity

▶ P.80

Ensure Safety and Promote Health

▶ P.83

KPIs and Progress

Assessment: ☺ Achieved / Steady Progress ☹ Not Achieved

KPI	FY2023 Results/Progress	Assessment
Implement initiatives to revitalize people and organizations	We conduct employee awareness surveys and actively incorporate employee feedback to create rewarding work environments. At the same time, we also strive to revitalize the entire organization by improving our education programs and introducing new training programs to support employee growth.	☺
Increase annual leave utilization rate: 80% or more in fiscal 2023	The annual leave utilization rate improved to 85.3%, higher than the previous fiscal year, thanks to our ongoing 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. Moving forward, we will continue to take actions to encourage employees to take more vacation.	☺
Maintain and improve hiring rate for persons with disabilities: 2.3% or more in fiscal 2023	In fiscal 2023, employees with disabilities comprised 2.59% of our total number of employees (total including special subsidiaries). We will continue to maintain and improve the hiring rate for persons with disabilities through actively providing support and rolling out measures to enable persons with disabilities to lead fulfilling social lives.	☺
Reduce serious occupational accidents: 0.70 or less accidents (four days or more of lost work time) per 1,000 workers in fiscal 2023	In fiscal 2023, the annual rate was 0.96 per 1,000 employees. 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.	☹
Initiatives for health promotion: Cancer screenings for 70% of employees or more in fiscal 2023	The screening rate for fiscal 2023 decreased from the previous year (78.1%) to 68.8%. Screenings are typically for JX Advanced Metals employees, with effects evident year after year. However, the overall screening rate declined in fiscal 2023 due to the absorption of companies not subject to such measures. We will continue such measures (e.g., regular health checkups and physical examinations that also include cancer screenings, follow-ups from the health consultation offices at the head office and other locations, and distribution of leaflets recommending cancer screening) to raise health awareness among employees and increase screening rates.	☹

Human Capital Management

People-driven innovation is essential to transform into a technology-driven company and maximize corporate value. To this end, maximizing the motivation and capabilities of our employees is a key management issue. We keep this issue in mind as we make proactive investments in human resources.

Attracting and Hiring Talent

The Group works to strengthen our acquisition of human resources, defining the following human resources as those creating new and added value.

(1) Human resources who lead innovation by understanding diversity, accepting diversity, and working in collaboration with stakeholders of various circumstances
(2) Human resources who take a sense of ownership, think, act, and embrace on their own
(3) Human resources who envision an ideal future in response to changes in the environment, and who are eager to act in achieving that vision

Fostering Diverse Values

We hire a wide range of outstanding human resources by strengthening the organization in charge of recruitment in the Human Resources Department and diversifying recruitment channels. We recruit technical candidates among new graduates, including technical college students, as well as globally oriented candidates from Japan and overseas who have experience studying abroad. We also recruit mid-career professionals that bring new and diverse knowledge and experience, achieving a 50/50 ratio of new graduates to mid-career professionals for the past three years. We diversify our recruitment channels to expand mid-career recruitment. Such channels include referral recruitment, in which employees are introduced by their friends and acquaintances, and come-back recruitment, in which employees who have previously left rejoin the company. Using various channels, including those for university graduates, technical school graduates, and mid-career professionals, allows us to ensure the quality, quantity, and diversity of the human resources we hire. These channels also enable us to develop an open-minded corporate culture that actively seeks to share new knowledge, skills, and ideas.

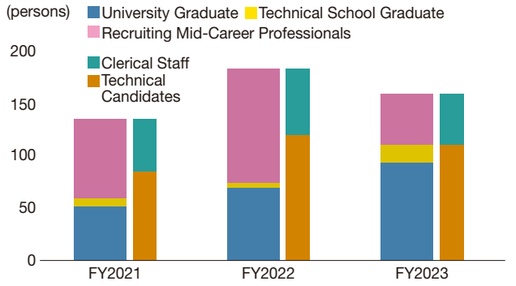
Recruiting Technical Candidates

We hire technical candidates actively to strengthen our technological development and production site capabilities, which represent the roots of our competitiveness. Pursuing these human resources measures is helping us transform into a technology-based company.

<Recruiting New Graduates>
- We hire people with interests and abilities across a wide range of college majors, not limited to those who majored in metals at university (graduate school)
- We are extending recruitment activities to all applicants, not limiting ourselves strictly to applicants recommended by the schools
- We are expanding the employment of technical school students

<Recruiting Mid-Career Professionals>
- We hire for technical expertise in positions such as new business planning, technology development, and others in which we lack expertise
- We hire for key positions above managerial staff levels
- We recruit from diverse industries (automotive, electric, chemical, university, etc.)
- We hire employees who match with our company through referral and come-back hires

Recruitment Results (JX Advanced Metals Corporation)



VOICE—Comments From A Referral and Come-Backmployee

I left JX Advanced Metals and rejoined in January 2024 after gaining two years of experience at another company. I ran into a senior colleague from JX Advanced Metals at an exhibition, and I realized that applying what I learned from my job away from the company at JX Advanced Metals would lead to my personal growth. When I rejoined JX Advanced Metals, I was nervous about whether I would fit in well at work and how to balance family life, especially childcare. But the various support I received from senior and junior colleagues and the Human Resources Department helped me feel better prepared. After returning, I heard countless employees express they were glad I was back, and I feel the warmth of the people at the company. I am currently in charge of the main customers of the division, gaining a lot of experience implementing structural reform measures. I hope to leverage my perspectives gained outside the company in my current work and share my knowledge and experience with others to contribute to the further growth of JX Advanced Metals.

JX Advanced Metals Corporation
Marketing Department, Functional Materials Division
Tomita Mao

Strengthening Human Resources Development

The Company develops various measures and support policies based on the following human resource development policy.

Human Resources Development Policy

- Providing opportunities for independent and self-motivated growth according to individual needs

We implement uniform training, including training in the skills we expect of human resources. We provide flexible training opportunities according to the needs of the individual employee (role expectations, competencies, aspirations, desired career, etc.) to encourage independent and self-motivated growth.

- Emphasizing practical human resources development

We place work experience at the center of employee development, fostering human resources through comprehensive personnel policies, including performance evaluations and education. In particular, we offer practical training in different environments to help employees develop a broad perspective, a resilient mentality, and a mindset of thinking and acting independently.

- Developing human resources in a corporate culture that accepts diversity and encourages challenge

We foster managers and a workplace culture that accepts diversity and encourages employees to take on challenges to develop human resources in line with our expectations.

- Engaging in the systematic development of target talent* to support continuous growth

  - We develop human resources systematically (select, assign, and train) to become management candidates, global business operations leaders, new business developers, etc. By enhancing educational opportunities for specialists, we develop human resources capable of supporting technology-based businesses.
  - We enhance education for managers and on-site leaders to strengthen their ability to respond to on-site situations.

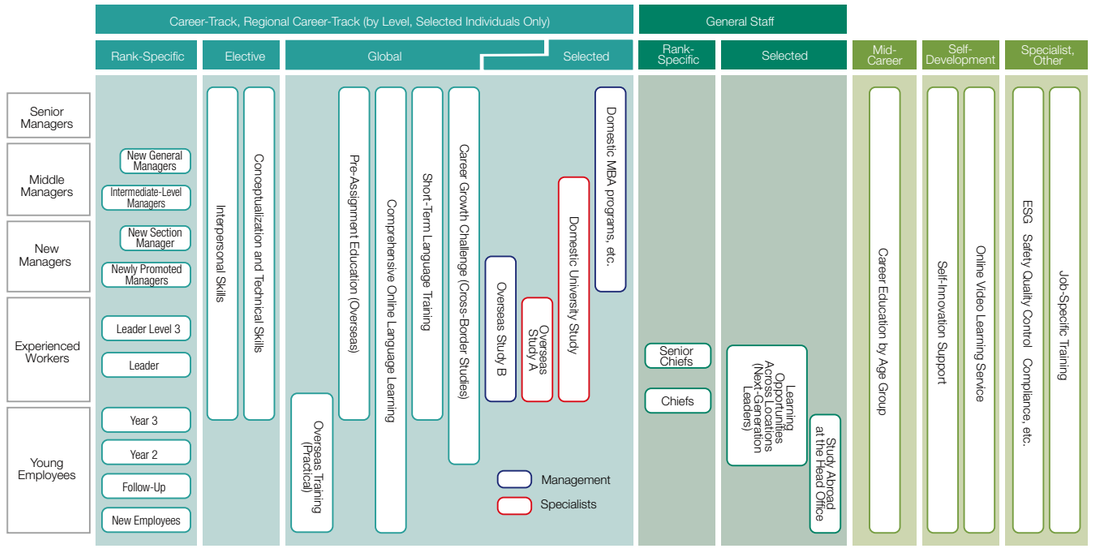
*Specific employees identified for individual training.

Improving the Training System

We revised our training system in fiscal 2023 to be more flexible and proactive in response to the greater diversity in career paths, including earlier promotion to manager positions and transfers across job categories.

In our education for young employees by job level, we aim to expand our younger workforce and manager-track training and encourage autonomous development by introducing selective trainings and supporting self-development. We also aim to provide such employees with opportunities for practical education outside the company and systematically train management candidates, global personnel to oversee overseas business development, specialists to lead the Company with their specialized knowledge, and personnel to improve the competitiveness of the workplace.

We also provide other training to foster a shared awareness of financial knowledge, quality communication, and problem-solving skills.



Well-Developed Training Programs

We have a variety of training programs that are tailored to the abilities and disposition of each employee.

Training Program for Young Employees

With a view to early promotion to managerial positions, we are speeding up the pace of focusing on training through year three of employment. Our aim here is to instill the Company's DNA while fostering the basic skills and mindset to act independently and take on challenges. In this context, we provide follow-up training six months after an employee joins the Company, providing an opportunity for reflection, raising awareness of their current situation and expected roles, and following up to foster a positive toward taking on challenges through the acquisition of organizational skills. We also provide training for leaders to develop the ability to solve problems for which there are no clear answers and to foster thinking from a company-wide perspective at stages before managerial levels.

Training for Managers

In conjunction with the revised human resources system for managers, we improved management training to instill a management mindset and build management skills. Newly promoted manager training includes panel discussions with vice presidents, allowing managers to learn about the ideas and specific background experiences of other managers. Our intent here is to teach an understanding of management attitudes and thinking from a company-wide perspective.

Training for Operations Managers

To improve on-site capabilities, which is an important issue for us today, we provide training for senior chiefs and chiefs—key personnel at production sites—to develop the skills and acquire the knowledge necessary for on-site management. While deepening an understanding of the Company's current management situation and issues, we also foster leadership skills to face challenges as a team, as well as personal skills and mindsets for developing and following up with subordinates.

Selective Programs

We strive for autonomous and voluntary employee growth in addition to conventional rank-specific education. To this end, we introduced selective programs that allow each employee to learn according to their personal job expectations, capacities, and aspirations. Participants select the knowledge and skills they wish to strengthen from several options, including logical thinking, business quantitative analysis, and DX skills and strategies.


Program for new employees


Third issue review meeting

Global Human Resources Development

Overseas Training

We provide overseas training for younger employees. Our objective is to not only develop language skills, cross-cultural understanding, relationship building, and global business awareness, but also develop the toughness and confidence to dive into different environments and cultivate various skills, knowledge, and mindsets.

Overseas Study

We select eligible individuals to study abroad at graduate schools to obtain degrees or at business schools to obtain MBA degrees, strengthening their expertise and management skills.

Comprehensive Online Language Learning

As part of our efforts to develop human resources for global business, we adopted goFLUENT, a comprehensive language online learning system, in fiscal 2023. The system combines e-learning in English, Chinese, German, and other languages, online global conversation classes, and ability assessment tests to provide practical language learning for use in daily work duties.

Career Education

We offer age-specific career education as an opportunity for employees to think independently about their future life plans and careers. Considerations include what the individual wants to accomplish at the Company, their future roles, and what skills they should acquire. Lectures by career counselors and in-house systems for balancing life events and work help employees build independent careers while alleviating concerns about the future.

Self-Development Support

Under our Self-Innovation Support program, 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). To create an environment that further facilitates learning, we began offering Udemy Business, in fiscal 2023. Udemy Business is an online video learning service for study without restrictions on location or time. With access to a variety of courses and educational materials, employees have more opportunities to acquire diverse knowledge and skills.

Creating an Environment for Employees to Maximize Their Abilities

We began revising our personnel system in stages in fiscal 2021. Our aim is to transform into a technology-based company by creating an environment where each employee is aware of his or her role, respects and encourages each other, and takes on more challenging tasks in a spirit of friendly competition.

Revision of Human Resources System for Managers

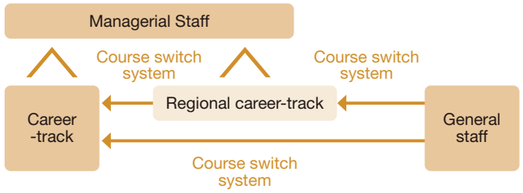
We introduced a structure that aims to select and develop outstanding employees, regardless of job type, department, or rank. These employees will manage our businesses from a long-term, company-wide perspective and play a central role in management. Specifically, we clarified the classification of line managers with subordinates as management personnel. We also implement consistent compensation based on the scope of responsibilities and endeavor to promote individuals to managerial positions earlier in their careers.

Revision of General Human Resources System for Non-Management Employees

We implemented the following measures to strengthen the on-site competitiveness through the appropriate evaluation and compensation of employees who support production sites, secure and develop human resources to support business expansion, and allow diverse human resources, including seniors, to play active roles, etc.

(1) Clarified course classifications between career-track and general staff positions

After clarifying the roles of each course, we designed the system to provide appropriate evaluations and compensation accordingly. We also established a means for employees to switch from general staff to career-track or regional career-track, depending on their willingness to take on new challenges. In this way, we support an independent career development and foster a corporate culture of embracing the challenge of change.



(2) Established regional career-track position

We established a regional career-track course for the Ibaraki Prefecture area, where we expect a significant increase in employees. This course has a defined work area within Ibaraki Prefecture. In principle, this course will not entail transfers that require relocation. The course is designed to strengthen recruitment and business operations in Ibaraki Prefecture, including I-turns (moving to the prefecture for the first time) and U-turns (returning to the prefecture).

Classification: Non-management

Course Classification	Work Location	Job Description
Career-track	Domestic and overseas offices	Manage and develop business and functions based on the company-wide management strategy
Regional career-track	Ibaraki Prefecture business locations*1	Manage and develop businesses and functions in the area in accordance with the company-wide business plan
General staff	Head office and operating sites*2	Manage and execute the operations of a specific department at a given business location

*1 In principle, there are no transfers involving relocation
*2 In principle, there are no transfers out of the prefecture involving relocation

(3) Raised retirement age to 65

We raised the retirement age from 60 to 65 for more stable operations at production sites and the passing on of learned skills. Salary levels will remain at that of employees aged 60. At the same time, we introduced a manager retirement program at a maximum age of 60 to provide management opportunities to young and experienced workers, as well as to revitalize our organization.

VOICE—Comments From a Regional Career-Track Employee

I moved to Ibaraki, my husband's hometown, and joined the Hitachi Works as a mid-career employee through prior connections. As I gained abundant work experience, I began wanting to advance my career and job from a broader perspective. It was then that I decided to take on the challenge of the course switch system. Although I was also interested in pursuing a career-track position, I decided to switch to the regional career-track position that would allow me to be even more active here in Ibaraki, considering childcare and family living arrangements.

I switched to a regional career track position in April 2023, and currently play a small role in the start-up of the Hitachinaka New Plant. I find my current work load rewarding and am learning a lot. Although every day is busy, I strive to balance my work and family life. To this end, I am doing my best to help strengthen business in Ibaraki Prefecture in cooperation with my colleagues and family.

JX Advanced Metals Corporation
Hitachi Works Administration Department, and Project Management Office
Planning and Administration Group, Hitachinaka Office
Yoshinari Mizuki

Promote Diversity

In compliance with relevant laws and regulations in Japan and overseas, the JX Advanced Metals Group is pursuing initiatives including the continued employment of senior citizen employees, hiring of persons with disabilities, women's empowerment, and hiring of non-Japanese employees. Here, we are working to create an environment in which diverse employees feel fulfilled and display their abilities fully.

Empowering Female Employees

JX Advanced Metals is dedicated to fostering an environment where female employees feel empowered to demonstrate their full potential. To this end, we strive to leverage flextime systems and telecommuting systems and enhance maternity and childcare support systems. We strive to increase the number of female employees, implementing ongoing recruitment seminars and public relations activities targeting female students. We also roll out direct recruiting policies targeting female mid-career candidates. Furthermore, we are committed to supporting career development through communication from top management and internal training. We also foster interactions and networking among female employees. We will continue to accelerate these efforts, striving to be a company that encourages the success of female employees.

Fostering Diversity

The Company conducts training for all employees to raise awareness on diversity. In doing so, we aim to create a workplace environment that enables diverse employees to work with peace of mind. Our trainings include programs for employees to learn and gain an understanding of diversity in terms of gender, age, nationality, and cultural backgrounds. We also emphasize the importance of respecting different points of view to encourage innovation and overall corporate growth.

Support System for Male Employees Taking Childcare Leave

We have provided support for childcare for some time, and in recent years the percentage of male employees taking childcare leave has been increasing. In addition to providing presentations about our system, we are working to spread awareness of support measures by holding panel discussions with employees who have taken childcare leave or are balancing work with childcare in our Career Design Training that has been held since fiscal 2020.

Employing and Retaining People With Disabilities

We employ and retain people with disabilities in response to their desires to play active roles in society. In September 2020, our head office began training instructors and improving work environments. In January 2022, we established the Cheerful Support Office, which consists of members who have mental disabilities (intellectual and developmental). In April 2023, we made JX Advanced Metals Corporate Service Co., Ltd.* a special subsidiary, transferring the Cheerful Support Office to this company to accelerate improvements in the working environment. In addition, we hold tours of workplaces and meetings to foster a shared awareness for Group-wide understanding.

*A wholly owned subsidiary of JX Advanced Metals

Cheerful Support Office

Between fiscal 2021 and fiscal 2022, we hired six employees with mental disabilities to work in the head office. These employees sorted and delivered mail, replenished supplies and beverages, and performed other services. In April 2023, we welcomed four new employees from a special-needs school and expanded our operations to accommodate the increased number of members. The office began taking orders for business card production, digitizing paper documents, and general administrative work for various departments. We launched a Cheerful Support cleaning team in April 2024 to bring head office cleaning in-house. These services were previously performed by an outside contractor.

A company-wide understanding is essential for making these types of initiatives a permanent fixture. All new employees and new hires at the head office learn about the Cheerful Support work through presentations given by Cheerful Support Members. Through these efforts, the activities of Cheerful Support Members have become well known among employees, and the office is receiving many requests for services. The cheerful and loud greetings offered by Cheerful Support Members bring energy and vitality to the company.

Cheerful Support members

Agricultural and Welfare Cooperative Project, Uchihara Farms

We established Uchihara Farms as an agricultural and welfare cooperative project in Mito City, Ibaraki Prefecture as an organization under JX Advanced Metals Corporate Service Co., Ltd. The farm aims to contribute to social welfare through farming performed by people with disabilities. The farm also aims to contribute to the well-being of Company employees by utilizing agriculture for employee education and company events. With the cooperation of Nihon Nogyo Jissen Gakuen, the farm leases approximately 7,000 m² of land from the organization and employs people with disabilities to farm the land. Harvested vegetables are used in the company cafeteria, provided at various events, and sold at direct sales outlets. In addition, Uchihara Farms serves as an in-house training facility to promote an understanding of people with disabilities.


Growing root and other vegetables on the farm


Members with disabilities and instructors


Shipment to a nearby direct-sales shop

Measures for 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.

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. During the COVID-19 pandemic, our employees have been working from both home and office to ensure the safety of our business partners, local communities, employees, and their families, while taking into account the state of the virus and requests from government agencies, etc. We have also been striving to maintain our business to fulfill our social responsibility to deliver essential products to society. We still continue to utilize our remote work system so that a wide range of diverse employees, not limited to those with circumstances such as childcare or nursing care, can play an active role in the Group.

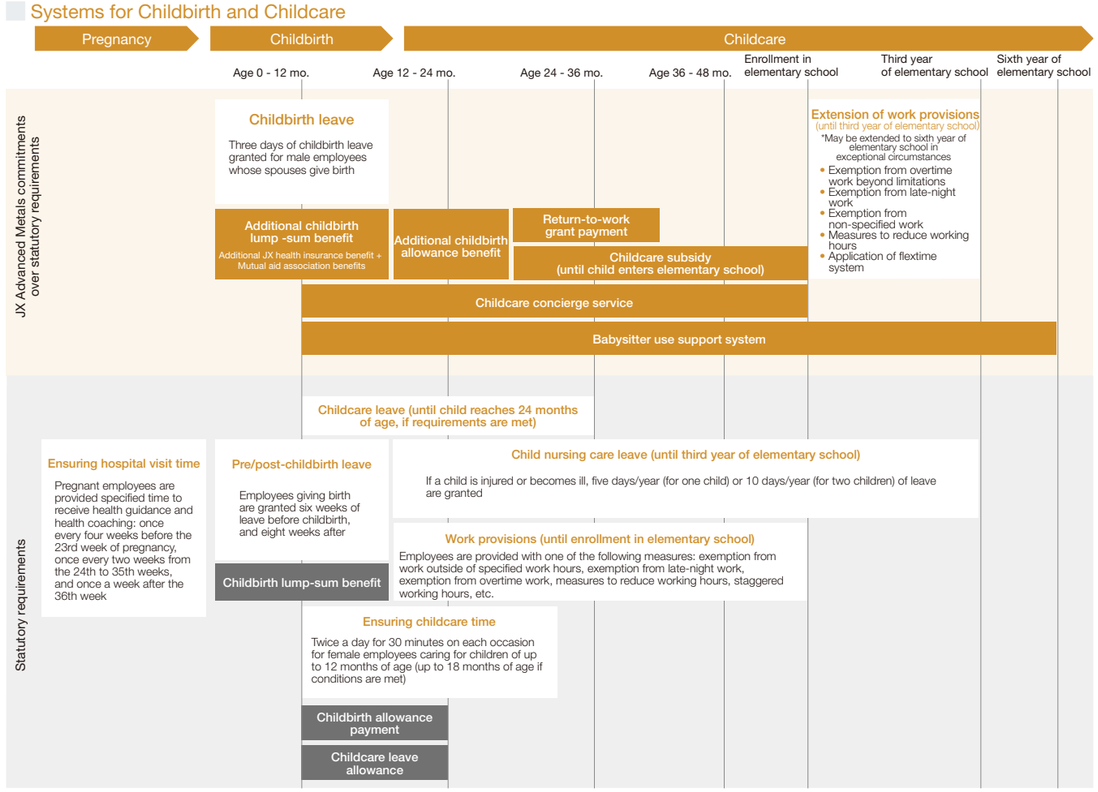
Introduction of a Flextime System Without Mandatory Core Hours

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, with the aim of promoting more autonomous work styles among. We have also defined our flextime system as covering 5:00 a.m. to 10:00 p.m., excluding late-night hours, to create a system where employees can flexibly choose their work hours.

Systems for Childbirth and Childcare

The Company implements internal systems, in addition to legally-required standard systems, related to childbirth and childcare, committing ourselves to fostering environment that allow employees to balance work and childcare. We support flexible work styles, ranging from maternity leave and shorter working hours, to the use flextime systems and other styles. We are committed to providing flexible work arrangements and childcare support.

Systems for Childbirth and Childcare



Systems for Family Care

JX Advanced Metals offers the following programs if an eligible family member requires constant care. We support our employees in balancing family care responsibilities with their work. We provide employees who need to care for family members with options, including shorter working hours and telecommuting, fostering an environment that allows employees to balance work and family life. The Company also reduces the burden on employees through interviews with those who provide family care, as well as through our own nursing care assistance. At the same time, we allow such employees to participating in company educational programs while on family care leave, striving to encourage sustainable career development.

Systems for family care

Course Classification	Statutory Requirements	Additional Benefits from JX Advanced Metals
Time Off	● For one family member requiring care: 5 days/year ● For two or more family members requiring care: 10 days/year	
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

Ensure Safety and Promote Health

Recognizing that the safety and health of our employees is the foundation for sustainable growth, the JX Advanced Metals Group is committed to creating a workplace environment that ensures safety and promotes health.

JX Advanced Metals Group 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 Advanced 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 health and safety 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). We also hold joint labor/management health and safety visitations (once a year) and Group safety supervisors' meetings (twice a year) to exchange information on health and safety. In fiscal 2023, we held a hybrid on-site and online meetings, as well as labor/management health and safety visitations at business sites.

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. In fiscal 2023, we targeted a total of 17 business sites, including 5 overseas sites. No major issues were identified.

Acquiring ISO 45001 Certification

Although we acquired OHSAS 18001 certification, we have been working to introduce ISO 45001 following the abolition of OHSAS in March 2021. ISO 45001 includes JISQ45001 and JISQ45100. Our domestic operating sites strive to acquire the latter to promote company-wide occupational health and safety activities involving a wider range of sites. As of the end of fiscal 2023, 13 domestic operating sites and 3 overseas companies obtained ISO45001 certification. We now aim to obtain certification at 3 domestic sites new to the Group.

We engage in such efforts to improve the level of health and safety throughout the Group further

Management Policy on Health and Safety for 2023

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]

● Safety and Disaster Prevention Items

1. Accidents with lost work days or worse: Zero
2. Targets for managing the number of accidents for the entire Group
   (1) (Shared domestic/overseas sites) Accidents without lost work days or worse: Reduction of 50% or more of the previous year's results
   (2) Occupational injury rate per 1,000 employees in domestic Group (four or more lost work days): 0.70 or less (five injuries or less)
3. Fires and explosions: Zero

● Health and Other Items

1. Occupational diseases: Zero
2. Rate of lost work days due to ordinary illnesses: Reduction by 10% or more from the average in the previous three years
3. Cancer screening rate: 70% or more
4. Percentage of employees maintaining an adequate weight (BMI less than 25.0): 70% or more
5. 1% reduction in smoking rate based on FY2022 results
6. Traffic accidents (as perpetrator or victim): Reduction by 10% or more from the average in the previous three years

[Key Measures]

- Promoting inherent safety (strengthening activities to prevent serious accidents from occurring)
- Expanding health and safety education
- Strengthening systems for safer construction execution
- Maintaining and promoting mental and physical health
- Continuing to implement traffic accident prevention (including work-related traffic accidents)

Safety Education at a Safety Education Center

In order to raise the sensitivity to hazard for each and every employee and enhance their safety awareness, the Group has established the Safety Education Center, where we conduct experience-oriented safety education, in Hitachi City, Ibaraki Prefecture. Here, sensitivity to hazards 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 help workers see that potential accidents are always present, and to improve worker understandings of danger and their sensitivity to hazards 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 locational education facilities at our core operating sites to address workplace-specific occupational accidents and improve employee sensitivity to hazards and safety awareness of not only our Group employees but also those of our Subcontractors. The Safety Education Center and the locational education facilities work in unison to eradicate occupational accidents among employees.

VR experiential education

Project to establish a health management system

We are promoting a variety of measures to improve the mental and physical health of our employees through a project system in which all of our operating sites participate. In fiscal 2023, the Isohara Works, Hitachi Works, and Kurami Works assigned public health nurses and established health consultation offices. These efforts enabled the sites to utilize the health management support system more effectively, enabling centralized management of various health checkup results and working hour records, and enabled significant progress in the development of industrial health systems.

Using the aforementioned system, we conducted physical fitness tests to determine current muscle strength, flexibility, sense of balance, etc. We also implemented self-care follow-up training for new employees as a mental health measure and improved workplaces based on the results of stress check group analysis. As a new initiative to reduce BMI, we also held a VegeCheck® event to encourage participants to measure their own vegetable intake. A large number of employees participated in the event, through which we raised awareness of the need to improve dietary habits by providing participants with vegetables harvested at Uchihara Farms and offering vegetable juice tastings.

VegeCheck® event

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Materiality 4

Respect Human Rights

The JX Advanced Metals Group 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.

Respect Human Rights Principles ▶ P.86

Respect Human Rights in Supply Chains ▶ P.87

Human Rights Education and Internal Awareness Raising ▶ P.89

KPIs and Progress

Assessment: ☺ Achieved / Steady Progress ☹ Not Achieved

KPI	FY2023 Results/Progress	Assessment
Conduct survey of human rights in supply chains	We have established and operate a supply chain due diligence management system in accordance with OECD guidance for procurement of raw materials. In fiscal 2023, we underwent external audits related to copper, gold, silver, platinum, palladium, and tantalum. These audits determined that we were taking appropriate action.	☺
Percentage of employees taking human rights training (100% in fiscal 2023)	In addition to stipulating respect for human rights in the Group Code of Conduct, Human Rights Policy, 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 2023, 100% of our officers and employees participated in these ongoing human rights training programs.	☺

Respect Human Rights Principles

The Group is committed to advancing human rights due diligence and addressing human rights issues in accordance with internationally recognized guidance.

Established the JX Advanced Metals Group Human Rights Policy

We adopted JX Advanced Metals Group Human Rights Policy on August 1, 2023. This Group policy is based on the United Nations Guiding Principles on Business and Human Rights, and it is intended to guide how we respect human rights in all the countries and regions where we conduct business.

JX Advanced Metals Group Human Rights Policy

The JX Advanced Metals Group understands that human rights of individuals must be respected in all countries and regions in which we conduct business activities, and as the guidelines for fulfilling our responsibility and obligation for ensuring the above, hereby stipulates this JX Advanced Metals Group Human Rights Policy (hereinafter referred to as this "Policy") based on the *Guiding Principles on Business and Human Rights* set forth by the United Nations. The JX Advanced Metals Group positions this Policy as the primary policy on human rights in conducting our business activities and continues to promote efforts in upholding human rights.

1. Commitment to Respecting Human Rights

While understanding that our business activities may have a direct or indirect impact on an individual's human rights, the JX Advanced Metals Group fulfills our responsibility for respecting human rights by avoiding any possible violation of human rights, and pledges to take appropriate actions to correct any negative impact on human rights that may be caused in the course of our business activities.

The JX Advanced Metals Group supports and respects the following international codes on human rights:

- The United Nations' (UN) *International Bill of Human Rights*, which stipulates the basic human rights of all individuals (including the *Universal Declaration of Human Rights*, the *International Covenant on Civil and Political Rights*, and the *International Covenant on Economic, Social and Cultural Rights*);
- The International Labour Organization's (ILO) *ILO Declaration on Fundamental Principles and Rights at Work*;
- Treaties on the human rights of workers, including wages and working hours;
- The *United Nations Declaration on the Rights of Indigenous Peoples*;
- The UN's *Children's Rights and Business Principles*;
- The Organization for Economic Co-operation and Development's (OECD) *OECD Guidelines for Multinational Enterprises on Responsible Business Conduct*;
- The *OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas*;
- and other international codes on human rights.

The JX Advanced Metals Group complies with laws and regulations applicable in each country and region in which we conduct business activities, and in the event of a conflict between internationally-recognized human rights codes and the laws of each respective country and region, the JX Advanced Metals Group will seek a way to respect international human rights principles above all else.

2. Human Rights Due Diligence

To fulfill its responsibility for respecting human rights, the JX Advanced Metals Group establishes and continues to implement a structure for human rights due diligence. Human rights due diligence refers to a continuous process to prevent and reduce any possible negative impact on human rights that we could cause to society, by conducting preventive investigations and developing early identification systems, taking corrective actions where applicable, and externally disclosing the progress and results of those activities.

3. Remedies

In the event that the JX Advanced Metals Group discovers that we have caused or contributed to any negative impact on human rights, we will endeavor to correct such a situation as seen fit. All parties involved, including, but not limited to, employees, employees in our supply chain, local residents, and other stakeholders, will be referred to an ever-improving complaint hotline where they can file formal complaints.

4. Education

The JX Advanced Metals Group will provide appropriate education to our officers and employees to ensure that this Policy is incorporated into the business activities of all JX Advanced Metals Group companies.

5. Information Disclosure

The JX Advanced Metals Group will disclose the progress and results of our efforts in respecting human rights under this Policy on our website, in a report or other forms.

6. Dialogue / Consultation

The JX Advanced Metals Group will hold a sincere dialogue with any relevant stakeholders as to any violations on human rights that could be caused in the course of business activities so that we (the JX Advanced Metals Group) can understand and address the issue from the view of the potentially affected individuals.

7. Scope of Application

This Policy shall apply to all officers and employees of the JX Advanced Metals Group. The JX Advanced Metals Group also requires that all business partners related to our business activities understand and cooperate with this Policy.

August 01, 2023
President and Chief Executive Officer, JX Advanced Metals Corporation
Hayashi Yoichi

Respect Human Rights in Supply Chains

In all of our business activities, the Group will respect the fundamental human rights of our own employees and all those involved in our supply chain, and at the same time we will strive to mitigate potential human rights risks.

JX Advanced Metals Group Basic Policy on Procurement (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 Organization 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 our business operations, it is necessary, not only that we in the JX Advanced Metals Group fulfill our responsibilities to society, but that our business partners do the same across their own supply chains. 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 laws and regulations related to health and safety and facilitate appropriate working environments
   - Prohibit discrimination based on race, gender, etc. and respect the human rights, personality, and individuality of employees
   - Prohibit bribery and other unfair conduct
   - Preclude all relations with “antisocial forces” (the term used to refer to organized crime groups in Japan)
   - Comply with labor-related laws and regulations
   - Prohibit child labor and forced labor
   - Comply with environmental laws and regulations
   - Do not engage in conflict minerals procurement or use that contributes to inhumane acts
2. Engage in sound and fair business management.
3. Set goals to achieve carbon neutrality to address climate change issues, and take active measures to meet these goals.
4. Based on the JX Advanced Metals Group’s Green Purchasing Guideline, build environmental management systems and properly manage specified chemical substances.
5. Offer stable supply capacity and satisfy the quality, price, delivery, and service requirements of the JX Advanced Metals Group.
6. Possess technological capabilities that meet the requirements of the JX Advanced Metals Group.

Initiatives for Human Rights in the Supply Chain

In accordance with the Basic Policy on Procurement, the Group conducts checks with our 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, in fiscal 2019, we began conducting CSR Procurement Questionnaires to foster CSR in procurement across our entire supply chain. We will continue to conduct these questionnaires and provide feedback to our suppliers, while at the same time taking precautions to prevent human rights violations from occurring in our supply chain.

Prohibit Forced Labor, Child Labor, and Discrimination

Our Group Policy for Selecting Procurement Partners extends to our supply chain and stipulates that forced labor, child labor, racial discrimination, and gender discrimination are prohibited and that there is to be compliance with all labor laws and regulations. Neither in the Group nor among our suppliers have there been any reported cases of forced labor, child labor, violations of freedom of association, factory shutdowns due to strikes, or employment discrimination. Going forward, we will continue to prohibit forced labor, child labor, and discrimination of all kinds.

TANIOBIS Japan Mito Plant Receives Platinum Status in RBA Audit

The TANIOBIS Japan Mito Plant received a perfect score of 200 points in the Validated Assessment Program (VAP) audit, which evaluates compliance with the Responsible Business Alliance (RBA) Code of Conduct, receiving platinum status, the highest status in the RBA certification program.

The Mito Plant is the third site to receive Platinum Status in the RBA audit, following Isohara Works (April 2022) and the Chigasaki Plant of Toho Titanium Co., Ltd (June 2021). We believe this status depicts the steady progress of our group-wide efforts to promote ESG and serves as proof of the transparency of our semiconductor material supply chains.

RBA-issued VAP audit certificates


Responsible Business Alliance
Advancing Sustainability Globally

Recognition that

TANIOBIS Japan Co.,Ltd Mito Plant

No.9 Industrial Park,Hitachiomiya-shi,Ibaraki 319-2134 , Hitachiomiya-shi, Ibaraki, 319-2134
Japan

Completed the RBA Validated Assessment Program, achieving PLATINUM Status closing all Priority, Major and minor findings, earning a score of 200.0

Validated Audit Report:	VAR-20230922-JP-02B02-1
Audit date:	September 22, 2023
Certificate issue date:	October 11, 2023
Expiration date:	November 2, 2024

Robert F. Lederer
CEO, RBA

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, LPPM*2, and RBA) have established monitoring programs for eliminating conflict minerals, and require each business operator to undergo investigations and external audits.

*1 London Bullion Market Association (LBMA)
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 London Platinum and Palladium Market (LPPM)
An industry association composed of financial institutions and others that deal in platinum and palladium ingot. Inclusion on this association’s Good Delivery List is viewed as a guarantee of high quality and reliability.

Initiatives in Copper, Gold, Silver, Platinum, and Palladium Supply Chains

JX Metal Smelting Co., Ltd., as a producer of gold, silver, platinum, and palladium ingots, has established and operates a management system for supply chain due diligence that calls confirmation of the origin of raw materials, risk assessments, and confirmation of distribution routes. Operational status is reported to the LBMA and LPPM after undergoing an external audit by a third-party organization designated by the association. As a result of these processes, both of these organizations have put the company’s gold, silver, platinum, and palladium ingots on their respective Good Delivery Lists. At the same time, the company has also been included on the RMAP Conformant Smelters list for gold compiled by the RBA and GeSI*—recognition that it is taking proper measures to exclude conflict minerals.

For refined copper, the company also established a supply chain due diligence management system, which includes confirmation of the origin of raw materials, risk assessment, and distribution channels. The system began operating in fiscal 2022. Its operational status is verified by external audits conducted by a third-party organization, as stipulated under the process followed to obtain The Copper Mark.

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

LBMA- and LPPM-Issued External Audit Certificates


LBMA
Responsible Gold Certificate
JX Advanced Metals Corporation
Sugawaseki
9 September 2024 1 April 2023 to 31 March 2024


LBMA
Responsible Silver Certificate
JX Advanced Metals Corporation
Hitachi
9 September 2024 1 April 2023 to 31 March 2024


LPM
Responsible Platinum and Palladium Certificate

Initiatives for the Tantalum Supply Chain

TANIOBIS GmbH is a Group company that produces tantalum powder. This company conducts supply chain due diligence in accordance with international standards as a refiner of tantalum, a designated conflict mineral. TANIOBIS GmbH strives to prevent complicity in human rights violations in conflict zones and high-risk areas.

The supply chain management of TANIOBIS GmbH received certification from RMI*1, an international framework for responsible mineral procurement, and was evaluated as an RMAP*2 Conformant Smelter.

*1 Responsible Minerals Initiative (RMI): An organization within the Responsible Business Alliance (RBA) that facilitates due diligence in the conflict minerals supply chain and provides programs to certify appropriate measures.
*2 Responsible Minerals Assurance Process (RMAP): A certification program for responsible mineral procurement established by RMI.

White Logistics Activities

At the end of April 2020, we announced our participation in the White Logistics movement launched by the Japanese government. We are promoting activities to resolve various issues based on our voluntary declaration of support for this movement. For example, in contracts with logistics providers, we are promoting appropriate action for contract reviews, such as separating driving from ancillary work, studying and introducing fuel surcharges, and reaffirming compliance with labor-related laws and regulations and trucking business-related laws and regulations.

Activity Content in Our Voluntary Declaration of Support

Statutory Requirements	
1	Making suggestions and cooperating in logistics improvements
2	Separating driving from ancillary work
3	Studying modal shifts for CO_2 reduction
4	Establishing fuel surcharge agreements
5	Incorporating legal compliance considerations when selecting contracting parties
6	Taking safety measures during loading and unloading
7	Cancelling/suspending service during abnormal weather, etc.

Human Rights Education and Internal Awareness Raising

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.

JX Advanced Metals Group Compliance Regulation (Excerpt)

Prohibition of unjust discrimination
JX Advanced 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.

Protection of personal information
The JX Advanced Metals Group companies and their officers and employees shall comply with personal information protection laws, regulations, and internal rules, adequately 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 harassment
JX Advanced Metals Group companies and their officers and employees shall work proactively to prevent sexual harassment (including gender harassment) and power harassment.

Prevention of child labor and forced labor
The JX Advanced 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.

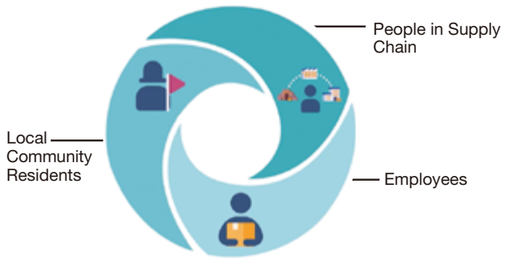
Human Rights Education

We provided human rights training to all Group employees in fiscal 2023 based on the theme of human rights (harassment prevention). This theme is designed to deepen employees' understanding of the JX Advanced Metals Human Rights Policy and its background, which was established as the highest policy regarding respect for human rights in the Group in response to recent increased need for companies to address human rights issues and the expanded scope of human rights issues to include the entire supply chain. This training aims to provide participants with the correct knowledge and judgment needed to prevent harassment as part of our efforts to respect human rights in the workplace.

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.

Total Hours Spent in Human Rights E-Learning Training
(Number of trainees x course hours)
FY2023 **1,077** hours

Work Categories



Human Rights Consultation and Remedies

The Group has established the JX Advanced 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 portal 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. Fourteen reports were made to the hotline in fiscal 2023. 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.

We have also established the JX Advanced Metals Group Supplier Hotline and a Group website-based Help Desk as a consultation service available to external stakeholders, such as suppliers, suppliers' employees, and local residents. The hotline and Help Desk have been set up to offer a process for remediation and redress that can be accessed by stakeholders affected by acts of the Group that violate or may violate laws and regulations. All consultations are conducted on an anonymous basis. In addition, the Group will never treat an individual or their employer unfavorably for using these consultation services or reporting a concern.

VOICE — Comments From a Human Rights Training Participant

My initial impression about human rights was that it wasn't really related to business or our daily work. I learned the importance of viewing human rights from a broader perspective, since the supply chains of global manufacturing companies like ours involve a diverse range of people. In particular, I learned about the definition and types of harassment, which is the most familiar issue in human rights. Our Company focuses on diversity, equity, and inclusion (DE&I) and we believe that eliminating human rights violations and harassment is fundamental to achieving equity in human resources. I think we must face our unconscious biases to recognize that anyone can be an unconscious perpetrator of discrimination and harassment. I plan to continue to raise my own awareness through regular training.

JX Advanced Metals Corporation
Human Resources Department
Morishima Yumi

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Materiality 5

Coexistence and Co-Prosperity With Local Communities

Since the inception of our business at the Hitachi Mine, the JX Advanced Metals Group has emphasized the spirit of maintaining good relations with local communities in conducting 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.

Social Contribution Activities | Environmental Conservation Activities | Educational Activities | Community Development | Donations to Local Communities | Sports Promotion

▶ P.92

KPIs and Progress

Assessment: ☺ Achieved / Steady Progress ☹ Not Achieved

KPI	FY2023 Results/Progress	Assessment
Continuing dialogue with local communities	We have made efforts to build relationships of trust with local communities through social contribution initiatives and open dialogues with communities at each of our operating sites in Japan and overseas.	☺

Activities at the Head Office (Minato-ku, Tokyo) > P.92

Activities at Hitachi Works > P.94

Activities at Kurami Works > P.95

Activities at Other Domestic Locations > P.96

Regional Cooperation in Ibaraki Prefecture > P.93

Activities at Isohara Works > P.94

Activities at the Saganoseki Smelter & Refinery > P.95

Activities at Other Overseas Locations > P.98

Social Contribution Activities

With the goal of further strengthening relationships with local communities through social contribution activities, the JX Advanced Metals Group conducted community-based initiatives at each of our operating sites in Japan and overseas. Along with the changing times, the nature and methods of community contribution have evolved. We have endeavored to create opportunities for communication with local communities, valuing the spirit of coexistence and co-prosperity that we have pursued since our founding.

Activities at the Head Office (Minato City, Tokyo)

Minato City Cooperation Agreement

We have concluded a cooperative agreement with Minato City, Tokyo, and the Minato City Board of Education regarding the development of the local community. We are the sixth company to conclude the same agreement in the district, and the first case of a B2B company. Since establishing our head office in 1937 in what is now Minato City, we have engaged in a variety of collaborative activities with Minato City for the development of the local community, including introducing the appeal of non-ferrous metals to children and facilitating workplace experiences. Additionally, we participate in networks that support employment for individuals with disabilities. Moving forward, we aim to strengthen and sustain the cooperative relationship we have built thus far. In addition to our existing initiatives, we will expand our collaboration into a wider range of areas by leveraging the knowledge and networks of both parties and facilitating personnel exchange.

Cooperation Agreement Signing Ceremony

Acceptance of Students From Special Need Education Schools for Workplace Tours

From June 18 to June 26, 2023, we hosted workplace visits for 100 first-year students from the Tokyo Metropolitan Eifuku Academy's Employment Technology Program at our head office. We aimed to enhance employment awareness and motivation for learning among students by allowing them to observe graduates from the academy at work in our Cheerful Support Office. Members of the Cheerful Support Office, responsible for mail sorting and shipping tasks, provided explanations about their work. The students actively took notes during the presentations. During the round-table discussion following the workplace tour, members shared their experiences, including what they concentrated on during their time at special needs education school and the reasons behind their decision to join the Company. There were many questions, including "When do you feel a sense of fulfillment?" and "What do you value most in your work?" The members took the time to reflect on their answers and responded thoughtfully in their own words.

Students listening attentively

Participation in the National Cooperative Marche in Shibaura

On September 24, 2023, we participated in the National Collaboration Marche held at Platanus Park in Minato City. This event is part of a national collaboration initiative in Minato City, aimed at creating local vibrancy and fostering deeper interaction between residents of Minato City and communities across the country. It utilizes the "power of collaboration with regions nationwide" to organize the marche. We have entered into a "Cooperation Agreement for Community Development" with Minato City and the Minato City Board of Education. Under this agreement, we set up a booth at the event to contribute to local revitalization and support for individuals with disabilities.

At our booth, we sold vegetables harvested by members with disabilities as part of JX Advanced Metals Corporate Service Co., Ltd.'s agricultural and welfare collaboration project, *Uchihara Farms*. Members of the Cheerful Support Office along with volunteer employees and their families participated in the sale and interacted with community members who visited the booth. In addition, as part of an effort to create an environment where people with physical disabilities or other limitations can work, Minato City set up the remote-controlled robot *OriHime* at our booth. This allowed individuals with disabilities to demonstrate customer service at our booth from a remote location.

Selling Ibaraki vegetables grown with reduced pesticides

COLUMN Regional Cooperation in Ibaraki Prefecture

JX Advanced Metals Corporation traces its roots back to the start of operations at the Hitachi Mine in Hitachi City, Ibaraki Prefecture, in 1905. Even today, we have several production facilities in this prefecture. We have a very close relationship with Ibaraki Prefecture, and the area is very important to our business. Looking ahead to the construction of our new factories and the growing importance of reliable supply chains, we are promoting activities to further develop the regional economy and increase our visibility there.

Supporting Mito HollyHock as a Top Partner

Mito HollyHock is a professional soccer club belonging to the J-League, with its hometown spanning Mito City in Ibaraki Prefecture and 15 municipalities in the northern and central areas of the prefecture. Since our founding, we have emphasized coexistence and co-prosperity with the community. We share the club's vision of rooting ourselves in the community, walking alongside it, contributing to it, and developing together with it to share a sense of dreams and excitement. Since we resonate with the club's philosophy, we have actively sponsored them since the 2022 season. From the 2023 season onward, we have continued our strong relationship with the club by providing support as a top partner in the highest category.

We support the club's efforts to revitalize the community through various initiatives, including advertising on the top team uniform (upper back), offering free invitations to middle and high school students as well as individuals aged 65 and over, holding Thank You matches, holding soccer clinics at kindergartens, nursery schools, elementary schools and special needs education schools in the home town area, and supporting youth development activities such as soccer schools.

JX Advanced Metals Thank You matches on September 23, 2023 *Photo courtesy of Mito HollyHock

Comprehensive Cooperation Agreement With Ibaraki University's College of Engineering

In July 2023, we concluded a comprehensive collaboration agreement with the Ibaraki University's College of Engineering. The agreement aims to jointly cultivate talent that learns, works, and lives in Ibaraki, thereby contributing to regional development. As a symbol of this partnership, we signed an agreement regarding naming rights with the university. Classroom 10 (with a capacity of 296) at the Hitachi Campus of the university will be referred to externally as the JX Advanced Metals Hall. As part of the cooperation agreement initiative, we held a matching event to promote industry-academia collaboration, including joint research, and also participated in the *Kogaku Festival*, a school festival held by Ibaraki University's College of Engineering. At the *Kogaku Festival*, along with organizing a children's experimental workshop, we also organized a collaborative event involving Mito HollyHock, titled *Ibaraki University* × *Mito HollyHock* × *JX Advanced Metals*. Additionally, we held a talk event themed around engineering and sports, along with a public viewing of a soccer match at JX Advanced Metals Hall.


Special collaboration event

Hosting the 1st JX Advanced Metals Kendo Festival

On January 28, 2024, the 1st JX Advanced Metals Kendo Festival was held at the Hitachi Budokan. The inaugural kendo tournament was held in Hitachi City, the birthplace of our company. The purpose of this event is to contribute to the community and support youth development through kendo. On the day of the event, about 170 elementary and junior high school students from 13 groups around Hitachi City and other areas participated. High school students from Hitachi City participated in the kendo clinic held in the morning, where Ishida Toshiya, a master instructor of the Company's kendo club, gave a lecture and provided practical skills instruction. In the afternoon, a tournament-style team competition was held, divided into three divisions: lower elementary school division, upper elementary school division, and junior high school division. The venue was filled with the participants' vibrant energy and spirited shouts, creating an exciting atmosphere. Going forward, we will actively promote initiatives for community contribution and youth development through kendo as part of our support for community-based sports activities.


Participants listening to Master Ishida's lecture

Initiatives at Hitachi Works

Transporting Emergency Supplies to Areas Hit by Torrential Rains and Flooding

On September 8, 2023, a linear precipitation zone associated with Typhoon No. 13 hit the northern coastal region of Ibaraki Prefecture, causing extensive damage from landslides and river flooding. The Hitachi Works suffered extensive damage on an unprecedented scale, including landslides on the site and flooding of buildings. While recovery efforts were underway, we were informed that the only road leading to the village in the Sawadaira area of Hitachi City, which has historical ties with the Company since the Hitachi Mine days, was cut off in several places, leaving the community isolated. Hoping to be of assistance, six members of the Hitachi Works Administration Department headed for the Sawadaira area on September 11, carrying emergency supplies. The team members walked along roads which were blocked by mounds of saturated soil and large stones, making them impassable for vehicles, and delivered emergency food and water for three days to all households in the Sawadaira area.


Hitachi Works Administration Department staff carrying relief supplies to the Sawadaira area

Exhibit at the Hitachi Youngster's Science Festival

The Hitachi Works set up an exhibition booth at the 23rd Hitachi Youngster's Science Festival held at the Hitachi Civic Center on October 29, 2023. This event is held under the philosophy of "providing science experiences to as many children as possible and increasing the number of science-loving children as possible." Each company and organization provides children with experiments and crafts that allow them to experience the fun of science through their five senses. We set up an experimental exhibition booth, *Shiny Copper Coin Experiment*, with about 80 children participating. Children who observed the color change of coins due to oxidation-reduction reactions expressed their excitement, saying things like, "The coins became really beautiful!" and "That was fun!"


Shiny Copper Coin Experiment being performed

Activities at Isohara Works

Implementation of the Riko Challenge for Elementary and Middle School Students

The Riko Challenge is an event co-hosted by the Cabinet Office and the Ministry of Education, Culture, Sports, Science and Technology, aimed primarily at female elementary, middle, and high school students. It focuses on exploring careers and future opportunities in science and engineering, organized by companies, universities, and academic organizations. We support this policy and have been holding events for local junior high school students since 2015. In fiscal 2023, we held events at the Isohara Works, Hitachi Works, Kurami Works, and Saganoseki Smelter & Refinery. A total of 11 junior high school students participated at the Isohara Works, where science and engineering employees gave presentations about their own career choices and also served as instructors for the day. The students had the opportunity to observe cooling experiments using liquid nitrogen and thermal conduction experiments using copper. Students who had the opportunity to see areas of the factory and showroom that they usually don't have access to expressed their thoughts, commenting that they gained a better understanding of what kind of work is done here and that the experiments were fun. The event concluded amidst a lively atmosphere, leaving everyone energized and inspired.


Students touring the showroom

Events in Kitaibaraki City

We made donations to the Hitachi-Otsu's fune Festival- (a nationally designated important intangible folk cultural asset) held in May 2024, as well as to the Children's Cafeteria Ren (NPO), which primarily provides meals for children in Kitabiraki City.

Involvement With Ibaraki Prefecture, Kitaibaraki Special Support School

The Isohara Works is working with the Kitaibaraki Special Support School to create a social infrastructure that enables coexistence with the local community and diverse talents to thrive. In fiscal 2023, JX Advanced Metals Corporate Services dispatched lecturers from its Isohara Office to give on-site cleaning classes from December to February. Additionally, we welcomed high school students for corporate internships from January 29 to February 9, and hosted a factory tour for junior high school students on February 20. During the factory tour, we welcomed 10 students and 6 teachers. In addition to a tour of the manufacturing facilities, senior employees who graduated from a special support school gave short presentations about their work and experiences. The students were surprised at the scale of the factory and listened intently to the explanations of the senior employees, making it a fulfilling learning experience.

Activities at Kurami Works

Participation in the Sagami River Beautification Campaign

In the Kanto region, local governments designate a Sunday near May 30 (Zero Waste Day) every year as Environmental Beautification Campaign Day and conduct a unified beautification campaign. In Samukawa Town, the Sagami River Beautification Campaign was held on May 26, 2024, in conjunction with this initiative. At Kurami Works, as a member of the Samukawa Town Industrial Association, we participate and cooperate annually to promote coexistence with the community and raise awareness and understanding of environmental issues. The day of the event saw good weather, and about 70 people participated, including employees and their families. We will continue to value communication with the community and actively help create a clean town.


Participants in the cleanup

Sponsorship of Kurami Children's Cafeteria

In October 2023, Kurami Works began sponsoring the *Kurami Children's Cafeteria* in cooperation with a non-profit organization that has been active since 2021. The Kurami Children's Cafeteria was established with the goal of providing children and their families with homemade, warm meals and creating a comfortable, home-like atmosphere for dining. It welcomes both adults and children, and is held once a month, accommodating about 70 participants. The local community association has made the community center available, and many local farmers and nearby businesses have generously donated ingredients and snacks. Additionally, Kurami Works has contributed items such as frankfurters and French fries, as well as vegetables harvested from JX Advanced Metals Corporate Service Co., Ltd. Uchihara Farm to be used in daily meals.

Sponsorship of Youth Soccer Tournaments

The 44th JX Advanced Metals Cup Contest, the Samukawa Invitational U-12 Boys Soccer Tournament was held on July 14, 2023. This is a traditional youth soccer tournament that has been held since 1980, sponsored by the Samukawa Soccer Association under the auspices of the Samukawa Town Board of Education. Kurami Works has been a sponsor of the tournament since 2023, providing various forms of support for the event, including a championship cup (trophy plate), award plaques, novelties for each team, and AED rentals during the tournament.

Activities at the Saganoseki Smelter & Refinery

Carrying the Mikoshi at Shiinetsuhiko Shrine and Hayasuhime Shrine

Every year, we participate in a festival at a shrine in the Saganoseki area. In fiscal 2023, 34 new employees from the firm participated in carrying the Mikoshi at the Spring Grand Festival at Shiinetsuhiko Shrine (April) and the Summer Grand Festival at Hayasuhime Shrine (July). The participating new employees wore traditional white garments and, after receiving purification rites from the shrine priest, carefully shouldered the Mikoshi. At first, they felt a bit unsure, but with the encouragement of the local community, they successfully fulfilled their role and carried the Mikoshi until the end.


New employees carrying the Mikoshi

Visits From Nearby Elementary Schools

We host plant tours for elementary schools located near the Saganoseki Smelter & Refinery. In October 2023, we invited 10 fifth-grade students from Saganoseki Elementary School, and in December, we welcomed 22 fifth-grade students from Kozaki Elementary School for a tour of the smelter. After explaining about copper and the smelter, we gave a tour of the facilities. The children had studied about the smelter in advance and actively participated in quizzes and other activities. Many students were interested in recycled materials and urban mining and asked many questions. They toured the inside of the smelter, which can usually only be seen from the outside, and were overwhelmed by the sheer size of the facility.

Donations to the Traffic Accident Orphans Support Fund

Every year, we donate a portion of the profits from the vending machines installed on the premises of the Saganoseki Smelter & Refinery to the Oita Prefecture Traffic Accident Orphans Support Fund. The fund offers a range of grants aimed at ensuring that children affected by traffic accidents can grow up healthy and resilient, while receiving support to excel in their studies and sports. Saganoseki Smelter & Refinery also conducts a wide range of other activities, such as the morning and evening Yamabiko Campaign and support for traffic safety promotion groups. We will continue to contribute to traffic safety in the local community through these initiatives.

Activities at Other Domestic Locations

JX Metals Circular Solutions Tsuruga Co., Ltd.
Participation in Kehi No Matsubara Cleanup Activities

We participated in Operation Cleanup Fukui, a cleanup activity held at Kehi no Matsubara in Tsuruga City, Fukui Prefecture, one of the three largest pine groves in Japan. A total of 20 people made up of our employees and their families, participated in the event, collecting driftwood and burnable trash that had washed ashore. On the day of the cleanup, about 1,300 people, including the mayor of Tsuruga City, employees of local companies, and local residents, participated in the cleanup activities. After the cleanup activity, we held a lunch gathering for the employees and their families who participated in the volunteer work, allowing everyone to enjoy a meal together and strengthen their bonds in a cheerful atmosphere.


Participants in the cleanup activities

JX Metals Mikkaichi Recycle Co., Ltd.
Participation in Kurobe Fair 2023

We participated in the Kurobe Fair 2023, held at the Kurobe City Sports Center from September 17 to September 18, 2023. The event is organized by the Kurobe Chamber of Commerce and Kurobe City, bringing together 120 businesses and organizations from the area to promote their products and services in a commercial and industrial festival. This year's event attracted a very large number of visitors, approximately 42,000, far exceeding the 18,000 who attended last year's event.

We set up an indoor exhibition booth, where we showcased our group's resource recycling initiatives using panels, videos, and samples of raw materials and products. We will continue to let the local community know about our business and the significance of resource recycling through exhibits at the Kurobe Fair and other events.

The event was crowded with participants

JX Metals Smelting Logitech Co., Ltd.
Hosting the "Tairyo Oshi Hajime Competition"

On September 9, 2023, the Tairyo Oshi Hajime Competition was held at the Saganoseki Fishing Port Kojima Gas Station for the first time in four years. Traditionally, fishermen needed to reach the best fishing grounds faster than anyone else to ensure a good catch at the start of the new year. This led to the practice of young people selected from various districts racing wooden boats, demonstrating their strength and skill. Those races are seen as the origin of the Oshi Hajime. We have participated in this event since 2003 and have competed with veteran local teams for the championship every year. We will continue to deepen our relationship with the community through these events.


Members of the runner-up team


Traditional rowing time trial races

JX Advanced Metals Research Institute for Technology & Strategy Co., Ltd.

Hosting theme-based internships

From September 19 to September 29, 2023, we conducted a practical internship training program in which we set challenges and worked with students to find solutions. Centered around the theme of LCA as a Management Method: How to Utilize the Mass Balance Method and Other LCA Analysis Methods to Strengthen Corporate Competitiveness, participating students attended lectures given by members of the ESG Promotion Department and the Technology Group, visited JX Metals Circular Solutions Tsuruga Co., Ltd., toured other companies from different industries, and participated in various research meetings. Interns expressed feedback such as, “It was a great source of inspiration and a valuable experience for my future.” Their supervising professor noted, “This was an incredibly important opportunity for them. I am looking forward to them engaging even more deeply with their research.”

Interns working on an assignment

JX Metals Resources Exploration & Development Co., Ltd.

Hosting the Resource Development Training Program from MINETEC: International Institute for Mining Technology, JMEC

In response to a request from the MINETEC, on July 6, 2023, we conducted a lecture on drilling in metal resource exploration at MINETEC in Kosaka, Akita Prefecture. We also provided a tour and explanation of drilling machinery at our Odate office. MINETEC operates as a division of the Japan Mining Engineering & Training Center, focusing on training personnel in mineral resources and conducting research related to metallic minerals. Each year, it holds lectures and training sessions in Kosaka, Akita Prefecture, as well as tours of resource development facilities both domestically and internationally. Despite the hot weather, 11 people participated in the training. Their enthusiasm made it a rewarding experience for us as hosts.

A tour of the drilling machine

Hitachinaka Office

Collaboration With the Career Design Class at National Institute of Technology, Ibaraki College

The Company collaborated on the Career Design curriculum for 40 first-year students at National Institute of Technology. The curriculum is designed to enable students to independently design their own careers. It consists of a flow that includes preliminary company research, career lectures, and factory tours. Students learn about work and society by deepening their understanding of an individual company. Recently, we collaborated on the career lectures and factory tour segments of the course.

A career lecture was held on July 26, 2023 as a guest lecture by the Hitachinaka Office. In the class, our employees shared insights with the students, who had done their preliminary research on the company. They emphasized how the specialized knowledge gained during their studies can be applied in the real world and highlighted that the experience of pursuing interests beyond their major can be a valuable advantage in the workplace.

A factory tour was conducted at the Isohara Works on October 3, 2023. Through explanations in the showroom and site tours, visitors learned about the applications of our sputtering targets for semiconductors and their manufacturing processes. During the closing Q&A session, insightful questions stemming from the factory visit—such as “Is the color-coded hallway in the building a safety feature?”—made for a very rewarding experience.

Career design seminar

Activities at Other Overseas Locations

Frankfurt Office

Sponsorship of the Main Festival, the Largest Japanese Cultural Event in Frankfurt

The Main Festival, the largest Japanese cultural event in the Frankfurt region, was first held in 2019. In 2023, it took place over three days from August 18 to 20 in the park in front of the Busing Palais in Offenbach, adjacent to the city of Frankfurt. The venue featured various stage performances, including music by Japanese artists, martial arts demonstrations, and traditional Japanese dance. There were also food stalls offering Japanese cuisine, exhibitions and sales of arts and crafts, hands-on workshops, and tents set up by sponsoring organizations and companies, attracting around 20,000 visitors.

In addition to the cities of Frankfurt and Offenbach and their chambers of commerce, the Main Festival is supported by the Consulate General of Japan in Frankfurt, the Frankfurt Japanese Business Association, the Japan-Germany Business Association, and the Deutsch-Japanische Gesellschaft Frankfurt. We also supported the festival by advertising in the program magazine sold during the event and assisting at the Frankfurt Japanese Business Association booth. As with the Nippon Connection Japanese Film Festival, we will continue to support such Japan-Germany exchange events to enhance our presence in the local community and contribute to the development of Japan-Germany relations.

Main festival stage

eCycle Solutions, Inc.

Cooperation With Canadian TV Educational Programs

Our group company, eCycle, collaborated with the Canadian educational TV program ADVANCEMENTS. The program is a public educational program that highlights important issues and topics in industry and the economy, and aired on Bloomberg TV. In the program, footage of the eCycle Solutions facility in Mississauga, showcasing the processing of discarded appliances and electronic devices, was featured. Additionally, Scott Loughran, the President and CEO of eCycle Solutions, gave an interview to explain about E-Waste recycling and its importance to the formation of a sustainable society.

Interview

Chile Office

Forest Fires in Chile

A major forest fire occurred in Chile in February 2024. The Group holds interests in and conducts business at several copper mines in the Chile, including the Caserones copper mine. In support of the affected communities, we donated the equivalent of 3 million yen to TECHO Chile, a local nonprofit organization that provides temporary housing and distributes disaster relief kits.

Chile Office

Participation in the Japan Festival at Universidad Nacional de Santiago, Chile

From November 7 to November 8, 2023, the Japan Festival was organized by students studying Japanese at the University of Santiago. The university is the only university in South America to offer Japanese language as a major. This event has been held since 2001 with the aim of promoting a broad understanding of Japanese culture among people inside and outside the university. Each year, it showcases various aspects of Japanese culture, including calligraphy, Shinto, and Japanese cuisine.

Chile Office set up a lecture booth at the event, introducing JX Advanced Metals and Chile Office. In particular, we highlighted how Japanese and Chilean employees work together while respecting each other’s cultures. We also showcased the roles of Chileans who speak Japanese in supporting expatriate workers. This inspired participating students, many of whom expressed a desire to pursue similar careers in the future. We will continue our exchange with the university by accepting internship students and cooperating in Japanese language classes.

Participating students dressed in kimonos

G 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.

Corporate Governance ▶ P.100

Rigorous Compliance ▶ P.102

Risk Management ▶ P.105

Quality Control in the Supply Chain ▶ P.112

KPIs and Progress

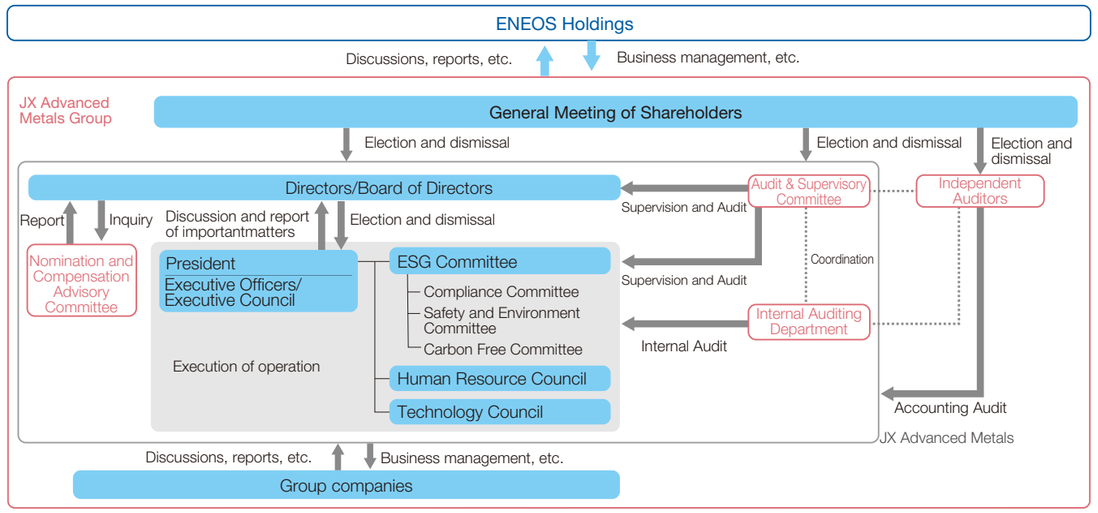
Assessment: ☺ Achieved / Steady Progress ☹ Not Achieved

KPI	FY2023 Results/Progress	Assessment
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 2023, in addition to the annual rank-specific compliance training, we once again conducted training sessions, both domestically and internationally, on harassment and security trade controls, tailored to business characteristics, social trends, and other factors.	☺
Steady operation of group-wide risk management	The JX Advanced Metals Group bases activities on Enterprise Risk Management (ERM), established with reference to ISO 31000, a set of guidelines for risk management. In fiscal 2023, we focused on continuously improving our ERM framework in order to achieve the JX Advanced Metals Group ERM Vision, which aims for ERM that is more conducive to enhancing corporate value. In making improvements, we used a maturity model from an external organization to analyze the gaps between the current situation and our desired outcomes, and subsequently planned and implemented measures to address these gaps.	☺

Corporate Governance

The Group is working to strengthen our 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. As of the end of June 2024, the Company's Board of Directors consists of 11 members: 6 non-Audit & Supervisory Committee members (5 male and 1 female) and 5 Audit & Supervisory Committee members (4 male and 1 female). The Chairman of the Board serves as the chairperson of the meetings. 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.

Audit & Supervisory Committee

The Audit & Supervisory Committee has the authority prescribed by law, the Articles of Incorporation, etc., to audit the execution of duties by directors and to prepare audit reports. In addition, auditors endeavor to understand the state of business execution by individual executives of the Company and Group companies through interviews and the inspection of documents. Furthermore, auditors 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.

Nomination and Compensation Advisory Committee

In order to strengthen the objectivity and transparency of procedures related to the nomination and compensation of directors and to enhance corporate governance, we have established the Nomination and Compensation Advisory Committee as an advisory body to the Board of Directors. This committee is comprised of a majority of outside directors, with one of them serving as chair. The Nomination and Compensation Advisory Committee shall, in consultation with the Board of Directors, deliberate and report to the Board of Directors on matters such as personnel proposals for the Company's directors (including election and dismissal), policies for determining the compensation of the Company's directors and executive officers, the compensation system, and succession plans for the Company's president.

Executive Council

As an advisory organ to the president, the Executive Council, consisting of the president and executive officers appointed by the president, was established to discuss important matters regarding company management and to report the state of business execution.

Outside Directors

With the recent growing calls from society to strengthen governance and internal controls, we appoint outside directors to incorporate new perspectives in judgment and new stimuli, as well as provide an external oversight function. As of the end of June 2024, 5 of the 11 directors (2 directors who are not Audit & Supervisory Committee members and 3 Audit & Supervisory Committee members) are outside directors.

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.

Policies and Procedures for Nominating Board of Director Candidates and for Selecting and Dismissing Senior Managers

Directors who are not Audit & Supervisory Committee members are selected from among persons having high professional ethics, excellent strategic thinking and judgment, adaptability to change, and the ability to make decisions and supervise management from the perspective of overall Group optimization.

Directors who are Audit & Supervisory Committee members are selected from among persons who have high professional ethics and a certain level of expertise in law, finance, accounting, etc., and who are capable of auditing the execution of duties by directors and supervising the execution of business operations appropriately.

The Nomination and Compensation Advisory Committee ensures objectivity and fairness by deliberating on the selection of director candidates before making a report to the Board of Directors.

Executive Officer Compensation System

We established a compensation system for directors responsible for business execution (directors who are not Audit and Supervisory Committee members and executive officers excluding outside directors) to ensure the sustainable growth of our group, enhance our corporate value over the medium to long term, and fulfill our responsibilities to our shareholders and other stakeholders. This system consists of fixed compensation and short-term performance-linked compensation to increase incentives for achieving our management plans. Short-term performance-linked compensation is compensation linked to the consolidated performance of the Company for a single fiscal year. On the other hand, compensation for directors who do not engage in business execution (outside directors and directors who are members of the Audit & Supervisory Committee) consists only of fixed compensation. This structure is designed to enable them to fully fulfill their responsibilities in overseeing and auditing business operations.

Compensation for directors who are not members of the Audit & Supervisory Committee is determined by resolution of the Board of Directors, taking into account the report of the Nomination and Compensation Advisory Committee, which is chaired by one of the outside directors who make up a majority of the committee and are expected to be reported as independent directors. The compensation of directors who are members of the Audit & Supervisory Committee is determined through discussions among directors who are members of the Audit & Supervisory Committee.

The Company does not have an executive officer retirement benefit program.

Internal Control System

The Group has established the Basic Policy for Establishment and Operation of Internal Control Systems. Based on this policy, the Group has established internal control systems to ensure the efficiency and appropriateness of our operations. In addition to receiving reports on the status of internal control activities from each division of the Company, we conduct surveys of the status of development and operation of internal control systems at major Group companies. The status of the development and operation of internal control systems is, in principle, monitored once a year by the Executive Council. While taking into consideration the business characteristics of each company, we are continuously improving internal control systems for the Group as a whole. In addition, as of April 1 of this year, we have established an Internal Control Department and are working to more firmly establish the Group's internal control activities.

Internal Audit

We conduct internal audits across the entire 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 our president, to the relevant Group company, and, as necessary, to the Executive Council.

Rigorous Compliance

The JX Advanced Metals Group Code of Conduct and the JX Advanced Metals Group Compliance Regulations define compliance as not only observing domestic and foreign laws, rules, and regulations, but also acting in line with social norms and corporate ethics. We conduct our corporate activities with an emphasis on compliance.

Compliance Promotion Structure

Based on the belief that thorough compliance is a prerequisite, the Group, as a member of the community, continues to create value in response to the expectations of our diverse stakeholders, and we have established various internal regulations concerning compliance. If any issues are identified in the system or in operations, we make improvements as we continue various efforts that will enable us to remain a trusted corporate group.

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, creating a special section on the Company portal site, and introducing the program during compliance education sessions.

In fiscal 2023, we received 14 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.

Handling Anti-Social Forces and Bribery Prevention

The Group has established a system for eliminating anti-social forces based on the JX Advanced Metals Group Regulations for Dealing with Anti-social Forces and the JX Advanced Metals Group Detailed Rules for Dealing With Anti-social Forces in order to cut off any relationship with anti-social forces. This system includes periodically conducting specified investigations of business partners and their related parties, and taking contractual measures in advance to terminate business relationships, depending on the circumstances. 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 Advanced 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 2023, we continued to monitor the application of said regulations, confirming that the system was generally being implemented appropriately. (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 they do not violate competition laws, requiring individual managers to submit periodic reports to the head office, and so on.

In fiscal 2023, we continued to monitor the application of the aforementioned program, confirming that it was generally being implemented appropriately. (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 environmental and safety laws at three Group sites in fiscal 2023. 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 four Group sites in fiscal 2023 and confirmed proper management.

Compliance Education

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.

In fiscal 2023, in addition to the annual rank-specific compliance training (for directors, managers, new employees, etc.), we conducted training sessions on internal controls, security trade controls, harassment, human rights, the Stamp Tax Act, information security, etc., as theme-specific legal and regulatory education sessions. At overseas bases, we conducted education for expatriates at the head offices or the bases, taking into account business characteristics and social trends, etc. In the U.S., Germany, and China, lectures on the Group's compliance system and explanations of important laws and regulations, such as those dealing with competition law compliance and anti-bribery, were presented mainly to national staff managers by lawyers, legal staff, and other instructors. It was an opportunity for participants to deepen their understanding of compliance.

Going forward, we plan to continue studying and implementing compliance training programs in Japan and overseas, based on trends in legal revisions, regional characteristics, and other factors.

Compliance training for executives conducted by Attorney Matsumoto from Nakamura, Tsunoda & Matsumoto Law Office

Tax Governance

The JX Advanced 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 provide necessary information properly and promptly.

Decision-Making on Tax Matters, Supervision by the Board of Directors, and the Role of Audit & Supervisory Committee Members

The Accounting Department is in charge of corporate taxes and performs duties related to taxes under the management and supervision of the executive officer in charge of the Accounting Department. We also established and maintain an internal control system, including matters related to taxes. We strive to ensure that this system operates properly and that an effective tax governance structure is in place. Whenever important tax-related events occur, the Company reports such to the Executive Council and other relevant bodies in a timely and appropriate manner.

Tax-Related Government Initiatives and Information Gathering

We are committed to reducing tax risks by consulting with outside experts and making advanced inquiries with tax authorities. We are committed to proper tax compliance by providing tax authorities with timely and appropriate information and by responding sincerely and cooperatively. We are a member of the Japan Mining Industry Association. Through this association, we gather information and express our opinions on tax system revisions to government agencies.

Protection of Intellectual Property

The Group recognizes that intellectual property rights are important company assets and strives to protect and utilize such rights. In addition, the JX Advanced Metals Group Basic Policy on Intellectual Property clearly states that we respect the intellectual property rights of other companies and endeavor not to infringe on them. In researching and developing new products and technologies, we conduct preliminary investigations to ensure that our products do not infringe on intellectual property rights.

Risk Management

We identify, analyze, and assess various risks surrounding our business based on future projections and changes in the internal and external environment, and implement measures to avoid, mitigate, transfer, or acknowledge, etc., related to these risks. In addition, by monitoring the situation, we promote risk management in accordance with the following principles with the goal of appropriately managing risks and supporting the management of the Group.

- Management and employees will all be involved.
- Recognize risks linked to business goals and promote them as an organization-wide activity.
- Review risks and risk response plans, taking into account the organization's purpose, mission, and goals, as well as internal and external conditions.
- Continuously improve based on evaluation of the effectiveness of our initiatives and feedback from stakeholders.

Enterprise Risk Management Promotion Structure

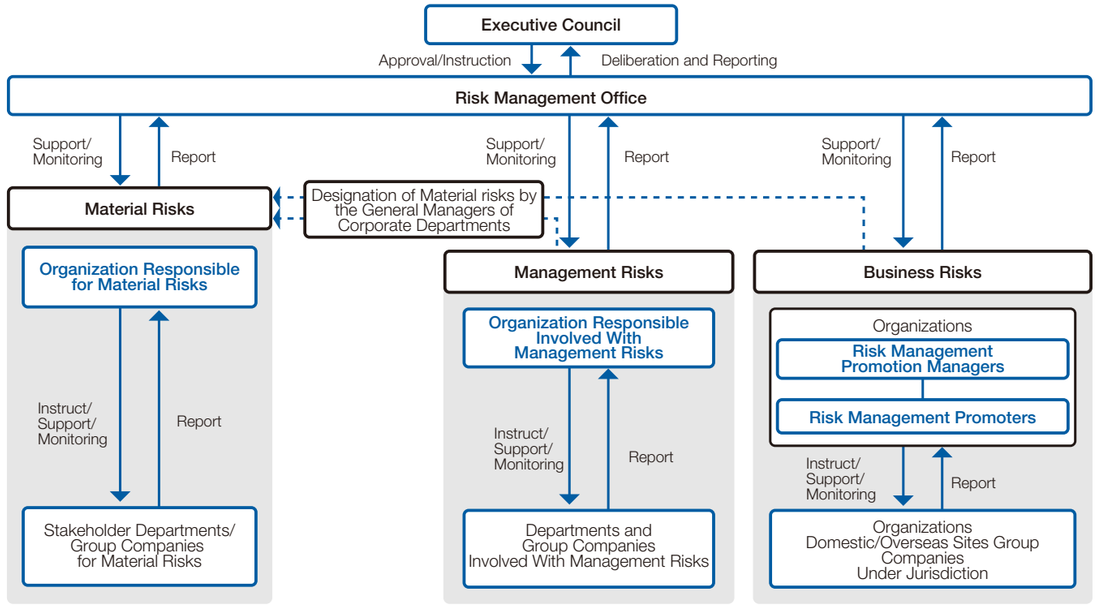
The Group determines material risks, approves response plans for each material risk, and monitors these plans, all under the approval of the JX Advanced Metals Executive Council. In addition, the Risk Management Office in the Company's Administration Department is responsible for the overall risk management for both the Company and Group, handling ERM.

Status of Enterprise Risk Management Initiatives

Risk is defined as "any and all uncertainty that could have an impact on the management of JX Advanced 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. Among those management risks and business risks, risks that we determine will have a significant impact on the Group's management, and that should be addressed on a company-wide basis, are designated as material risks by the Executive Council. These material risks include related to technology, business continuity, and geopolitical risks. The department responsible for these material risks takes the lead in implementing risk responses. In addition, the Executive Council monitors the status of these actions.

1. Management Risks
   Risk of obstructing achievement of the management goals of the JX Advanced Metals Group.
   These risks are selected by consensus from the general managers of corporate departments.
2. Business Risks
   Risks that may affect the achievement of goals related to the execution of business by the respective organization. The organization in charge of each risk selects these risks through a business risk identification survey. 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.
3. Material Risks
   Management and business risks that are selected by the Executive Meeting as risks that could have a significant impact on the management of the JX Advanced Metals Group. The Executive Council approves and monitors risk response.

Enterprise Risk Management Governance Structure



Implementation and Strengthening of Risk Transfer Strategies

Risk Response refers to selecting and implementing appropriate actions (transfer, mitigation, retention, or avoidance) based on the results of a risk assessment. For risks that could have a significant impact on our business activities despite risk reduction measures, we utilize insurance as a means of risk transfer. In order to enhance the usefulness of insurance, the Company is surveying the insurance policies held by the Group in Japan and abroad in fiscal 2023, and is implementing global initiatives for insurance optimization in cooperation with relevant departments.

COLUMN Risk Management That Creates Corporate Value

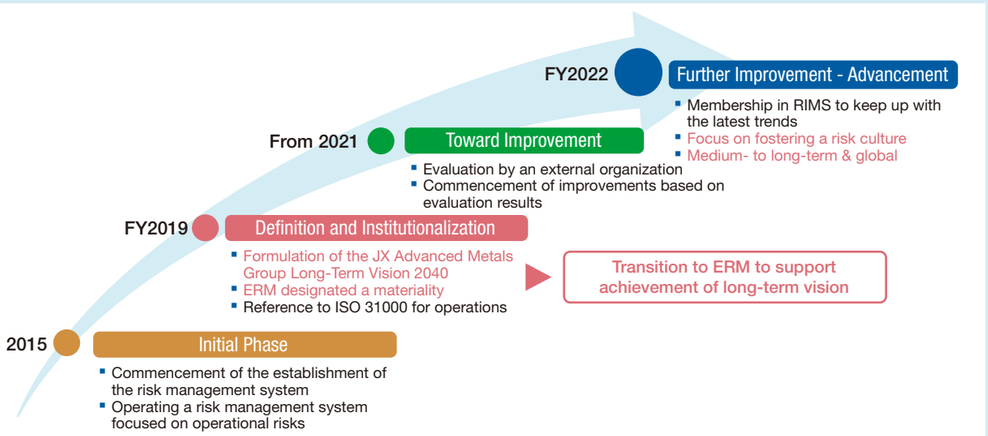
In order to create new corporate value in uncertain times, it is necessary to take certain risks and adopt a more aggressive approach. The Group regards risk management as a strategic framework necessary to ensure the achievement of the JX Advanced Metals Group Long-Term Vision 2040, and is promoting activities related accordingly.

Progress of JX Advanced Metals Group's Enterprise Risk Management (ERM)

The Group began establishing a risk management system in 2015 and has been promoting its activities since then. At the time of its establishment, the system focused on operational risks related to potential accidents and damages that could occur in the course of business operations in areas such as quality control, health and safety, and environmental protection. In 2019, the formulation of a long-term vision aimed at 2040 prompted the transition to a risk management approach that supports its achievement. We shifted from traditional risk management activities to the implementation of Enterprise Risk Management (ERM*), referencing ISO 31000.

The JX Advanced Metals Group regards ERM as an essential element in achieving our long-term vision. We are committed to continuous improvement to enhance the effectiveness of our ERM practices.

* A system or process to ensure that risk management is implemented in an organized, systematic, effective, and continuous manner in order to increase the certainty of achieving the organization's objectives and goals. The acronym ERM stands for Enterprise Risk Management in English.

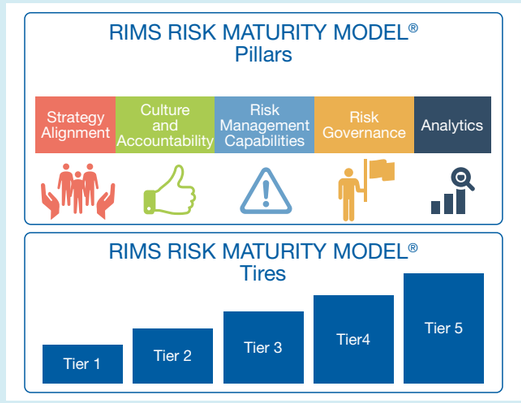


Toward Advanced of ERM

In advancing ERM, we utilize the Risk Management Society's ("RIMS*") maturity model. This model defines the status for each pillar, such as Strategy Alignment, at various tiers. These are compared to the Group's ERM status to assess maturity.

After setting the desired goals, we regularly conduct a gap analysis between the defined state at each tier and the current state of our group's ERM. This helps us identify the challenges we face in reaching the next tier. By implementing measures to resolve these challenges, we can achieve more effective ERM.

* Based in New York, this is the world's largest risk management organization, with more than 9,000 risk management professionals as members worldwide.



Source: RIMS, Risk Maturity Model

Risk Management Activity Framework

Based on the results of the maturity assessment, we have identified the dissemination of ERM activities throughout the Group and the development of risk-sensitive personnel as the two key elements to promote for achieving a more effective ERM. Specifically, through our outreach efforts, we aim to deepen understanding among all executives and other employees in our group regarding the importance of ERM and its connection to our management strategy by consistently highlighting these points. Additionally, through personnel development, we aim for individuals at various levels and roles to acquire the knowledge and skills necessary for effective risk management.

In order to incorporate these elements into actual activities and implement them, it is also necessary to develop processes that ensure risk management functions as a company-wide initiative.

Ultimately, the goal is for employees at all levels in each organization within the Group to fulfill the risk management roles required by their positions and to operate the ERM system autonomously.

Disseminate ERM Activities Throughout the Group

Regular awareness-raising to enhance each individual's daily risk management practices

We regularly publish Risk Management Newsletter, an in-house newsletter dedicated to risk management, with the aim of making risk management accessible to each employee and promoting its dissemination throughout the Group. For example, we feature articles such as, "What does the president consider risk management?" in which we interview the president. There are also articles regarding the latest trends in global risk, as well as those featuring good examples of how risk is handled within the Group.

Risks are not limited to Japan, but exist everywhere in any business organization, regardless of its size or location. To this end, in fiscal 2023, we also began publishing an English version of the newsletter to promote risk management among employees in all regions.

We conduct reader surveys twice a year to continuously monitor the level of dissemination, and we develop our initiatives based on the feedback received from these surveys.

Develop Risk-Sensitive Personnel

The foundation for the advancement and dissemination of ERM is human resources. The Group is implementing the following measures to promote company-wide understanding of risk management and encourage employees to engage with it as a personal responsibility through the following initiatives.

Acquiring Skills to Enhance Each Individual's Daily Risk Management Practices

①Target-Specific Training

Based on the Risk Management Training System, we are implementing training tailored to specific target groups in a phased manner. In each organization responsible for risks, e-learning and comprehension tests are conducted at the time of appointment for those in charge of risk management promotion. This ensures that they are equipped to lead the annual business risk assessment and risk response, allowing them to exercise their abilities as leaders in their respective organizations.

The program provides an overview of the Group's risk management activities and explains to newly appointed managers, leaders, chiefs, and newly graduated employees the expected roles for each position. The Risk Management Office also holds in-house cross-organizational study groups on an annual basis, where we deliver lectures on the fundamentals of risk management to all employees.

Target Group	Objective
● Directors ● General Managers of Business Division	1. Understanding Global Risk Trends 2. Understanding Leading Practices
● General Manager of the Corporate and Business Division ● Members of Organizations Responsible for Material Risks ● Risk Management Promotion Managers and Promoters ● Newly Appointed Managers	1. Enhancing Risk Sensitivity 2. Promoting Understanding of Roles
All employees (including those covered above)	Fostering Risk Sensitivity

②Member Skill Set

The Risk Management Office is committed to improving the competence of its members. Specifically, we have established our own skill sets of the skills and knowledge required to perform risk management tasks, and visualize the status of acquisition of these skills by our office members. Each member conducts a self-assessment during the performance evaluation period and, through discussions with their supervisor, works on improving their individual capabilities.

In the future, we will establish and develop skill sets not only for Risk Management Office members, but also for risk management promotion managers and promoters assigned to each business division, group company, and plant in an effort to broadly support the development of risk management talent.

Knowledge and Skills Required for Members of the Risk Management Office	Classification	Outputs (Outputs That Can Be Expected From Having the Knowledge and Skills)	Output Level
Understanding Business Operations	Knowledge	● Ability to engage in conversations with business divisions and management based on an understanding of business operations	Level 1-3
Key Business Processes of the Risk Management Office	Knowledge	● Ability to understand the risk management framework and be able to design and improve our ERM in light of the latest information on international standards and relevant laws and regulations	Level 1-3
Knowledge of Contract Formation	Knowledge	● Ability to avoid contract terms that do not meet our standards and reduce risk associated with contract management	Level 1-3
Knowledge of Insurance	Knowledge	● Ability to assess the necessity and content of coverage, and determine optimal coverage standards	Level 1-3

Risk Management Process

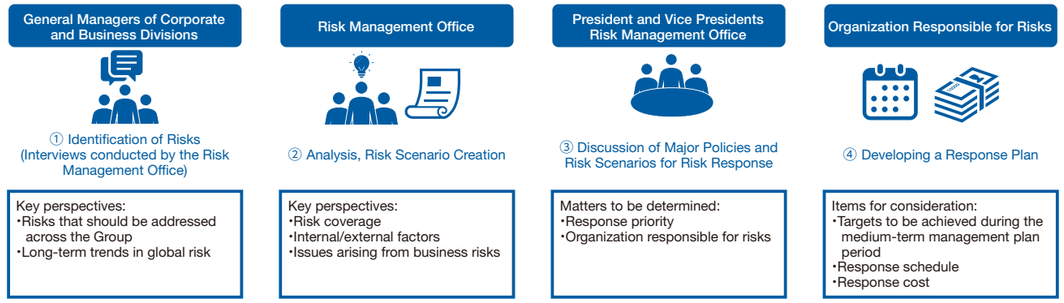
Identifying Risks and Conducting Scenario Planning in Collaboration With Management After Trend Analysis

Within the Group, we are working to implement risk management linked to our long-term vision, medium-term plan, and business plan by establishing three categories of risk: business risks, management risks, and material risks.

Reference Status of Enterprise Risk Management Initiatives > P. 105

Process for Initiating Risk Response for Material Risks

Material risks will be identified and risk responses initiated in conjunction with the timing of the medium-term management plan, according to the following steps. The process involves the participation of key members of the Group's management, such as the general managers of corporate and business divisions, as well as the president and vice presidents. This ensures that management's perception of a risk is correctly reflected as a material risk.



Importance of Scenario Planning

Risk scenarios are developed for all material risks. Risk scenarios are documented descriptions that outline the *causes* of risks manifesting and the potential *effects* on the Group if these risks were to materialize. The benefits of developing risk scenarios are as follows.

(1) Risk response includes activities to prevent risks before they occur and activities to minimize the impact if they do occur. The more clearly we define causes in risk scenarios, the easier it is to identify the most appropriate actions to take.

(2) By verbalizing risks and their impacts in detail as risk scenarios, we can correctly identify risks and ensure a unified recognition of these risks by all members of the Group, especially management. All risk scenarios will be finalized through discussions between the president and vice presidents.

Risk scenarios should not be created once and left unchanged; they need to be revised in response to changes in the internal and external environment. Instead of thinking about it after it happens, we are focused on using our imaginations to prepare for *what if* scenarios, and striving to embed this mindset within the organization.

Message — Message From a Director

In this Identification of Material Risks - Scenario Review session, we held several discussions that delved into how the president and vice presidents should engage with the members of the Risk Management Office. For example, with regard to technology, while we identified multiple risks related to products and technology, there was a sense that our understanding of these risks remained somewhat superficial. Through this discussion, we concluded that we should integrate risks based on their relationships. This reaffirmation that we need to adopt a fundamental perspective on risks, rather than viewing them as merely isolated and fragmented, was highly valuable. Furthermore, this led to the critical issue of how we will develop the talent that will support our technology and sales/marketing in the future. From the perspective of business growth, it is essential that we continue to deepen our discussions on the necessary future initiatives.

Directors
Vice President and Executive Officer
Sugawara Shizuo

Business Continuity Plan (BCP) Initiatives

The Group has formulated business continuity plans (BCP) to minimize damage and achieve early recovery in the event of business interruption due to a major earthquake.

From fiscal 2020, we have taken this to a higher level and have begun working toward the establishment of an all-hazard BCP called a resource-based BCP. This is not a BCP for every event, such as an earthquake or a flood, but one that focuses on resource contingencies (facilities, raw materials, materials, etc.) that are likely to disrupt business activities during emergencies, and organizes relevant disaster mitigation and recovery measures. We also conduct regular assessments of disaster risks at major business sites, including those overseas. This information aids in making decisions related to preventive measures and capital investments to mitigate potential damages.

Through these initiatives, we aim to strengthen our BCP. We continue efforts to improve initial response through efficient and reliable means of information sharing in the event of a natural disaster. In fiscal 2023, we conducted joint training exercises at the head office, Hitachi Works, and Isohara Works. This included: 1) the establishment of a disaster response headquarters, 2) confirmation of the safety of personnel, 3) assessment of the damage within and outside the Company, and 4) sharing this information and discussing and implementing response measures. The scenarios for these exercises were kept confidential in advance.

Moving forward, we will continue to enhance the effectiveness of our BCP through regular training sessions, as we work on establishing business continuity management (BCM).

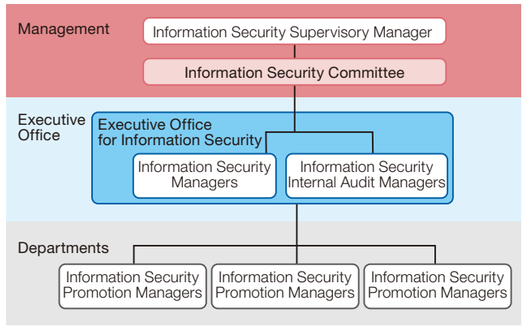
Information Security Initiatives

The Group has taken steps to establish 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 2023, we conducted information security risk assessments, internal audits, rank-based training, and supplier management in each department according to the plan approved by the Information Security Supervisory Manager. To solidify information security measures and awareness within the Group, we are extending their application to Group companies, in addition to the head office and business sites.

In efforts to upgrade information security further under the leadership of the Information Security Supervisory Manager, we will incorporate the cyber security measures implemented by the IT Department. At the same time, we pursue continuous improvement in accordance with ISMS to contribute to the realization of our long-term vision of becoming a technology-based company.

Information Security Systems



JX Advanced Metals Group Basic Policy Concerning Information Security

As a company with a social mission to provide a stable supply of nonferrous metals and advanced materials, the JX Advanced Metals Group recognizes that the information entrusted to us by our customers and business partners, as well as trade secrets and personal information held by us, are important assets. We have established the Basic Policy Concerning Information Security in order to systematically and continuously strengthen information security.

1. Legal compliance and social responsibility
   Comply with laws and regulations, government guidelines, contractual obligations, and internal rules related to information security, and work to foster compliance management and a culture that emphasizes information security.
2. Maintain and strengthen the trust we receive from customers and business partners
   Ensure the protection of information assets entrusted to us by our customers and business partners.
3. Contribute to the expansion of our own business opportunities
   Ensure the protection of information assets that can be a source of competitive advantage.

Implementing a New IT Infrastructure Based on the Zero Trust Approach

Reference Strengthening DX Infrastructure (Zero Trust Network) > P.67

Quality Control in the Supply Chain

The Group recognizes that our social mission is to provide a stable supply of nonferrous metals and materials in order to contribute to the sustainable development of society. Based on this policy, we aim to improve the level of quality control throughout the entire supply chain.

JX Advanced Metals Group Basic Quality Policy

The JX Advanced 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 quality improvements through steady PDCA cycles, aiming to realize better quality through the QMS. As one measure, 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 Meetings twice annually to share information on quality management. Participants share the action plans adopted at Quality Meetings and share issues encountered and good practices found at each manufacturing site, fostering interactions among managers. Furthermore, we are working to improve the effectiveness of internal quality audits, automate inspections, and strengthen the training of quality control personnel.



Quality Meetings

Main Manufacturing Sites With Third-Party QMS Certifications

[Domestic]

- Isohara Works, Kurami Works, Hitachi Works (Copper Foil Department)
- Ichinoseki Foil Manufacturing Co., Ltd.
- Kitaibaraki Precision Co., Ltd.
- JX Advanced Metals Coil Center Co., Ltd. (Kurami Office, Tatebayashi Office)
- JX Metals Trading Co., Ltd. (Takatsuki Plant)
- JX Metals Smelting Co., Ltd. (Saganoseki Smelter & Refinery, Hitachi Works)
- JX Metals Resources Exploration & Development Co., Ltd.
- TANIOBIS Japan Co., Ltd. (Head Office, Mito Plant)
- Tokyo Denkai Co., Ltd.
- Toho Titanium Co., Ltd. (Head Office/Chigasaki Plant, Hitachi Plant, Yahata Plant, Wakamatsu Plant, Kurobe Plant)
- Japan Copper Casting Co., Ltd. (Saganoseki Plant)
- Furuuchi Chemical Corporation

[Overseas]

- Nippon Mining & Metals (Suzhou) Co., Ltd.
- JX Nippon Mining & Metals Dongguan Co., Ltd.
- Nikko Metals Taiwan Co., Ltd. (Longtan Works, Kuanyin Works)
- JX Metals Philippines, Inc.
- JX Metals USA, Inc.
- JX 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.

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, supporting quality improvement activities and quality control training at manufacturing sites, introducing DX to quality management tasks.

In fiscal 2023, the Quality Control Department conducted internal quality audits at 24 domestic and overseas sites. In addition, to improve the auditing skills of Quality Control Department staff, four new employees took the JRCA*1 and IRCA*2-certified ISO 9000 auditor training course and passed the qualification examination in fiscal 2023. The Quality Control Department currently has 11 employees who have passed the training course for ISO 9001 certified auditors and are actively engaged in quality audits.

*1 JRCA stands for Japanese Registration of Certified Auditors
*2 IRCA stands for International Register of Certificated Auditors

On-site audit

VOICE —— Voice From the Quality Control Department

One of the important tasks handled by the Quality Control Department is internal quality audits. I had no previous experience in the field, and it was a completely different from my major as a student. However, I believed that being able to conduct evaluations from a different perspective would contribute to our quality improvement efforts. With an eye towards becoming an internal quality auditor, I was able to pass the JRCA/IRCA ISO 9000 auditor certification examination with the support of study groups within our Company and outside seminars. I would like to thank everyone in the department who helped me obtain the certification. Moving forward, I want to use this as a source of confidence and contribute to maintaining and improving the quality that will satisfy our customers.

JX Advanced Metals Corporation
Quality Control Department
Hoso Marie

Liability Claims

In fiscal 2023, no claims were pursued under the Product Liability Act due to personal or property damage caused by defects in products made by the Group.

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.

* Safety Data Sheet (SDS): A document containing information on the hazards and toxicity of chemicals to ensure safe handling

Quality Assurance Initiatives With Suppliers

Cooperation with suppliers is essential for thorough quality assurance. Our efforts include conducting regular evaluations and quality audits for JX Advanced Metals Group suppliers based on quality control criteria and requirements, reducing quality risks, and improving the quality level of our suppliers. We also conduct Supplier Surveys to promote mutual understanding with our suppliers.

Promotion of Personnel Quality Education

The Group ensures that all employees are thoroughly familiar with the Basic Quality Policy through quality control training. In addition, we provide quality control training to all employees to improve their problem identification and resolution capability, help them to logically infer the root cause of a problem, independently resolve problems, and improve the quality of their work. These training programs range from introductory to advanced courses according to the level of the participants and reflect carefully planned courses according to job rank and years of employment, and have become an established part of employee training.

Starting in fiscal 2020, the Company's Quality Control Department began encouraging internal quality auditors to acquire qualifications such as QMS Auditor, and conducting review training performed by outside instructors to improve competence.

Quality control training

Section 4 Data Book

Environmental Data / Social Data

Mass Balance Table for the Group (Fiscal 2023)

INPUT

Raw Materials

Primary raw materials

Domestic operating sites	1,382 kt
Overseas operating sites	15 kt
Total	1,397 kt

Recycled raw materials

Domestic operating sites	218 kt
Overseas operating sites	11 kt
Total	230 kt

Energy

Fuel

Domestic operating sites	2,375 TJ
Overseas operating sites	1,577 TJ
Total	3,952 TJ

Electricity and heat*

Domestic operating sites	4,508 TJ
Overseas operating sites	2,358 TJ
Total	6,866 TJ

Water Resources

Fresh water

Domestic operating sites	16.4 million cubic meters
Overseas operating sites	7.2 million cubic meters
Total	23.7 million cubic meters ☑

Seawater

Domestic operating sites	34.4 million cubic meters
Overseas operating sites	— million cubic meters
Total	34.4 million cubic meters ☑

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

JX Advanced Metals Group

OUTPUT

Principal Products

Copper concentrate	207 kt
Electrolytic copper	416 kt
Gold	35 t
Silver	312 t
Platinum	546 kg
Palladium	2,453 kg
Other metals (selenium, tellurium)	269 t
Electro-deposited and rolled copper foil	6 kt
Copper alloy, special steel strips, etc.	18 kt
Titanium sponge	23 kt
Sulfuric acid (by-product)	1,058 kt

Emissions

CO_2

Total of domestic operating sites

Scope 1	376 kt
Scope 2	183 kt

Total of overseas operating sites

Scope 1	107 kt
Scope 2	51 kt
Total	718 kt ☑

Chemical substances (release and transfer)☑

Total of domestic operating sites	0.80 kt

SOx

Domestic operating sites	3.2 kt
Overseas operating sites	0.0 kt
Total	3.2 kt ☑

Final disposal of waste materials

Domestic operating sites	13.6 kt
Overseas operating sites	35.0 kt
Total	48.6 kt ☑

NOx

Domestic operating sites	0.3 kt
Overseas operating sites	0.0 kt
Total	0.3 kt ☑

Wastewater

Domestic operating sites	55.4 million cubic meters
Overseas operating sites	1.0 million cubic meters
Total	56.3 million cubic meters ☑

Environmental Management

Operating Sites That Have Obtained ISO 14001 Certification (as of March 31, 2024)

Domestic Operating Sites: 23	Overseas Operating Sites: 16
Hitachi Works, JX Advanced Metals Corporation (including Technology Development Center, Hitachi Works, JX Metals Smelting Co., Ltd., and JX Metals Environmental Services Co., Ltd.)	JX Metals Philippines, Inc.
Copper Foil Manufacturing Division, JX Advanced Metals Corporation (including Ichinoseki Foil Manufacturing Co. Ltd.)	JX Metals USA, Inc.
Isohara Works of JX Advanced Metals Corporation	Materials Service Complex Malaysia Sdn. Bhd.
Kurami Works of JX Advanced Metals Corporation (including JX Advanced Metals Coil Center Co., Ltd. and the Kurami Office of JX Metals Trading Co., Ltd.)	JX Metals Korea Co., Ltd.
Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd. (including Japan Copper Casting Co., Ltd., and JX Metals Smelting Logitech Co., Ltd.)	Nikko Fuji Precision (Wuxi) Co., Ltd.
JX Metals Tomakomai Chemical Co., Ltd.	Longtan Works of Nikko Metals Taiwan Co., Ltd.
JX Metals 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.
Amagasaki Office of JX Metals Trading Co., Ltd. (including Takatsuki Plant)	TANIOBIS GmbH (including TANIOBIS Smelting GmbH & Co. KG, TANIOBIS Co., Ltd., and TANIOBIS Japan Co., Ltd.)
Shirakawa Plant of JX Metals Takasho Co., Ltd.	Valleyfield, Mississauga, Airdrie, and Chilliwack of eCycle Solutions, Inc.
Tsukuba Factory of Furuuchi Chemical Corporation	

Raw Materials

Ratio of Recycled Raw Materials (FY2023)

Ratio of recycled raw materials in incoming raw materials for the copper smelting business

15.7% ☑

Ratio of copper from recycled raw materials in electrolytic copper

24.3% ☑

Definition of Recycled Raw Materials

(1) Ratio of recycled raw materials in incoming raw materials for the copper smelting business

(total dry volume of recycled raw materials processed at JX Metals Smelting Co., Ltd.*1) ÷ (total dry volume of primary and recycled raw materials processed at JX Metals Smelting Co., Ltd.) x 100 (Unit: %)

*1 However, the dry volume of recycled raw materials before pretreatment is calculated based on the pretreatment residue ratio if recycled raw materials are pretreated at JX Advanced Metals Corporation plants or affiliates, other than JX Metals Smelting Co., Ltd. and the dry volume of recycled raw materials before pretreatment is available.

(2) Ratio of copper from recycled raw materials in electrolytic copper

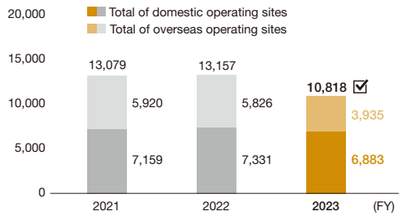
(volume of copper derived from recycled raw materials in copper anodes per year*2) ÷ (copper anode charge per year)

*2 Cumulative 12-month total of figures calculated monthly with (monthly copper anode charge in the electrorefining process at JX Advanced Metals Smelting Co., Ltd.) x (ratio of copper from recycled raw materials in copper anode*3).
*3 (Total volume of copper in recycled raw materials processed by JX Advanced Metals Smelting Co., Ltd. for the month) x (copper yield at Saganoseki Smelter & Refinery for the month) ÷ (total copper in net copper production at Saganoseki Smelter & Refinery for the month)
*4 In the electrorefining process, copper anodes are electrolyzed to produce electrolytic copper. Here, there is no input of copper components other than copper anodes. Therefore, the recycling ratio in copper anodes charged in the process is equal to the recycling ratio in electrolytic copper.

Energy

Energy Consumption

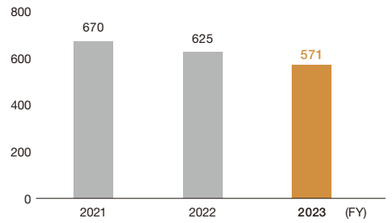
(calorific value, terajoules)



* Energy consumption is calculated by applying the calorific value conversion coefficients for fuel and electricity as stipulated in the Act on Rationalizing Energy Use (currently, the Act on Rationalizing Energy Use and Shifting to Non-fossil Energy)
* Energy consumption is calculated by applying the calorific value conversion coefficients for fuel as stipulated in the Act on Rationalizing Energy Use and Shifting to Non-fossil Energy. 3.6 MJ/kWh is applied for electricity consumption.

Energy Consumption in Logistics Stages (Domestic)

(calorific value, terajoules)



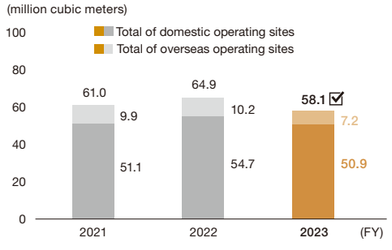
* Applicable to specified consigners as defined in the Act on Rationalizing Energy Use. Four Group companies fall under this definition: JX Advanced Metals Corporation, JX Metals Smelting Co., Ltd., Kasuga Mines Co., Ltd., and Pan Pacific Copper Co., Ltd.

Breakdown by Fuel Type

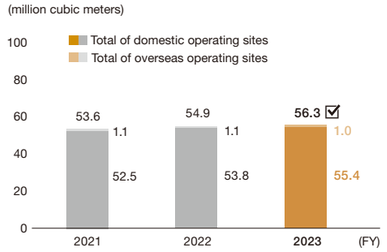
	Domestic operating sites	Overseas operating sites
Kerosene (kL)	152	0
Gasoline (kL)	126	242
Light oil (kL)	2,768	36,968
Class A heavy oil (kL)	7,905	0
Class B and C heavy oil (kL)	11,942	0
Reclaimed oil (kL)	2,602	0
LPG/Butane (t)	5,351	194
LNG (t)	5,258	613
Coke (t)	1,889	0
Petroleum coke (t)	3,025	0
City gas (thousand cubic meters)	14,268	2,742

Water Resources

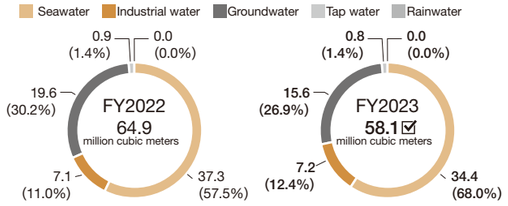
Water Usage*1



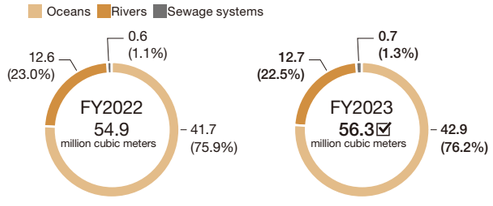
Water Discharge*2



Total Water Usage*1



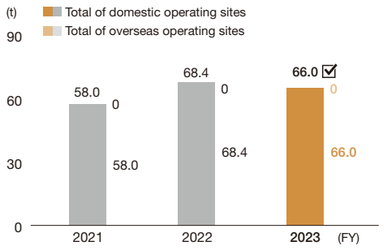
Total Water Discharge*2



*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: the volume calculated based on drainage weirs (Hitachi Works, Isohara Works, JX Metals Tomakomai Chemical Co., Ltd., and JX Metals Mikkaichi Recycle Co., Ltd.); the volume obtained by multiplying groundwater usage by a fixed rate (Kurami Works, Toho Titanium Co., Ltd.'s Chigasaki Plant); the volume from invoices (Toho Titanium Co., Ltd.'s Yahata Plant and Kurobe Plant); or the volume based on flowmeter readings (other operating sites). The volume of water discharged into the sewage system at each operating site represents the following: the volume calculated based on daily water discharge (TANIOBIS Co., Ltd.); or the volume based on flowmeter readings or on invoices from the site's respective sewage utility for other operating sites.

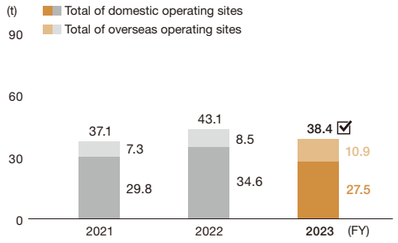
Water Pollutants

COD Load



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

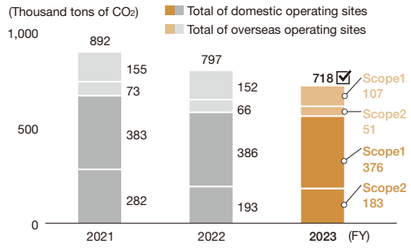
BOD Load



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

Climate Change

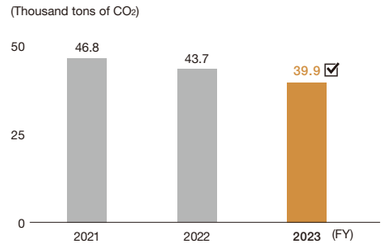
CO_2 Emissions From the Entire JX Advanced Metals Group (Scope 1 & 2)



Total of Group
Scope1: 484 Thousand tons of CO_2 ☑
Scope2: 235 Thousand tons of CO_2 ☑

* 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 CO_2 equivalent. We use the CO_2 emission factors defined by the Act on Promotion of Global Warming Countermeasures applicable to each fiscal year.
* Scope 2 emissions are those from electricity or heat consumption converted to CO_2 equivalent. This figure includes emissions from thermal energy (steam, hot water, and 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: The latest adjusted emission factors per electric power utility published by the Ministry of the Environment and the Ministry of Economy, Trade and Industry are applied
Overseas: Emission factors published by local power companies, national governments, or country-specific emission factors published in the IEA Emission Factors 2022, issued by the International Energy Agency (IEA), are applied

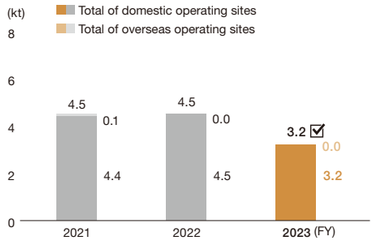
CO_2 Emissions in Logistics Stages



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

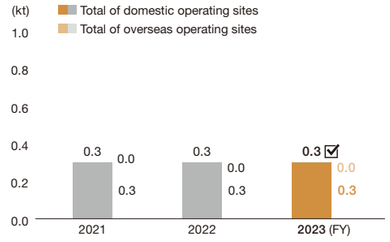
Air Pollutants

SOx Emissions



* Totals are for operating sites subject to emissions regulations.

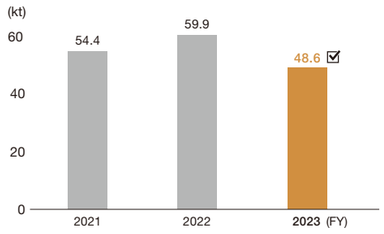
NOx Emissions



* Totals are for operating sites subject to emissions regulations.

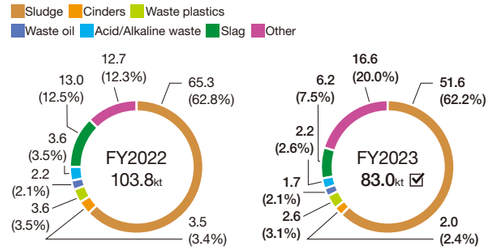
Waste Materials and By-Products

Volume of Final Disposal of Waste

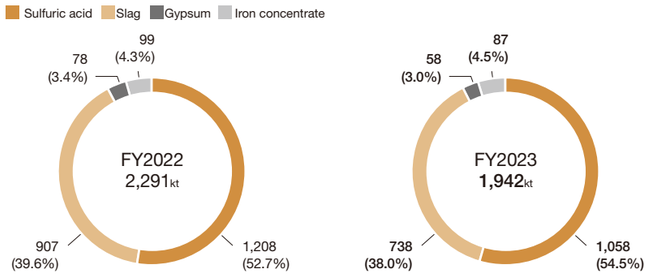


* These do not include the approximately 26.2 million tons of slag from the Caserones Copper Mine.
* Calculations include the final disposal volumes of Toho Titanium Co., Ltd.'s offshore landfill volume and the TANIOBIS Group.

Total Discharge Volume by Type of Waste Materials

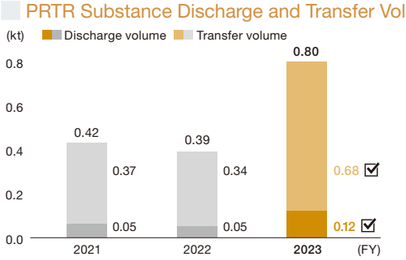


By-Product Production

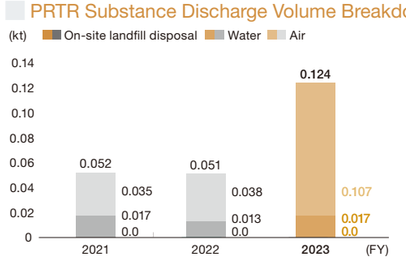


Chemical Substances

PRTR Substance Discharge and Transfer Volumes



PRTR Substance Discharge Volume Breakdown



* The FY2023 revision of the PRTR system added several chemicals used in large quantities at certain facilities, to the list of substances that need emissions and transfers tracking. As a result, the reported amounts increased compared to FY2022.
* The volumes transferred and discharged in FY2023 does not include the volumes of each discontinued mine (discharged volume 0.01kt ☑, transferred volume 1.14kt ☑).

Volumes of Release and Transfer of Major PRTR Substances in FY2023

(kg)

No.	Control Number	Chemical Substance	Discharge Volume			Transfer Volume	
			Air	Water	On-Site Landfill Disposal	Sewage Systems	Waste Materials
1	75	Cadmium and its compounds	51	92	0	0	8,400
2	132	Cobalt and its compounds	0	181	0	0	18,410
3	300	Toluene	32,400	0	0	1,200	368,000
4	309	Nickel compounds	43	308	0	0	12,473
5	354	Dibutyl phthalate	0	4	0	58	8,200
6	405	Boron compounds	0	8,041	0	0	990
7	667	Silicon carbide	0	0	0	0	9,900
8	697	Lead and its compounds	462	125	0	0	69,000
9	731	Heptane	72,700	0	0	0	175,000
							(g-TEQ)
10	243	Dioxins	0.1	0.0	0.0	0.0	2.3

* The values given are the total volumes reported by business sites subject to reporting requirements under the PRTR Act (the domestic companies defined in Scope of this Report on page 3 as subject to Environment section reporting). Of the 51 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.
* The volumes transferred and discharged in FY2023 does not include the volumes of each discontinued mine (discharged volume 0.01kt ☑, transferred volume 1.14kt ☑).

Occupational Health and Safety

Occupational and Other Accidents*1, *2

Category			2021	2022	2023
Safety performance at domestic operating sites	Employees (including Group companies)	Fatalities (persons)*3	0	0	0 ☑
		Accidents with lost work days (persons)*3	10	3	8 ☑
		Accidents without lost work days (persons)*3	24	27	37 ☑
		Total (persons)	34	30	45 ☑
		Frequency rate of occupational accidents*4 — Fatalities	0.00	0.00	0.00 ☑
		Frequency rate of occupational accidents*4 — Accidents with lost work days	0.75	0.21	0.53 ☑
		Severity rate of occupational accidents*4	0.03	0.01	0.51 ☑
		Cumulative work hours (hours)*4	13,322,483	14,349,309	15,160,608
	Employees of subcontractors*5	Fatalities (persons)	0	0	0 ☑
		Accidents with lost work days (persons)	6	4	3 ☑
		Accidents without lost work days (persons)	13	13	14 ☑
		Total (persons)	19	17	17 ☑
		Frequency rate of industrial accidents — Fatalities	0.00	0.00	0.00
		Frequency rate of industrial accidents — Accidents with lost work days	1.56	1.47	1.04
		Severity rate of industrial accidents	0.11	0.04	0.01
		Cumulative work hours (hours)	3,210,160	2,726,924	2,884,202
		Total casualties (persons)	53	47	62 ☑
		Occupational injury rate per 1,000 employees (four or more lost workdays)*6	1.7	0.74	0.96
		Explosions and fires (incidences)*7	0	2	2 ☑
(Reference) Safety performance at overseas operating sites*8		Fatalities (persons)	0	0	0 ☑
		Accidents with lost work days (persons)	19	17	9 ☑
		Accidents without lost work days (persons)	7	5	8 ☑
		Total (persons)	26	22	17 ☑

*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 Each accident category is defined as follows.
- Fatalities: Worker deaths resulting from work-related causes.
- 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.
- 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.

*4 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) cover Company employees and employees at other Group companies (including Toho Titanium).
*5 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. 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 2023, the frequency and severity rate of occupational accidents for all businesses in Japan were 2.14 and 0.09, respectively (Source: Ministry of Health, Labour and Welfare, "Survey on Industrial Accidents")
*6 The Group defines a serious accident as one that results in four or more lost work days, and considers the occupational injury rate per 1,000 employees to be one of our key indicators for evaluation. (Occupational injury rate per 1,000 employees (four or more lost workdays) = number of casualties with four or more lost workdays ÷ total number of employees (including employees of regular partner companies) x 1,000)
*7 No physical injuries were caused as a result of explosions/fires.
*8 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 business sites, and detailed data such as frequency rates are not disclosed.

Human Resource Development

Training Programs Implemented in FY2023

	Managerial Staff			Non-Management Employees			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total annual program hours (hours)	12,088	402	12,489	153,208	19,763	172,971	165,295	20,165	185,460 ☑
Program hours per employee (hours/person)	21	19	21	52	42	50	47	41	46 ☑

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

Employment and Work Styles

Survey scope: Companies in which JX Advanced 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.

No. of Employees (by Employment Status and Employment Contract Type; as of March 31, 2024)

(persons)

Employment Status	Contract Type	Male	Female	Total
Full-time	Contracts without fixed terms	7,587	1,307	8,894
	Contracts with fixed terms	537	119	656
Full-time subtotal		8,124	1,426	9,550
Part-time	Contracts without fixed terms	22	52	74
	Contracts with fixed terms	59	32	91
Part-time subtotal		81	84	165
Total		8,205	1,510	9,715

(persons)

Employment Status	Contract Type	Japan	North America	South America	Asia	Europe	Middle East	Total
Full-time	Contracts without fixed terms	6,781	410	51	1,307	336	9	8,894
	Contracts with fixed terms	549	1	8	59	37	2	656
Full-time subtotal		7,330	411	59	1,366	373	11	9,550
Part-time	Contracts without fixed terms	51	2	0	2	19	0	74
	Contracts with fixed terms	88	0	0	1	2	0	91
Part-time subtotal		139	2	0	3	21	0	165
Total		7,469	413	59	1,369	394	11	9,715

No. of Employees (by Region; as of March 31, 2024) ☑

(persons)

	Japan	North America	South America	Asia	Europe	Middle East	Total
Male	6,561	300	45	962	326	11	8,205
Female	908	113	14	407	68	0	1,510
Total	7,469	413	59	1,369	394	11	9,715

No. of Newly Hired Employees (April 1, 2023 to March 31, 2024)

(persons)

	Male	Female	Total
No. of new hires	704 ☑	189 ☑	893 ☑
Percent of total employee count as of March 31, 2024	9% ☑	13% ☑	9% ☑

(persons)

Age 29 or Younger	Age 30 to 49	Age 50 or Older	Total
389	340	164	893
25%	6%	6%	9%

(persons)

	Japan	North America	South America	Asia	Europe	Middle East	Total
No. of new hires	737	103	9	41	2	1	893
Percent of total employee count as of March 31, 2024	10%	25%	15%	3%	1%	10%	9%

No. of Employees Ending Employment (April 1, 2023 to March 31, 2024)

(persons)

	Male	Female	Total
No. of retiring employees	430 ☑	78 ☑	508 ☑
Percent of total employee count as of March 31, 2024	5% ☑	5% ☑	5% ☑

(persons)

Age 29 or Younger	Age 30 to 49	Age 50 or Older	Unknown	Total
134	196	177	1	508
9%	4%	6%	—	5%

(persons)

	Japan	North America	South America	Asia	Europe	Middle East	Total
No. of retiring employees	256	133	6	102	11	0	508
Percent of total employee count as of March 31, 2024	3%	32%	10%	7%	3%	0%	5%

* Employees retiring at the mandatory retirement age are not in scope.

Membership in Labor Unions (as of March 31, 2024)

(persons)

	Male	Female	Total
No. of union members	5,183 ☑	864 ☑	6,047 ☑
Unionization rate	63% ☑	57% ☑	62% ☑

(persons)

Age 29 or Younger	Age 30 to 49	Age 50 or Older	Total
1,244	3,447	1,356	6,047
80%	64%	49%	62%

Diversity

Use of Childcare Leave in FY2023 (JX Advanced Metals)

(persons)

	Male	Female	Total
No. of employees using leave	35 ☑	21 ☑	56 ☑
No. of employees eligible to use leave*	138	21	159
Percentage	25.4% ☑	100% ☑	35.2% ☑

* Employees with a child under one year of age, whether biological or adopted (including those who have extended childcare leave under two years of age) However, this does not include those on maternity leave

Retention Rate After Childcare Leave (Percentage of Those Still Employed 12 Months After Returning From Leave) (JX Advanced Metals)

(persons)

	Male	Female	Total
No. of employees who returned to work from childcare leave during FY2022	22	16	38
No. of employees still employed 12 months after returning to work	20	16	36
Percentage	90.9% ☑	100% ☑	94.7% ☑

Rate of Return to Work After Childcare Leave (JX Advanced Metals)

(persons)

	Male	Female	Total
No. of employees who returned to work from childcare leave during fiscal 2023	29	14	43
No. of employees scheduled to return to work	29	15	44
Percentage	100.0% ☑	93.3% ☑	97.7% ☑

Status of Rehiring Efforts in FY 2023 (JX Advanced Metals)

(persons)

No. of age-limited retirees	0
No. of these rehired	0
Percentage	0%

* Zero due to the extension of the mandatory retirement age in October 2022.

Persons With Disabilities as a Percentage of the Workforce in FY2023 (JX Advanced Metals and designated subsidiaries) ☑

Percentage of employees with disabilities (statutory minimum: 2.3%)	2.59%

No. of Locally Hired Senior Managers Overseas (Section Manager or Above) and Locally Hired Employees (as of March 31, 2024)

(persons)

		Number of Senior Managers	Senior Managers as a Share of Locally Hired Employees*1	Number of Locally Hired Employees*2
North America	Male	43	14%	300
	Female	8	7%	113
North America subtotal		51	12%	413
South America	Male	15	33%	45
	Female	1	7%	14
South America subtotal		16	27%	59
Europe	Male	53	16%	326
	Female	8	12%	68
Europe subtotal		61	15%	394
Asia	Male	153	16%	962
	Female	63	15%	407
Asia subtotal		216	16%	1,369
Total		344	15%	2,235

Scope of aggregation: Overseas Group companies in which JX Advanced 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

Independent Assurance Report

To the President & Representative Director, CEO of JX Advanced Metals Corporation

We were engaged by JX Advanced Metals Corporation (the “Company”) to undertake a limited assurance engagement of the environmental and social performance indicators marked with ☑ (the “Indicators”) for the period from April 1, 2023 to March 31, 2024 included in its Sustainability Report 2024 (the “Report”) for the fiscal year ended March 31, 2024.

The Company’s Responsibility

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

Our Responsibility

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

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

Conclusion

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

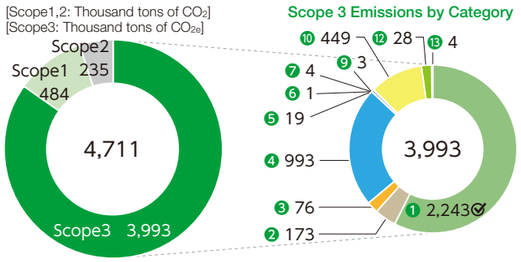
Our Independence and Quality Management

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

/s/ Kazuhiko Saito
Kazuhiko Saito, Partner, Representative Director
KPMG AZSA Sustainability Co., Ltd.
Tokyo, Japan
November 28, 2024

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

Calculation of Scope 3



Scope 1 and 2 emissions are calculated for operating sites of high quantitative importance. Scope 3 emissions are calculated mainly for operating sites where production activities are conducted, and the scope of calculation is different for each category.

* Due to obtaining third-party assurance for Scope 3, the content on P125-126 has been added as a new page. (Updated in March 2025)

Scope 3 Calculation Standards

Our company calculates Scope 3 emissions with reference to the Ministry of the Environment and the Ministry of Economy, Trade and Industry's "*Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (Ver.2.6)*" and the GHG Protocol's "*Corporate Value Chain (Scope 3) Accounting and Reporting Standard.*"

For emission factors, we select and use appropriate data from the following databases:

- Ministry of the Environment: "*Emissions intensity Database for Calculating Greenhouse Gas Emissions of Organizations Through the Supply Chain (Ver.3.4)*"
- "*IDEAv3.4 IPCC2021 without LULUCF AR6*" by the National Institute of Advanced Industrial Science and Technology (AIST), Research Institute of Science for Safety and Sustainability
- CO_2 emission factors under the Act on Promotion of Global Warming Countermeasures

The approach to calculating each category is as follows.

Category 1 Purchased goods and services	The calculation is based on the quantity of raw materials and services purchased by each group company from outside our corporate group (measured in physical volume data*1 and monetary data*2), multiplied by the respective emission factors for each raw material and service. *1 The calculation includes production sites of corporations with 21 or more employees (companies marked with * on P3-4 of this report). *2 The calculation covers JX Advanced Metals Corporation, JX Metals Smelting Co., Ltd., and Toho Titanium Co., Ltd., where data is available.
Category 2 Capital goods	The calculation is based on the acquisition cost of fixed assets newly acquired during the fiscal year, multiplied by the emission factor.
Category 3 Fuel and energy-related activities not included in Scope 1 or 2	The calculation is based on multiplying the aggregated energy data (activity volume) published in this report (refer to P116-117) by the emission factors for each type of energy.
Category 4 Upstream transportation and distribution	The activity volume is based on logistics data (transportation method, transport distance, and cargo volume) for items with identifiable transportation scenarios, such as "Raw Materials" and "Key Products" published in this report (refer to P115). For shipments of our products, the calculation covers transportation only up to direct customers. Subsequent transportation after processing or other handling by customers is excluded, as various scenarios are possible. In principle, the ton-kilometer method is applied, multiplying by the corresponding emission factor to calculate emissions.
Category 5 Waste generated in operations	The calculation is based on the total waste emissions by type (refer to P118), using the aggregated data (activity volume) multiplied by the emission factors for each waste type. Waste that is recycled or processed within our corporate group is excluded from the calculation.
Category 6 Business travel	The calculation is based on the aggregated employee count data (refer to P121), multiplied by the emission factor.
Category 7 Employee commuting	The calculation is made by multiplying the appropriate emission factor per unit of activity for each work pattern and work location, based on the aggregate data of the number of employees (refer to P121) and the number of working days as stipulated in the employment regulations and other relevant documents.
Category 8 Upstream leased assets	Emissions from the operation of leased assets, such as vehicles and office equipment, are entirely included in Scope 1 and 2, and are therefore excluded from the calculation.
Category 9 Downstream transportation and distribution	The calculation is based on the same approach as Category 4.
Category 10 Processing of sold products	The calculation is primarily based on the aggregated data (activity volume) of "Key Products" published in this report (refer to P115), multiplied by the emission factor.
Category 11 Use of sold products	Our corporate group's products consist of non-ferrous metal materials and catalysts (inorganic substances). Since the products themselves do not consume energy or emit GHGs during use, they are excluded from the calculation.
Category 12 End-of-life treatment of sold products	The calculation is primarily based on the aggregated data (activity volume) of "Key Products" published in this report (refer to P115), multiplied by the emission factor.
Category 13 Downstream leased assets	If related facilities not included in Scope 1 and 2 (such as company housing and employee dormitories) are owned, they are accounted for under this category to ensure comprehensiveness, even though they are not leased assets.
Category 14 Franchises	Our corporate group does not operate through franchises, and since there are no applicable activities, this category is excluded.
Category 15 Investments	This category is currently excluded as we are in the process of identifying the applicable companies within our corporate group and examining the approach for calculating Scope 1 and 2 emissions for these companies.

Independent Assurance Report

Independent Assurance Report

To the President & Representative Director, CEO of JX Advanced Metals Corporation

We were engaged by JX Advanced Metals Corporation (the "Company") to undertake a limited assurance engagement of the environmental performance indicator marked with ☑ (the "Indicator") for the period from April 1, 2023 to March 31, 2024 included in its Sustainability Report 2024 (the "Report") for the fiscal year ended March 31, 2024.

The Company's Responsibility

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

Our Responsibility

Our responsibility is to express a limited assurance conclusion on the Indicator 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 Indicator.
- Performing analytical procedures on the Indicator.
- Examining, on a test basis, evidence supporting the generation, aggregation and reporting of the Indicator in conformity with the Company's reporting criteria, and recalculating the Indicator.
- Evaluating the overall presentation of the Indicator.

Conclusion

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

Our Independence and Quality Management

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

/s/ Kazuhiko Saito
Kazuhiko Saito, Partner, Representative Director
KPMG AZSA Sustainability Co., Ltd.
Tokyo, Japan
March 14, 2025

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

GRI Standards Content Index

GRI 1: Foundation 2021	
the statement of use;	JX Advanced Metals Corporation referenced the GRI Standards to report the information in this table for the relevant period (April 1, 2023 to March 31, 2024).
the title of GRI 1 used;	GRI 1: Foundation 2021

Universal Standards

No.	Disclosure	References / Reason for Omission
GRI 2: General Disclosures 2021		
2-1	Organizational details	P3-4: Sustainability Report 2024 P15-16: Global Network
2-2	Entities included in the organization's sustainability reporting	P3-4: Sustainability Report 2024
2-3	Reporting period, frequency and contact point	P3-4: Sustainability Report 2024 Back cover
2-4	Restatements of information	N/A
2-5	External assurance	P3-4: Sustainability Report 2024 P124: Independent Assurance Report
2-6	Activities, value chain and other business relationships	P7-8: Value Creation Model P13-14: Our Products That Support the Future P15-16: Global Network P17-20: Long-Term Vision and Medium- to Long-Term Business Targets P21-26: Strategy by Segment
2-7	Employees	P121-122: Social Data (Employment and Work Styles)
2-8	Workers who are not employees	—
2-9	Governance structure and composition	P27-28: Materialities and KPIs P100-102: Corporate Governance
2-10	Nomination and selection of the highest governance body	P100-102: Corporate Governance
2-11	Chair of the highest governance body	P100-102: Corporate Governance
2-12	Role of the highest governance body in overseeing the management of impacts	P27-28: Materialities and KPIs P45-52: Decarbonization P105-112: Risk Management
2-13	Delegation of responsibility for managing impacts	P27-28: Materialities and KPIs P45-52: Decarbonization P105-112: Risk Management
2-14	Role of the highest governance body in sustainability reporting	P27-28: Materialities and KPIs
2-15	Conflicts of interest	P100-102: Corporate Governance
2-16	Communication of critical concerns	P102-104: Rigorous Compliance P105-112: Risk Management
2-17	Collective knowledge of the highest governance body	P27-28: Materialities and KPIs P102-104: Rigorous Compliance
2-18	Evaluation of the performance of the highest governance body	P100-102: Corporate Governance
2-19	Remuneration policies	P100-102: Corporate Governance
2-20	Process to determine remuneration	P100-102: Corporate Governance
2-21	Annual total compensation ratio	—
2-22	Statement on sustainable development strategy	P9-12: Message From the President
2-23	Policy commitments	P1: JX Advanced Metals Group Code of Conduct P37-58: Materiality 1 Contributing to Environmental Conservation P75-84: Materiality 3 Create Attractive Workplaces P85-90: Materiality 4 Respect Human Rights P99-114: Materiality 6 Strengthen Governance
2-24	Embedding policy commitments	P27-28: Materialities and KPIs P37-58: Materiality 1 Contributing to Environmental Conservation P75-84: Materiality 3 Create Attractive Workplaces P85-90: Materiality 4 Respect Human Rights P99-114: Materiality 6 Strengthen Governance
2-25	Processes to remediate negative impacts	P87-89: Respect Human Rights in Supply Chains P89-90: Human Rights Education and Internal Awareness Raising P102-104: Rigorous Compliance
2-26	Mechanisms for seeking advice and raising concerns	P89-90: Human Rights Education and Internal Awareness Raising P102-104: Rigorous Compliance
2-27	Compliance with laws and regulations	P58: Environmental Management P102-104: Rigorous Compliance P112-114: Quality Control in the Supply Chain
2-28	Membership associations	P29-32: Responding to International Norms and Initiatives
2-29	Approach to stakeholder engagement	P29-32: Responding to International Norms and Initiatives
2-30	Collective bargaining agreements	P121-122: Social Data (Employment and Work Styles)

No.	Disclosure	References / Reason for Omission
GRI 3: Material Topics 2021		
3-1	Process to determine material topics	P27-28: Materialities and KPIs
3-2	List of material topics	P27-28: Materialities and KPIs
3-3	Management of material topics	P27-28: Materialities and KPIs P37-58: Materiality 1 Contributing to Environmental Conservation P59-74: Materiality 2 Provide Advanced Materials That Support Lives and Lifestyles P75-84: Materiality 3 Create Attractive Workplaces P85-90: Materiality 4 Respect Human Rights P91-98: Materiality 5 Coexistence and Co-Prosperity With Local Communities P99-114: Materiality 6 Strengthen Governance

Topic Standards

Economy

No.	Disclosure	References / Reason for Omission
GRI 202: Market Presence 2016		
202-1	Ratios of standard entry level wage by gender compared to local minimum wage	—
202-2	Proportion of senior management hired from the local community	P123: Social Data (Diversity)
GRI 203: Indirect Economic Impacts 2016		
203-1	Infrastructure investments and services supported	P59-74: Materiality 2 Provide Advanced Materials That Support Lives and Lifestyles P91-98: Materiality 5 Coexistence and Co-Prosperity With Local Communities
203-2	Significant indirect economic impacts	P59-74: Materiality 2 Provide Advanced Materials That Support Lives and Lifestyles P91-98: Materiality 5 Coexistence and Co-Prosperity With Local Communities
GRI 205: Anti-corruption 2016		
205-1	Operations assessed for risks related to corruption	P102-104: Rigorous Compliance
205-2	Communication and training about anti-corruption policies and procedures	P102-104: Rigorous Compliance
205-3	Confirmed incidents of corruption and actions taken	P102-104: Rigorous Compliance
GRI 206: Anti-competitive Behavior 2016		
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	P102-104: Rigorous Compliance
GRI 207: Tax 2019		
207-1	Approach to tax	P102-104: Rigorous Compliance
207-2	Tax governance, control, and risk management	P102-104: Rigorous Compliance
207-3	Stakeholder engagement and management of concerns related to tax	P102-104: Rigorous Compliance
207-4	Country-by-country reporting	—

Environment

No.	Disclosure	References / Reason for Omission
GRI 101: Biodiversity 2024		
101-1	Policies to halt and reverse biodiversity loss	P53-56: Nature-Positive
101-2	Management of biodiversity impacts	P53-56: Nature-Positive
101-3	Access and benefit-sharing	P53-56: Nature-Positive
101-4	Identification of biodiversity impacts	P53-56: Nature-Positive
101-5	Locations with biodiversity impacts	P53-56: Nature-Positive
101-6	Direct drivers of biodiversity loss	P53-56: Nature-Positive
101-7	Changes to the state of biodiversity	P53-56: Nature-Positive
101-8	Ecosystem services	P53-56: Nature-Positive

No.	Disclosure	References / Reason for Omission
GRI 301: Materials 2016		
301-1	Materials used by weight or volume	P115: Environmental Data (Mass Balance Table for the Group)
301-2	Recycled input materials used	P115: Environmental Data (Mass Balance Table for the Group)
301-3	Reclaimed products and their packaging materials	P115: Environmental Data (Mass Balance Table for the Group)
GRI 302: Energy 2016		
302-1	Energy consumption within the organization	P115: Environmental Data (Mass Balance Table for the Group) P116-117: Environmental Data (Energy)
302-2	Energy consumption outside of the organization	P115: Environmental Data (Mass Balance Table for the Group) P116-117: Environmental Data (Energy)
302-3	Energy intensity	—
302-4	Reduction of energy consumption	P115: Environmental Data (Mass Balance Table for the Group) P116-117: Environmental Data (Energy)
302-5	Reductions in energy requirements of products and services	—
GRI 303: Water and Effluents 2018		
303-1	Interactions with water as a shared resource	P57: Other Initiatives for Environmental Conservation
303-2	Management of water discharge-related impacts	P57: Other Initiatives for Environmental Conservation
303-3	Water withdrawal	P115: Environmental Data (Mass Balance Table for the Group) P117: Environmental Data (Water Resources)
303-4	Water discharge	P115: Environmental Data (Mass Balance Table for the Group) P117: Environmental Data (Water Resources)
303-5	Water consumption	P115: Environmental Data (Mass Balance Table for the Group) P117: Environmental Data (Water Resources)
GRI 305: Emissions 2016		
305-1	Direct (Scope 1) GHG emissions	P45-52: Decarbonization P115: Environmental Data (Mass Balance Table for the Group) P118: Environmental Data (Climate Change)
305-2	Energy indirect (Scope 2) GHG emissions	P45-52: Decarbonization P115: Environmental Data (Mass Balance Table for the Group) P118: Environmental Data (Climate Change)
305-3	Other indirect (Scope 3) GHG emissions	P45-52: Decarbonization P115: Environmental Data (Mass Balance Table for the Group) P118: Environmental Data (Climate Change) P125-126: Calculation of Scope 3
305-4	GHG emissions intensity	—
305-5	Reduction of GHG emissions	P45-52: Decarbonization
305-6	Emissions of ozone-depleting substances (ODS)	—
305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	P115: Environmental Data (Mass Balance Table for the Group) P118: Environmental Data (Air Pollutants)
GRI 306: Waste 2020		
306-1	Waste generation and significant waste-related impacts	P39-44: Resource Recycling
306-2	Management of significant waste-related impacts	P39-44: Resource Recycling
306-3	Waste generated	P115: Environmental Data (Mass Balance Table for the Group) P118-119: Environmental Data (Waste Materials and By-Products)
306-4	Waste diverted from disposal	P118-119: Environmental Data (Waste Materials and By-Products)
306-5	Waste directed to disposal	P118-119: Environmental Data (Waste Materials and By-Products)
GRI 308: Supplier Environmental Assessment 2016		
308-1	New suppliers that were screened using environmental criteria	P58: Environmental Management
308-2	Negative environmental impacts in the supply chain and actions taken	P53-56: Nature-Positive P87-89: Respect Human Rights in Supply Chains

Social

No.	Disclosure	References / Reason for Omission
GRI 401: Employment 2016		
401-1	New employee hires and employee turnover	P121-122: Social Data (Employment and Work Styles)
401-2	Benefits provided to full-time employees that are not provided to temporary or parttime employees	—
401-3	Parental leave	P123: Social Data (Diversity)
GRI 403: Occupational Health and Safety 2018		
403-1	Occupational health and safety management system	P83-84: Ensure Safety and Promote Health P120: Social Data (Occupational Health and Safety)
403-2	Hazard identification, risk assessment, and incident investigation	P83-84: Ensure Safety and Promote Health P120: Social Data (Occupational Health and Safety)
403-3	Occupational health services	P83-84: Ensure Safety and Promote Health P120: Social Data (Occupational Health and Safety)
403-4	Worker participation, consultation, and communication on occupational health and safety	P83-84: Ensure Safety and Promote Health
403-5	Worker training on occupational health and safety	P83-84: Ensure Safety and Promote Health
403-6	Promotion of worker health	P83-84: Ensure Safety and Promote Health
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	P83-84: Ensure Safety and Promote Health
403-8	Workers covered by an occupational health and safety management system	P83-84: Ensure Safety and Promote Health
403-9	Work-related injuries	P83-84: Ensure Safety and Promote Health P120: Social Data (Occupational Health and Safety)
403-10	Work-related ill health	—
GRI 404: Training and Education 2016		
404-1	Average hours of training per year per employee	P76-79: Human Capital Management P121: Social Data (Human Resource Development)
404-2	Programs for upgrading employee skills and transition assistance programs	P76-79: Human Capital Management
404-3	Percentage of employees receiving regular performance and career development reviews	—
GRI 405: Diversity and Equal Opportunity 2016		
405-1	Diversity of governance bodies and employees	P76-79: Human Capital Management P123: Social Data (Diversity)
405-2	Ratio of basic salary and remuneration of women to men	—
GRI 406: Non-discrimination 2016		
406-1	Incidents of discrimination and corrective actions taken	P85-90: Materiality 4 Respect Human Rights
GRI 407: Freedom of Association and Collective Bargaining 2016		
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	P85-90: Materiality 4 Respect Human Rights
GRI 408: Child Labor 2016		
408-1	Operations and suppliers at significant risk for incidents of child labor	P85-90: Materiality 4 Respect Human Rights
GRI 409: Forced or Compulsory Labor 2016		
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	P85-90: Materiality 4 Respect Human Rights
GRI 411: Rights of Indigenous Peoples 2016		
411-1	Incidents of violations involving rights of indigenous peoples	P85-90: Materiality 4 Respect Human Rights
GRI 413: Local Communities 2016		
413-1	Operations with local community engagement, impact assessments, and development programs	P91-98: Materiality 5 Coexistence and Co-Prosperity With Local Communities
413-2	Operations with significant actual and potential negative impacts on local communities	P53-56: Nature-Positive P57: Other Initiatives for Environmental Conservation
GRI 414: Supplier Social Assessment 2016		
414-1	New suppliers that were screened using social criteria	P85-90: Materiality 4 Respect Human Rights
414-2	Negative social impacts in the supply chain and actions taken	P85-90: Materiality 4 Respect Human Rights
GRI 416: Customer Health and Safety 2016		
416-1	Assessment of the health and safety impacts of product and service categories	P112-114: Quality Control in the Supply Chain
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	P112-114: Quality Control in the Supply Chain