



# SUSTAINABILITY REPORT 2023





# We contribute to the development of a sustainable economy and society through innovation in the areas of resources and materials

## JX 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.



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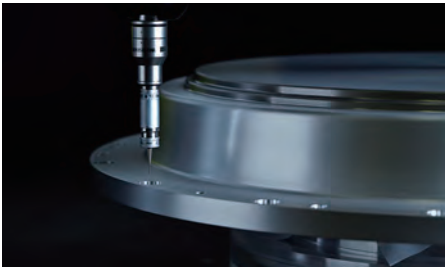
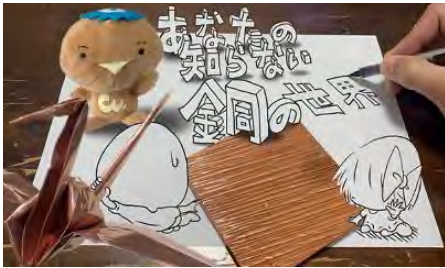
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Sustainability Report 2023

Editorial Policy

The JX 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 2023 presents the JX 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 with a check.

Definitions of Terminology

The Company: Refers to JX Metals Corporation. The JX Metals Group (the “Group”): JX 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 Metals Corporation. Along with the Company, the core operating companies of the JX Metals Group are ENEOS Corporation and JX Nippon Oil & Gas Exploration Corporation.

Publication Date

February 2024

Reporting Period

April 2022 - March 2023

In principle, this report covers our business activities during fiscal 2022. 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 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 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 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 83 companies in which the Company has 50% or greater voting rights directly or indirectly. * Main companies covered by this report are those marked with ★ below.

Main Companies Covered by This Report

Domestic

- JX Metals Corporation ◎●★  
JX Metals Trading Co., Ltd. ◎●★  
Toho Titanium Co., Ltd. ◎●★  
JX Nippon Mining Ecomanagement, Inc. ◎●★  
Yoshino Mines Co., Ltd. ◎●★  
Oya Mines Co., Ltd. ◎●★  
Hokuriku Mines Co., Ltd. ◎●★  
Shin-Takata Mining Co., Ltd. ◎★  
Kaneuchi Mining Co., Ltd. ◎★  
Hitachi Mines Co., Ltd. ◎●★  
Shakanai Mines Co., Ltd. ◎★  
Hanawa Mines Co., Ltd. ◎●★  
Hokushin Mining Co., Ltd. ◎●★  
Namariyama Mining Co., Ltd. ◎●★  
Kamikita Mines Co., Ltd. ◎●★  
Toyoha Mine Co., Ltd. ◎●★  
Shimoda Hot Springs Co., Ltd. ◎●★  
Kamine Clean Service Co., Ltd. ◎★  
Furuuchi Chemical Corporation ◎●★  
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. ◎★  
MFN Investment LLC ◎★  
Nippon Caserones Resources Co., Ltd. ◎★  
Pan Pacific Copper Co., Ltd. ◎●★  
Keihin Kaseihin Center Co., Ltd. ◎●★  
PPC Logistics Co., Ltd. ◎★  
JX Metals Smelting Co., Ltd. ◎●★  
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. ◎●★  
JX Nippon Foundry Co., Ltd. ◎●★  
TANIOBIS Japan Co., Ltd. ◎●★  
Toho Material Co., Ltd. ◎●★  
Advanced Forging Technology, Inc. ◎●★  
Tokyo Denka Co., Ltd. ◎●★

Other

One domestic and one overseas company ◎\*

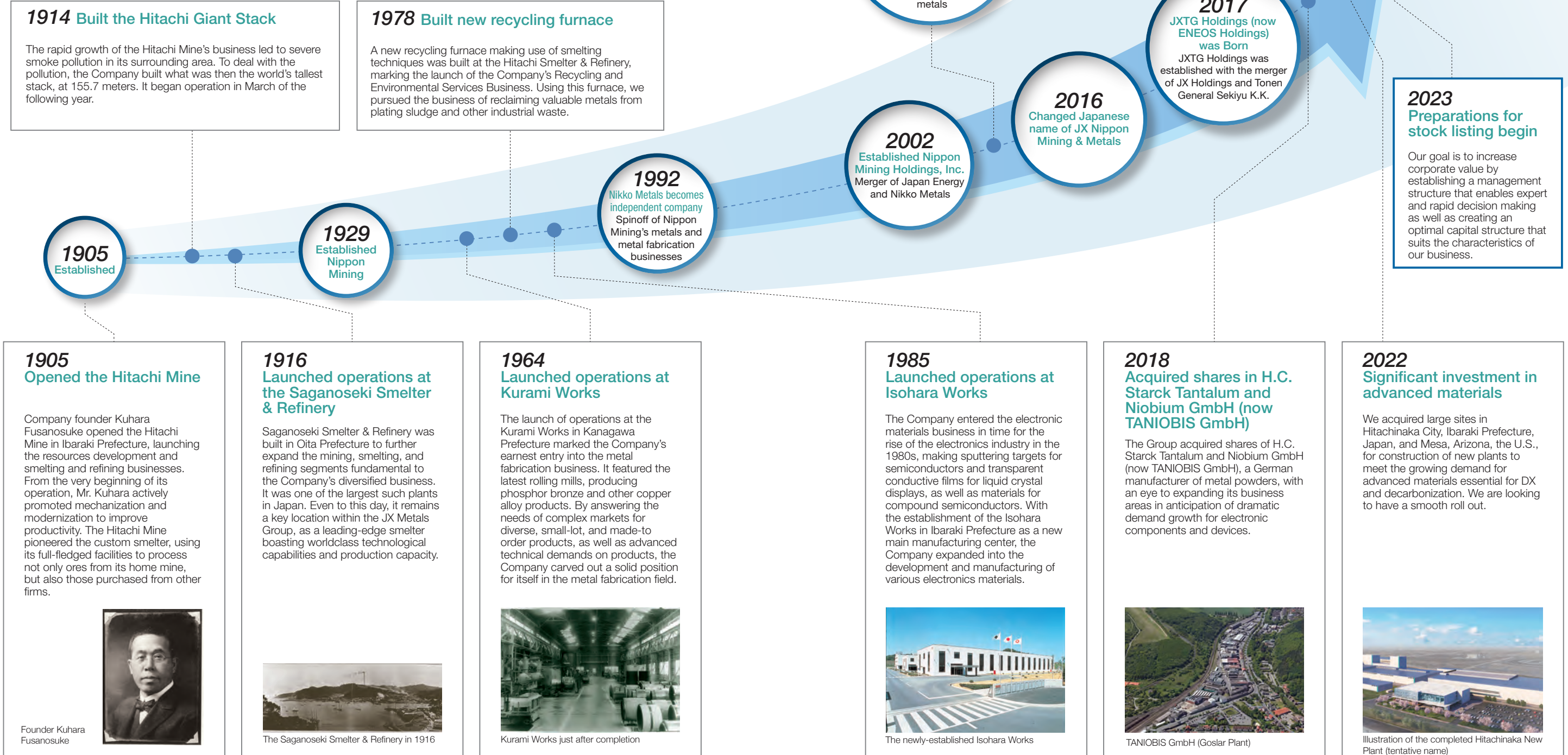
Overseas

- 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 Nippon Mining & Metals Philippines, Inc. ◎●★  
Nippon Mining & Metals (Suzhou) Co., Ltd. ◎●★  
Nikko Fuji Precision (Wuxi) Co., Ltd. ◎●★  
Materials Service Complex Malaysia Sdn. Bhd. ◎●★  
Nikko Metals Shanghai Co., Ltd. ◎★  
JX Nippon Mining & Metals Dongguan Co., Ltd. ◎●★  
JX Nippon Mining & Metals USA, Inc. ◎●★  
JX Nippon Mining & Metals Europe GmbH ◎★  
JX Metals Korea Co., Ltd. ◎●★  
JX Nippon Mining & 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. ◎★



# 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 resources and materials.







JX Metals Corporation  
President & Representative Director

**Hayashi Yoichi**

## Message From the President

**Aiming to leap forward as a global leader in semiconductor and ICT materials through strategic investments to accelerate the growth of our Focus Businesses, structural reform in our Base Businesses, and social value creation**

[Assuming Office as President]

**Fully confident in our vision, even amid significant environmental changes  
Overcoming the challenges at hand and doing what it takes to advance steadily forward**

In 2019, the JX Metals Group announced the *JX Metals Group Long-Term Vision 2040*, which declared our transformation into a technology-based company. I was involved in creating this vision, and I believe this vision is an important guidepost for the future of the Group.

Surveying the landscape of future world trends reveals that resource-rich countries are prioritizing their internal resources holdings, due in part to rising resource nationalism. We expect that Japan will face challenges in securing a stable supply of resources in the future. It is also easy to imagine that the demand for advanced materials will accelerate as our data-driven society progresses even further. While the population of Japan has begun to decline, worldwide consumption will expand with growing global populations, economies, and the middle class in Asia. Three important perspectives come to mind: Avoiding resource depletion, utilizing advanced materials, and creating sustainable societies.

Given such a world, in what direction will the JX Metals Group journey? For one, in addition to mining mineral resources, as we have done since our founding, we will secure resources by focusing on recycling in the future. Second, we have built a foundation for technological development in advanced materials, which will become a growth driver. In terms of sustainability, resource recycling is a given. At the same time, we expect advanced materials will stimulate technological innovation, which in turn will contribute to the sustainability of societies with growing populations.

These perceptions form our basic direction. We have composed a picture in which we produce advanced materials and conduct materials development as our Focus Businesses, while our Base Businesses supply sustainable materials to our Focus Businesses in support.

These trends, which we first acknowledged about five years ago, have only become more acute over time. The issue of climate change has emerged with torrential rains, floods, and tornadoes in many parts of the world, while the resulting human suffering and economic loss have ballooned. Differences in ideas among nations have become an even greater risk than expect-

ed. For example, frictions have emerged between China and Russia, not to mention other countries and democracies. These frictions increase the risk of supply chain confusion and disruptions. Maintaining supply chains under dysfunctional global procurement is an urgent issue for manufacturers around the world. Our Base Businesses are increasingly important in terms of securing raw materials to support our Focus Businesses, which are the driver of JX Metals Group growth. At the same time, recycling is also rising in importance.

I took the opportunity of my appointment to president to reexamine our long-term vision. I reaffirmed the critical nature of this vision in light of the latest social trends and the management resources we possess. Under the current market conditions, we have seen that in the latter half of fiscal 2022, semiconductor and ICT materials entered an adjustment period from which they have yet to emerge. Meanwhile, our Base Businesses face intense competition for recycling collection and weakening smelting margins due to the construction of new smelters in Asia. To put it simply, my appointment as president is off to a challenging start. However, we are fully confident in our chosen direction. My current state of mind is to do what we must to make our long-term vision a reality.

[Reviewing the Previous Medium-Term Management Plan and FY2022 Results]

**Operating income of 305 billion yen over the three years of the medium-term management plan  
Proof of portfolio reform and competence heading into the future**

We view the medium-term management plan covering the three-year period beginning fiscal 2020 as a period for sowing seeds toward our vision. From this perspective, I believe we achieved a certain degree of success. One example is our decision to increase existing capacity for semiconductor and ICT materials, which we have designated as growth areas. One of our most significant achievements was our decision to build new plants in Hitachinaka City, Ibaraki Prefecture, Japan, and in Arizona of the United States. We made these decisions after detailed internal discussions to determine the direction of the projects.

Meanwhile, our Base Businesses faced a challenging business environment as expected. Even in this environment, however, we addressed issues that included improving capital effi-



ciency and reducing interest-bearing debt. We also conducted a review of our business portfolio to improve profitability with an eye to the future. We concluded the sale of a portion of our interest in the Caserones Copper Mine, and we continued a review of our copper smelting structure that began two management plans prior, including the sale of our stake in LS-Nikko.

In terms of building a stronger foundation for ESG management, former president Murayama declared the Group's stance on decarbonization and began our shift to CO<sub>2</sub>-free electricity, starting with the Caserones Copper Mine and major locations in Japan. In August 2022, we organized the Group's approach to the sustainable supply of copper, putting it into action in the form of the *Sustainable Copper Vision*. While Europe is the leading region in communicating concepts and regulations that emphasize social value, few examples exist in Japan. We are proud of the real progress we have made in communicating the Group's philosophy internally and externally.

We are no different than most Japanese companies in our disposition to be inward-looking regarding technology development, having a strong tendency to do everything in-house. That being said, we endeavored under the previous medium-term plan to adopt new mechanisms, including corporate venture capital and investments in domestic and overseas startups. At the same time, we began to reform our personnel system with an *Idea Seed Bank*, which serves as a platform for ideation within the company. We also pursued human resources development appropriate for a technology-based company. Although these efforts are not yet quantifiable, I believe we have planted seeds for the future.

In terms of business performance, JX Metals Group operating profit for fiscal 2022 was 68.7 billion yen, a decrease of 89.5 billion yen compared with the previous fiscal year. One contributing factor was a valuation loss of 75.3 billion yen resulting from the sale of a portion of our interest in the Caserones Copper Mine. Another factor was a decrease of 12.3 billion yen in profit due to the sale of our shares in LS-Nikko, a smelting business company in South Korea. A detailed analysis reveals various factors contributing to the change in profit, but semiconductor and ICT materials, which had been strong until fiscal 2021, declined in the latter half of fiscal 2022. This decrease was offset in part by improved sales prices for certain products, including sulfuric acid in our Base Businesses. Excluding the losses due to special factors, we view operating profit at around 140 billion yen.

Including portfolio realignment, over the three years of the medium-term management plan through fiscal 2022, we generated a cumulative operating profit of 305 billion yen. Considering these results, including the impairment loss recorded for

the Caserones Copper Mine, to be a strength, we see evidence of growth and competence, particularly in our Focus Businesses. At the same time, we conducted growth investments of 300 billion yen over the past three years, which means our financial position remains challenging.

[Medium-Term Management Plan for Fiscal 2023 to 2025]

**Our new medium-term management plan will be a phase to mark out footprints for growth through the steady execution of growth strategies**

Recently, we announced a new three-year medium-term management plan beginning fiscal 2023. Under the basic philosophy of this plan, we aim to leap forward as a global leader in semiconductor and ICT materials through strategic investments to accelerate the growth of our Focus Businesses, structural reform in our Base Businesses, and social value creation. When we announced this new plan, we also announced that the Group would prepare for a public share listing. We also changed the composition of our business segments under the new plan in our hope to provide a clearer understanding to stakeholders of the Group's growth strategy, helping stakeholders evaluate the results of our efforts more efficiently. Under our Focus Businesses, we changed the former Functional Materials Division and Thin Film Materials Division segment to the Semiconductor Materials and ICT Materials segments. In line with this change, we changed the name of our Base Businesses to Basic Materials. We believe these new classifications will make visualizing our businesses and markets easier.

If the previous medium-term business plan was a phase for sowing seeds, then our new plan is a phase to mark out footprints for growth through the steady execution of our growth strategy. No matter how aggressive our medium- to long-term vision may be, we cannot secure the belief of our stakeholders without a tangible footprint. The new plan is very important as a means to accumulate objective evidence and provide numerical support toward our long-term vision. Our target for cumulative operating profit over the three-year period is 309.2 billion yen. While this may seem like a minor modification of the 305 billion yen target in our previous medium-term plan, this target is actually an aggressive one when considering the sale of interests in the Caserones Copper Mine and LS-Nikko. This target assumes 1.6-times growth in our Focus Businesses.

Our 2040 Long-Term Vision provides an annual operating

profit target of 250 billion yen. This target reflects our expectation that Base Businesses will remain flat at around 50 billion yen, while Focus Businesses will grow to 200 billion yen, four times the current size. To reach this goal, our first order of business is to achieve the next three-year target and then chart a more solid path forward.

Our reason for listing on the stock market is to accelerate our growth strategy by speeding up decision-making and optimizing capital structure, measures that will lead to a transition. We will communicate the JX Metals Group goals to the outside world, including the stock market, in a manner easy to understand. Our focus will be on groupwide efforts to make JX Metals a recognized global leader in semiconductor and ITC materials by the time we finish our medium-term plan in fiscal 2025.

To this end, we must first ensure that the capital investments and new plant projects under our Focus Businesses take concrete shape and that our stakeholders recognize the growth potential of our group. Meanwhile, our Base Businesses encompass a major issue in terms of profit margins relative to invested capital. From the perspective of resource recycling, which I mentioned earlier, the smelting business represents an advantage, and we hope to improve capital efficiency as soon as possible.

It goes without saying that we will take a more detailed approach to the people and technologies that support future growth. We are already accelerating the growth of compound semiconductors to create a new product line that will become our next global niche product in addition to sputtering targets for semiconductors and rolled copper foil. We are determined to pave the way for crystal materials to become the next product line that supports profits during the span of this medium-term management plan.

While this growth strategy requires significant capital, at the same time, having made the decision to list shares, we must also solidify our financial position. Therefore, we launched a project for structural reforms to ensure investments for growth and financial soundness. As part of this project, we launched a fundamental review of our businesses with the cooperation of everyone across the Group. These reforms will be from a zero-base perspective in all aspects, including cost structure, financial condition, investment plans, and business portfolio.



[Sustainable Copper Vision]

**Accelerating resource recycling and decarbonization efforts with like-minded partners for the evolution and wider adoption of sustainable copper**

In recent years, society has become increasingly aware of the need to decarbonize and recycle resources. We, ourselves, felt compelled to take action toward making the decarbonization resource of copper more sustainable. Given these considerations, we announced the Sustainable Copper Vision, demonstrating our commitment to further measures for decarbonization, resource recycling, and responsible procurement. Over the past year or so, we have seen steady results from our efforts. In fact, we became the first Japanese company to obtain third-party certification for the calculation of the carbon footprint (CFP) of electrolytic copper. We were also the first Japanese company to receive The Copper Mark certification, a framework for assuring responsible copper production.

In addition to our own internal activities, we pursue communication with companies involved in the production and use of copper. Through these dialogues, we have come to understand that many people share the same ideas and direction as our Sustainable Copper Vision. We have also begun to identify the needs that exist in the supply chain for the production and use of sustainable copper. Green Enabling Partnerships are one way we work with companies and universities that share our goals



and agree to work in concert to implement these initiatives. We have already established partnerships with a number of entities from arterial to venous. We issued public announcements together with Intel Corporation, BHP, and Waseda University.

We will continue to pursue appropriate technological development, capital investment, and product design based on the wide-ranging needs of all parties involved in copper production and use. The Group will also cooperate with other companies and universities with which we have established partnerships to co-create efficient resource recycling systems, decarbonize supply chains, and offer products with higher environmental value and traceability to the world.

[The Keys to Change]

**To shift from an equipment-oriented industry to a technology-oriented one, the most important change is a change in mindset**

The JX Metals Group is shifting from an equipment-oriented company to a technology-oriented company, aiming for global growth through advanced materials. This change, however, is not as easy as it sounds. First, we must attract people who have ideas about product development and manufacturing for advanced materials. At the same time, no matter how superior the technology, nothing will be brought to the market when hampered by a fear of failure. It takes energy and fearless determination to engage in business development with an eye for the future. That energy is the unwavering desire to make it happen because the task is simply too important. The most crucial factor in shifting from an equipment-industry orientation to a technology orientation is changing the mindset of our people.

A technology-based company must have new ideas, logic, and discussions that transcend the status quo. A technology-based company must have a culture that values the process of creating new technologies, whether they result in success or failure. New developments are most likely to come from new ideas. Therefore, we must first nurture ideas. We must train our technical staff and administrative staff to embrace new ideas and challenges. Managers and systems must be in place to evaluate our employees in this light. Our companies must be attractive workplaces that hire, train, and elicit maximum performance, including a personnel evaluation system, job rotations, and other measures. I recognize that these efforts related to human resources and workplace environments represent high

hurdles.

But as we develop these ideas further, we must eventually ask ourselves whether our production sites are acceptable as they are today. For example, issues related to work styles are likely to emerge, including whether equipment and machinery can be monitored remotely. There are concerns that manufacturing will become unviable in 10 years without process innovation and labor savings. One major issue is developing human resources who think about on-site reform and have an objective view of the future.

During the previous medium-term management plan, we implemented a complete revision of our human resources system. Our objectives included evaluating and compensating key on-site support employees appropriately, recruiting and developing employees capable of growing our businesses, and providing environments in which every employee feels confident in taking on challenges. We also introduced flexible job rotations, such as transferring employees from business divisions to lead corporate divisions. People tend to think of things based on their own experiences. We want to take on reforms from fresh perspectives and ideas, respecting the opinions all manner of individuals, even those who have little experience or widely different experiences.

[Materialities]

**Contribute tangible results to society for social issues suited particularly to JX Metals**

The JX Metals Group has identified six materialities for priority action to realize our 2040 Long-Term Vision. Each materiality includes KPIs.

We consider contributing to environmental conservation our highest priority, not only through carbon-neutral initiatives, but through what we do as a non-ferrous metals producer, as described in the Sustainable Copper Vision. Because we are in the mineral resources and smelting business, we are in a unique position to ensure traceability from the mining stages. We believe we can provide indispensable materials to the world in a transparent and environmentally friendly manner.

We provide advanced materials that support lives and lifestyles. Here, the copper, minor metals, and precious metals we produce are indispensable for building sustainable and prosperous societies. Our products are critical for semiconductors, ICT, and renewable energy infrastructure. We understand that sup-

plying these materials is equally linked to contributing to lives and lifestyles.

Coexistence and co-prosperity with local communities is a concept we inherited from the company policies traced back to our original founding. For my own part, I want to take a broader view of the term local communities, contributing to the nation of Japan. Recently, we have seen more discussions on the importance of economic security. Japan supplies a significant portion of materials to the global semiconductor industry, even though Japan's share of chip manufacturing itself is minimal. Beyond semiconductors, raw materials will become increasingly important in industrial innovation. When that happens, we want to contribute to coexistence and co-prosperity with regions and countries, understanding where we can offer our strengths. We have seen a dramatic increase in the risk of supply chain disruptions in areas such as minerals and energy. Japanese manufacturers that possess superior materials must consider how to hedge risk with their own systems in place to avoid bottlenecks at the origins of where resources are located. This perspective is very meaningful. To coexist and co-prosper with the Japanese nation, industries, and other companies, we must add to our own strengths by ourselves.

To strengthen governance, we changed our legal structure to a company with an Audit Committee, effective June 28, 2023. We also added two independent outside directors, bringing the total number of independent outside directors to five. More than 10 years have passed since we removed our shares from the public market. During that time, we have had limited opportunities to experience external evaluations directly, including assessments related to the stock market. Corporate governance has changed dramatically over the past decade or so. This change is why we selected highly expert individuals willing to evaluate our governance from a strict perspective. Under this new structure, we will improve the effectiveness of the Board of Directors and strengthen governance to enhance corporate value.

[Message to Stakeholders]

**JX Metals aspires to be a well-loved group with a well-known vision**

We want investors to understand first that we are moving toward the long-term vision we have set for ourselves. The key phrase of this vision is to be the global leader in semiconductor and ITC materials. At the same time, we want you to understand that even as various issues in the supply chain emerge, we—with our resources and smelting business—are a group that solves

social issues with transparency and traceability. With such upstream and downstream management resources, the JX Metals Group is capable of producing advanced materials in a stable manner, controlling capital efficiency, and pursuing sustainability from an ESG perspective.

We are determined to achieve the corporate image we envision for ourselves. We also want to become a widely recognized company capable of communicating just who JX Metals is to all parties, whether it be our shareholders, investors, business partners, or employees and their families. And we are confident that your direct support will bring us closer to the vision we strive to achieve.





# Long-Term Vision and Medium-Term Management Plan

In 2019, we formulated our 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 formulated our Medium-Term Management Plan for Fiscal 2020 to 2022 based on this vision. Under that plan, we engaged in specific initiatives to achieve our vision, including strengthening our production capacity for sputtering target for semiconductors, treated rolled copper foil, high-performance copper alloys, and other advanced materials, developing new businesses in collaboration with external partners, and implementing structural reform in our Base Businesses.

After operating for four years under this vision, 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 adjusted our sights, redefining business segments based on this future direction and business lines while stating a clear profit target for 2040.

### The JX Metals Group Long-Term Vision 2040

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

#### Main Revisions in the Long-Term Vision

● Changes in underlying trends

● Redefinition of the position and roles of Base Businesses

● Declaration of our decarbonization vision

● Redefined segments ▶ **Point 1**

● Long-term earnings target ▶ **Point 2**

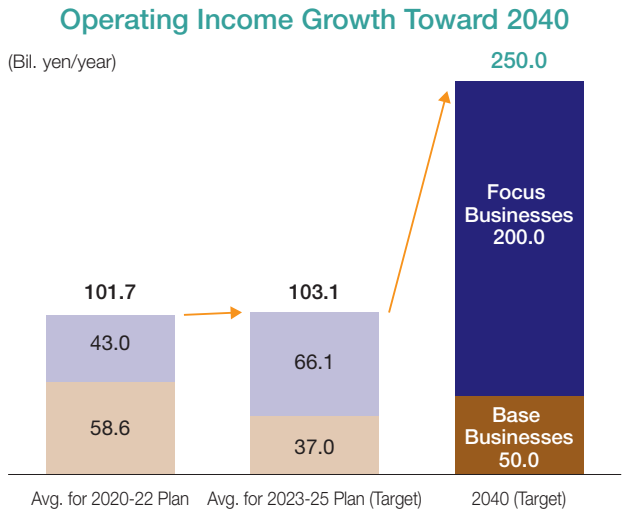
**Point 1** Redefined Segments

We established three segments. To properly communicate our path to growth to stakeholders, we established two segments under Focus Businesses: the Semiconductor Materials Segment and the ICT Materials Segment. Under Base Businesses, we established one segment called the Metals & Recycling Segment, which combines Mineral Resources and Metals & Recycling into one.

Division/Operating Company		Segment
Focus Businesses (Downstream)	Thin Film Materials Division	Semiconductor Materials
	Tantalum and Niobium Division	
	Functional Materials Division	ICT Materials
	Toho Titanium Co., Ltd., Tatsuta Electric Wire and Cable Co., Ltd.	
Base Businesses (Upstream)	Mineral Resources Division	Metals & Recycling
	Metals & Recycling Division	

**Point 2** Long-Term Earnings Target

We aim to lift operating income to 250 billion yen in 2040 backed by high-margin, high-growth Focus Businesses



\*Common expenses are allocated to the two businesses in proportion to operating income

## Previous Medium-Term Management Plan

The Medium-Term Management Plan 2020-22 was positioned as a three-year period for sowing seeds for transformation into a technology-based company through business operations with greater autonomy, agility, and independence as set forth in the JX Metals Group Long-Term Vision 2040, and we accelerated efforts in new growth areas.

### Measures Implemented Under the Previous Medium-Term Plan

	Expand Strategic Investment and Promote Technology Development	Review Business Portfolios	Implement Reforms and Contribute to the SDGs
	<b>Focus Businesses</b> <ul style="list-style-type: none"><li>Expand production capacity to meet growing demand</li><li>Hitachinaka New Plant (tentative name) and investments to create a portfolio centered on the Focus Businesses</li></ul>	<b>Technology-Based Businesses, ESG Initiatives, Etc.</b> <ul style="list-style-type: none"><li>Build fundamentals to develop next pillar of profits</li><li>Promote sustainable copper projects for our ESG management</li></ul>	<b>Base Businesses</b> <ul style="list-style-type: none"><li>Stabilize profitability and minimize volatility by reshaping asset portfolio</li><li>Support transformation to center on Focus Businesses</li></ul>
FY2020	HQ relocation (to introduce dynamic management and develop personnel oriented to added value) Capacity expansion of semiconductor sputtering target	Collaboration with Novel Crystal Technology, Inc. Establishment of JX Metals Research Institute for Technology & Strategy Co., Ltd.	Restructuring of copper business (changed smelting structure) Investment in scrap treatment capacity
FY2021	Capacity expansion of treated rolled copper foil	Establishment of Crystalline Material Business and Battery Material & Recycling Promotion Offices Establishment of lithium-ion battery recycling subsidiaries in Japan/Germany Collaboration with a national research laboratory (AIST)	Sale of P.T. Smelting
FY2022	Implementation of sustainable copper CO <sub>2</sub> -free electricity at major locations in Japan and overseas Implementation of the new factory in Hitachinaka Implementation of North America New Plant (tentative name) TOB Announcement of Tatsuta Electric Wire and Cable, Co., Ltd. (Investment in Mibra Mine) Acquisition of Maruwn	Investment in NanoWired GmbH Awarded the Copper Mark	Acquisition of eCycle Solutions Sale of LS-Nikko Copper Investment in Mibra Mine Partial sale of Caserones Copper Mine interests

### Previous Medium-Term Management Plan Results (Operating Income)

		(billions of yen)			
		FY2020	FY2021	FY2022	3-Year Cumulative
Focus Businesses	Functional Materials Business, Thin Film Materials Business	31.1	54.5	56.4	142.0
Base Businesses	Mineral Resources Business	34.9	72.1	-22.0	194.0
	Metals & Recycling Business	27.3	41.0	40.7	
Common Business Expenses		-15.2	-9.4	-6.4	-31.0
Total		78.1	158.2	68.7	305.0



● Summary of Business Results for FY2022

Year-on-year product sales were lower generally in the Functional Materials and Thin Film Materials Businesses leading to lower profit. This result was mainly due to declining demand for consumer electronic devices in the semiconductor market, the economic slowdown due to China’s Zero-COVID policy, and inventory adjustments in the supply chains affected by these factors.

Despite increased production at the Caserones Copper Mine in Chile, the Mineral Resources Business saw lower copper price levels compared with the previous fiscal year. In addition,

we conducted an assessment of fair values for the assets of the SCM Minera Lumina Copper Chile in the wake of our decision to transfer our shares in the mine, and we recorded a loss of 75.3 billion yen.

The Metals & Recycling Business recorded an increase in profit stemming from improved international market conditions for sulfuric acid and the weak yen.

As a result, revenue for the fiscal year under review rose 26.7% year on year to 1,637.8 billion yen, while operating profit declined 89.5 billion yen year on year to 68.7 billion yen.

Financial Performance (Consolidated, IFRS)

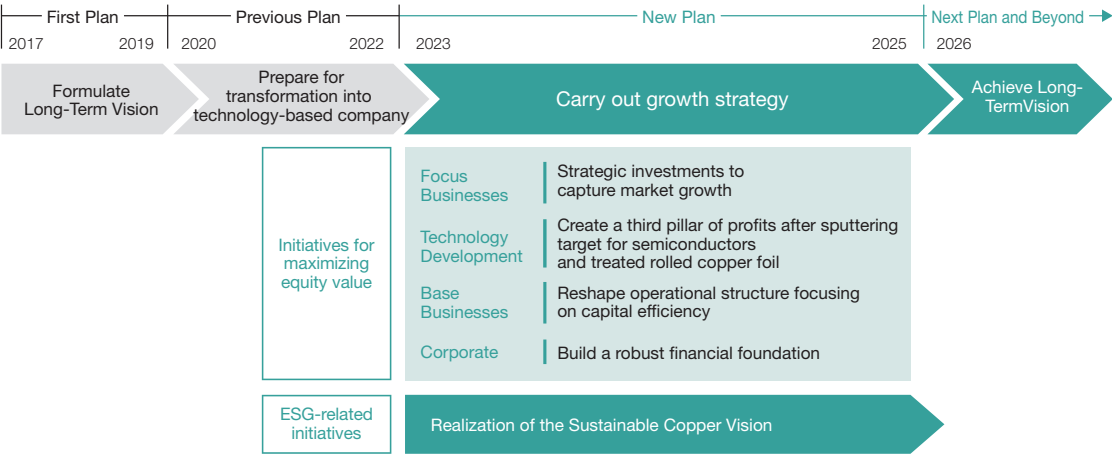


Medium-Term Management Plan for Fiscal 2023 to 2025

Under the new medium-term management plan launched in fiscal 2023, we aim to be a leading global supplier of semiconductor and ICT materials by executing strategic investments for

Focus Businesses, reshaping the operational structure of Base Businesses and creating social value.

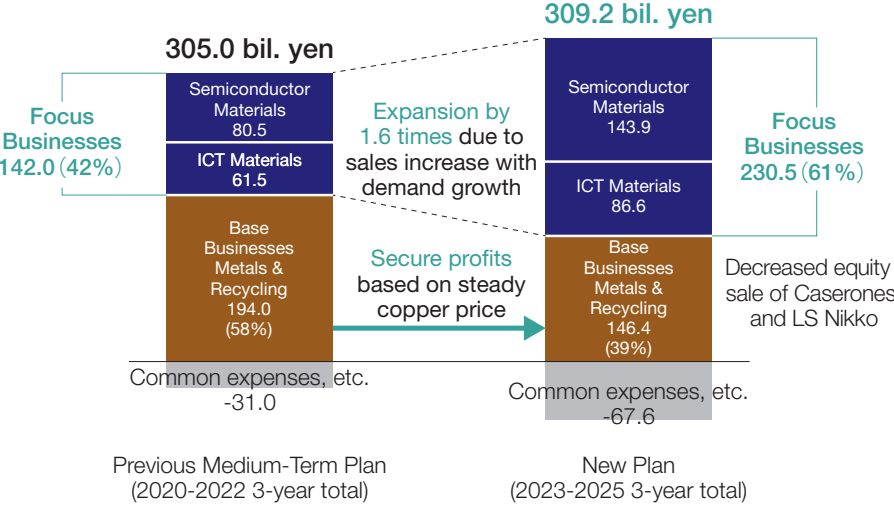
Role of the Current Medium-Term Plan



● New Plan: Business Plan

Although the business environment was difficult at the beginning of the period due to ongoing electronics market adjustments since fiscal 2022, we aim to achieve a cumulative operating income higher than the previous medium-term plan by capturing demand in the period of recovery onward. In addition, we will execute aggressive strategic investments to prepare for increased demand in our Focus Businesses.

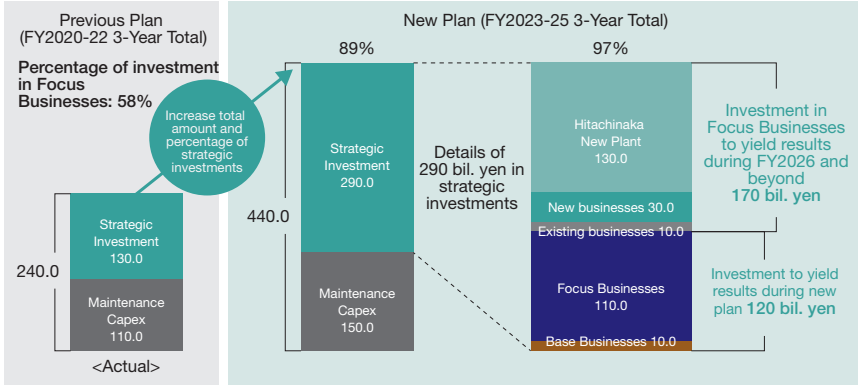
3-Year Total Operating Income



● Planned Capex

Under the Medium-Term Management Plan for Fiscal 2023 to 2025, we intend to invest 290 billion yen over the three-year period to prepare for increased demand in the Focus Businesses. Of this amount, we have set aside 170 billion yen as Focused Investments that we expect to conduct in fiscal 2026 onward. Focused Investments include the construction of the Hitachinaka New Plant (tentative name) and the creation of new businesses.

New Plan: Planned Capex





# Global Network (as of July 14, 2023)

JX 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.

## Europe

- Frankfurt Office
- JX Nippon Mining & Metals Europe GmbH
- JX Metals Circular Solutions Europe GmbH
- TANIOBIS GmbH
- TANIOBIS Smelting GmbH & Co. KG
- Toho Titanium Europe Co., Ltd.
- Nippon LP Resources UK Ltd.

## Middle East

- Advanced Metal Industries Cluster and Toho Titanium Metal Company Limited

## Asia

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

## North America

- eCycle Solutions Inc.
- JX Nippon Mining & Metals USA, Inc.
- TANIOBIS USA LLC
- Toho Titanium America Co., Ltd.

## Central and South America

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

## Japan

- JX Metals Tomakomai Chemical Co., Ltd.
- JX Metals Precision Technology Co., Ltd., Esashi Works
- Ichinoseki Foil Manufacturing Co., Ltd.
- JX Metals Takasho Co., Ltd., Shirakawa Plant
- Isohara Works
- Hitachi Works
- JX Metals Smelting Co., Ltd., Hitachi Works
- JX Metals Environmental Services Co., Ltd.
- Toho Titanium Co., Ltd., Hitachi Plant
- TANIOBIS Japan Co., Ltd., Mito Plant
- Furuuchi Chemical Corporation, Tsukuba Factory
- JX Nippon Coil Center Co., Ltd., Kurami Office
- JX Metals Precision Technology Co., Ltd., Nasu Works
- Tokyo Denkai Co., Ltd.
- Kurami Works
- JX Nippon Coil Center Co., Ltd., Kurami Office
- Toho Titanium Co., Ltd., Chigasaki Plant
- JX Metals Mikkaichi Recycle Co., Ltd.
- Toho Titanium Co., Ltd., Kurobe Plant
- JX Metals Precision Technology Co., Ltd., Kakegawa Works
- Osaka Alloying Works Co., Ltd.
- JX Metals Circular Solutions Co., Ltd.
- JX Metals Trading Co., Ltd., Takatsuki Plant
- Tatsuta Electric Wire & Cable Co., Ltd., Osaka Plant
- Toho Titanium Co., Ltd., Yahata Plant
- Toho Titanium Co., Ltd., Wakamatsu Plant
- JX Metals Smelting Co., Ltd., Saganoseki Smelter & Refinery
- Japan Copper Casting Co., Ltd., Saganoseki Works
- JX Metals Smelting Logitech Co., Ltd.
- Kasuga Mines Co., Ltd.

### Corporate Profile

Company Name	JX Metals Corporation
Paid-in Capital	75.0 billion yen (wholly owned by ENEOS Holdings, Inc.)
Representative	President and Chief Executive Officer Hayashi Yoichi
Revenue	1,637.8 billion yen (FY2022, consolidated)
Head Office	10-4, Toranomon 2-chome, Minato-ku, Tokyo105-8417, 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)	3,345 (as of March 31, 2023)
Employees (Consolidated)	10,759 (as of March 31, 2023)
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

\* The JX Metals Group conducts business in 13 countries and regions outside Japan.



# Responding to International Norms and Initiatives

The JX 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 Metals in FY2022	Activity Content
Japan Copper and Brass Association (JCBA)	Chairperson	The JCBA works with member companies to promote progress and growth throughout the entire copper production industry. The Group sits on the Roadmap Committee to take part in the improvement of quality and the discovery of new demand. The Group is also involved in the survey and reporting of market size as a member of the Statistics Committee.
Japan Society of Newer Metals (JSNM)	Vice Chairman	The JSNM was established to promote the sound growth of new metals that support high-tech and related industries through research and the collection and provision of information. JX Metals sits on the Compound Semiconductors Subcommittee and the Target Subcommittee in order to be involved in the survey and reporting of market size, as well as to take part in providing opinions and advice to concerned government ministries and agencies. JX 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	The JMIA is an association of companies engaged in the smelting business and nonferrous metal resource development. JMIA promotes the sound growth of the industry by conducting research and publicizing knowledge for technical improvement and making policy proposals to concerned government ministries and agencies. The JX Metals Group served as the director of the association in fiscal 2022.
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 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



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)



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/>



### Carbon Disclosure Project (CDP)



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 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 Metals Group announced our participation in June 2020.

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



### 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/>



### Copper Mark



Established in 2019, the Copper Mark is a framework to demonstrate the copper industry's responsible production and contributions to the SDGs of 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.

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



### 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/>



### Partnership Development Declaration

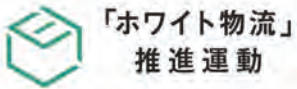


The Partnership Development Declaration is an initiative that aims to increase added value throughout the supply chain by having corporate leaders declare supply chain-wide coexistence and coprosperity, that new partnerships will transcend size, affiliation, etc., and that participants will engage in 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 Campaign 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 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/>







## Outside Directors Roundtable Discussion

We held a roundtable discussion on July 31, 2023, to discuss governance, challenges for future growth, and sustainability initiatives at the JX Metals Group.

**A** 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 Investment and Responsible Business Committee. He became an outside director with JX Metals Corporation in June 2022.

**B** 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.

**C** Outside Director  
**Tokoro Chiharu**

In 2004, Ms. Tokoro was named assistant professor at Waseda University, School of Science and Engineering. 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 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, vice 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 became an outside director with JX Metals Corporation in June 2023.

**F** 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). Mr. Futamiya became an outside director with the JX Metals Corporation in June 2023.

On the role of outside director and assessments of the Company's governance structure

**Murayama Seiichi:** In May 2023, we announced preparations to list our shares, and we are working to strengthen our governance structure in a manner appropriate for a listed company. We expect outside directors to make recommendations based on their respective experiences and expertise.

**Futamiya Masaya:** I am a newcomer to the board, but I plan to offer my input freely in the form of questions and proposals regarding risk management and compliance from the perspective of a corporate manager, as well as how to communicate medium- to long-term growth scenarios to audiences in Japan and overseas. I will also be happy to share my experience in the area of sustainability, including initiatives for biodiversity and human rights.

**Kawaguchi Rika:** I hope to help the Company build a strong governance structure based on my experience as an outside member of the Audit & Supervisory Committee, work in human resources and labor relations, and expertise as a lawyer. My life's work is in promoting gender equality, so I want to contribute to an awareness of true diversity in the Company in terms of making it easier for employees to work.

**Itoh Motoshige:** From an outside perspective as a researcher, I want to offer insights on economic trends. Recently, government councils have been discussing the SDGs and other topics. I believe I can offer advice on connecting government policy and business, as well as how public-private partnerships can work effectively.

**Sakuma Soichiro:** My background is in the metals industry. Despite the differences between ferrous and nonferrous metals, I think there are many similar management issues. I also have experience creating governance systems for government councils and at the Japan Business Federation (Keidanren). I think the Company has already formed a solid framework for an initial public offering by establishing itself as a company with an Audit & Supervisory Committee and full-time members of the Audit & Supervisory Committee.

**Tokoro Chiharu:** As a technology specialist, I am well aware of the high technological capabilities and future-oriented development activities of the Company. Joining the Board of Directors has provided a solid understanding of the situation backed by evidence. I think one of my roles is to provide advice to ensure that these wonderful technologies are evaluated properly.

**Itoh:** Society is changing rapidly, so discussing how to follow or anticipate the changes is important. It is also very important to discuss directions and mechanisms at length within the Company. As outside directors, we want to participate in these discussions actively.

**Sakuma:** For having a traditional background, the Company has a flat and open culture. This culture may be due to the fact that the business is orienting toward more advanced semiconductor and ICT materials. I think the Board of Directors mirrors this corporate atmosphere, which is conducive to discussion.

**Murayama:** Under a new structure beginning this fiscal year, we have five outside directors, including Mr. Futamiya and Ms. Kawaguchi as new outside directors. We want to move forward while strengthening our governance structure by drawing on the wide-ranging expertise of our outside directors in managing a corporate board.

Challenges in the run-up to an IPO and future growth strategy

**Itoh:** The Company has highly competitive products in new fields such as semiconductor and ICT materials. With the increasing focus on decarbonization and resource recycling, I believe the Company has become a key player in the market. So, in preparation for the IPO, it will be important to first communicate the long-term strategy and investments in growth to the outside world. At the same time, the background to the Company's strength in advanced materials is the accumulation of technology and experience over a long history. Therefore, JX Metals must act with a sense of speed in deciding how to reaffirm that value.

**Sakuma:** The most important issue in moving toward an IPO is to achieve steady growth. The Company has already established a vision with goals to raise operating profit from the current level of 100 billion yen to 250 billion yen by the year 2040. To do that will require a third pillar that is not part of the current product mix.

**Futamiya:** It's a very positive move that the Company has established a vision for 2040. The year 2030 is the year of the SDGs, while 2050 is the target year for decarbonization. I think that by 2040, which lies between these two milestones, the Company will have a history of successes, and the target of focused efforts will become clearer. I believe the Company's growth will be guided by its position as a technology-based company responding to needs for advanced materials, which are indispensable for the transformation to solve global issues.

**Tokoro:** As you say, the foundation of the Company is its technology-based approach. It will be important for future growth to foster basic capabilities applicable to any needs that may arise. Environmental issues and other societal demands are changing at a pace faster than we could have imagined. This change is an opportunity, but also a risk if misjudged. It will be important to seize upon the opportunities without fail.

**Futamiya:** To establish a correct understanding of the significance of the Company's role and expectations for the future, the Company must tailor communication not only to institutional investors, but also to NPOs and civil society. Both sides must have a correct understanding and expectations for the Company to receive support from well-educated shareholders.

**Kawaguchi:** One approach to gaining the understanding of civil society is through dialogue and collaboration. This area is a weakness for Japanese companies. It would benefit the Company to increase access to public interest foundations and NPOs, offering the abilities and skills of employees directly to



where there is a need. More initiatives to respond employees who want to be of service to society.

**Tokoro:** In my role as a university faculty member, I have regular opportunities to be in laboratory classes for elementary and junior high school students led by Company employees. Recently, I observed how the Company is revitalizing a local community by sponsoring a local soccer club. It is important that the Company continues activities contributing to the well-being of community residents and employees to deepen its value offering and earn the trust of civil society.

**Murayama:** In 2019, we formulated our first long-term vision, which defined us as a technology-based company responding to the expectations of our stakeholders through advanced materials. As you pointed out, we believe that we must change our corporate structure to one that takes on challenges routinely in a rapidly changing world. Only after we achieve this formation will we be able to become a company talked about in terms of growth potential.

ESG and sustainability

**Tokoro:** The Company established its Sustainable Copper Vision for fiscal 2022. The world still considers copper, steel, and plastics as a single material in terms of recycling. Each material has its own direction for sustainability, so it's important to communicate this in a way that is easy to understand, domestically and internationally. The Sustainable Copper Vision shows the direction for copper materials to be sustainable and what role the Company plays in that direction. The Company needs to emphasize this vision in communications.

**Futamiya:** The general belief is that thermal recycling, which accounts for more than half of the recycling in Japan, emits a large amount of CO<sub>2</sub>. I was surprised to learn that the Company's Green Hybrid Smelting process reduces CO<sub>2</sub> significantly. I was also surprised to hear that the Company is quantifying and producing more accurate data regarding not only Scope 1 and 2, but also Scope 3 figures. This gives me the impression that the Company is addressing this issue in a very deep and technical way.

**Sakuma:** Copper is dominant within the metals industry, but in a completely different position from iron or aluminum. There are three reasons for this difference. The first is that copper, with its high electrical conductivity, will play a leading role in green and digital transformation. Second, as Mr. Futamiya mentioned, smelting is done in flash furnaces, which basically eliminates the

need for fossil fuels. Third is that the use of urban mines is economically viable. The Sustainable Copper Vision, based on these points, is both rational and praiseworthy. But I think the Company will need to work more in terms of how to communicate this vision to the world.

**Tokoro:** Last year, the Company began dialogues with various industries and companies involved in the use and production of copper. We understand that the ideas presented in the Sustainable Copper Vision and the related measures have been received very favorably by those whom the Company has met. JX Metals has also partnered with several companies and universities to promote resource recycling and decarbonization. It will be important to continue this kind of direct dialogue through the media and other channels to communicate the message widely throughout the world.

**Itoh:** When I look at the Company and other companies, stakeholders ask questions about sustainability, which is an important issue. But the questions differ entirely depending on the characteristics of the industry or history of the company in question. This isn't a bad thing, necessarily, but the ability to communicate these differences is what makes the true distinction. As a company that handles copper, the Company must encourage every employee to consider seriously what emphasis the Company should place on sustainability and the type of values to emphasize in everyday tasks.

**Futamiya:** I have always believed that a company cannot grow without the growth of its employees. It's important to create an environment in which everyone enjoys equal opportunities to learn, regardless of the type of job or specialty. Chairman Murayama mentioned changing the corporate structure. To do so will require eliminating vertical divisions and fostering cross-organizational understanding. In that sense, I think it would be effective to create opportunities for employees and executives to interact, such as an online corporate university.

**Kawaguchi:** I understand that historically, the Company has been divided into vertical sections, such as the division between resources and smelting. I also understand that the Company recently began to transfer key personnel from one section to another. In this sense, I think this is a period of trial and error in formulating a human resources strategy. But introducing new ideas by having people of different fields interact and take on new assignments within the Company will also foster change.

**Sakuma:** I think as far as being a traditional Company, JX Metals has been paying particular attention to the issue of human capital. I am not sure if this is sufficient, however. Generally speak-

ing, the best way to attract people is to offer a strong compensation package. But ESG and sustainability initiatives should also be an important element in evaluating a company and an attractive factor for students and mid-career hires. I hope the Company continues to make solid efforts to become a company of choice among employees.

**Itoh:** When I talk to young students and graduates today, they are all quick to consider changing jobs. The reason isn't necessarily that they want to change companies, but more that they want to expand their own possibilities. To attract and retain excellent people may require more than considerations of preserving the Company's organization. For example, serious considerations about the best means to grow employees.

**Kawaguchi:** Human resources are essential for future growth. Where we are today is that potential employees have the luxury of choosing their employer. I believe JX Metals offers a good benefits package and working environment. But the Company needs to go one step further and think about becoming a preferred company of choice by employees. Fail to do so, and the human capital information disclosed in annual securities reports, etc., will be form only, rather than truly meaningful. It would be very powerful if JX Metals Corporation can become a company offering a clear career and life plan to women in STEM.

**Tokoro:** The Company needs to communicate its values and contributions to society to attract female students and other human resources. At the same time, the Company must understand the needs of the individual and have the capability to engage in two-way communications. And to advance further will require appealing to the other party's values to elicit change, which can be tricky.

**Murayama:** You have made a number of points regarding external communications. Having an internal industry perspective, we have taken the content of the Sustainable Copper Vision for granted, failing to make a strong appeal to the public. We want to continue expanding our activities in the future by involving various stakeholders, even in more mundane activities.

Expectations of the JX Metals Group

**Sakuma:** JX Metals has the potential to achieve both carbon neutrality and economic efficiency in a smooth manner. I hope to see the Company realize this potential reflected in corporate value. The Company is a very important part of the supply chain, as it manufactures about 400,000 tons of copper materials here in Japan. We have high expectations for JX Metals as a com-

pany that plays a role in Japan's economic security.

**Itoh:** Supply chain is an important keyword. When you look at the industrial structure overall, the value of providing materials and intermediate materials is extremely high. Once a seemingly behind-the-scenes field is in fact the lifeblood of an industry or an economy. The products the Company deals in are symbolic of this factor. At the same time, it is unrealistic to expect expansion solely under the traditional value model of making better products at lower prices. For example, the world now expects the ability to offer sustainability and other diverse values. It is a world of great risk. But I expect JX Metals will be up to the new challenges ahead.

**Kawaguchi:** The JX Metals history of taking on various challenges is one reason it is a technology-based company. While there have naturally been failures, I think the company has a history of success for the very reason that failures are allowed. I hope the Company retains this spirit as it aims to go public, continuing to be a company where employees work with vitality and enthusiasm.

**Futamiya:** I was impressed by the presentations on the Company's business activities, particularly its efforts to address the issue of abandoned mines. My understanding had been that a closed mine is a negative legacy that incurs ongoing costs and no positive results. But that understanding results in a lack of respect for the past. The Company uses the term *positive legacy*, and I have been impressed by the attitude of pursuing modern values while respecting past efforts. When we talk about environmental issues today, we tend to focus on climate change. We lag behind when it comes to biodiversity, but I have high expectations for the Company's efforts to utilize its positive legacy to transform itself into green infrastructure.

**Tokoro:** Society increasingly demands that the materials industry fulfill its expected role, and I feel this is a great opportunity for the Company. I hope to see JX metals become more and more visible in the public eye as a leading company in the materials industry. While there may be some hesitation in standing out due to unexpected consequences, I hope the Company sees the opportunity of stepping up and becoming a globally influential company.

**Murayama:** Thank you all for your valuable comments today. It is always our policy to welcome frank opinions at Board meetings, and I believe this is the most effective way to manage the board. Thank you for your continued support.







# Value Creation Model

The JX 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.

Medium-Term Management Plan

2023

2025

2030

2050

**2040**  
The JX Metals Group  
Long-Term Vision 2040

Contribute to creating a sustainable society  
as a global leader of  
semiconductor and ICT materials

## JX Metals Value Creation

### INPUTS (FY2022)

#### Financial Capital

Total assets  
**1,859.2** billion yen

#### Manufacturing Capital

No. of sites  
Japan: **33** overseas: **38**

#### Intellectual Capital

R&D expenses  
**13,573** million yen

#### Human Capital

Consolidated employees  
**10,759**  
(as of March 31, 2023)

#### Social/Relationship Capital

Copper Mark\* Certification  
acquisition  
**2** sites

#### Natural Capital

Energy consumption  
**13,157** TJ

### BUSINESSES

Promoting Open Innovation

Technology Development, Quality Improvement,  
Productivity Improvement, Stable Supply

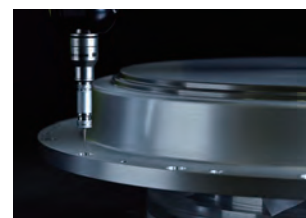
Added Value in  
Technology

Added Value of Base  
Business Products



Basic Materials Segment

Added Value of Focus  
Business Products  
Special Feature ▶ P27



Semiconductor Materials  
Segment  
ICT Materials Segment

Added Value  
in the Environment

Resource Recycling  
Sustainable Copper Vision  
Special Feature 2 ▶ P33

Decarbonization  
Net Zero FY2050  
Materiality 1 ▶ P53

Working With External Partners

### OUTPUTS

#### Sputtering Target for Semiconductors



Global Market Share

Approx.  
**60%**

#### Treated Rolled Copper Foil for Flexible Printed Circuit Board (FPC)



Global Market Share

Approx.  
**80%**

#### Indium Phosphide Compound Semiconductor Substrates



Global Market Share\*

Approx.  
**30%**

#### High-Purity Tantalum Powder



Global Market Share\*

Approx.  
**50%**

#### Electrolytic Copper Production Capacity



Annual

Approx.  
**450,000**  
tons

### OUTCOMES

#### Economic Value

Projected Operating  
Profit in 2040

#### Focus Businesses

**200.0** billion yen

#### Base Businesses

**50.0** billion yen

#### Social and Environmental Value

- Advanced materials drive IoT and AI, contributing to remote medicine, the spread of education in developing countries, and other areas
- Expansion of powder technologies broadens the scope of 3D printer applications to achieve resource conservation
- Conservation of natural resources and the natural environment by effectively using urban mines through technological innovation in recycling



### IMPACTS

A Sustainable Society That Enables Both Digitization  
and Environmental Conservation

#### Key Social Trends

- Expanding needs for advanced materials
- Global acceleration in addressing climate change
- Intensifying mineral resource shortages/depletion

\*Company estimate as of October 31, 2023



Special Feature 1

# Contributing to Sustainable Societies Through Advanced Materials

IT, mobility, healthcare, energy, construction, and various other industries use digital data to create sustainable societies. The need for advanced materials in these fields will only expand in the future. In addition, rising geopolitical risks have accelerated the development of renewable energy and storage batteries. Against this backdrop, the JX Metals Group aims to contribute to developing a sustainable society through advanced materials.

Mission

By pivoting from an equipment industry company to a technology-based company, we will contribute to the creation of a sustainable society as a leader in semiconductor and ICT materials

Vision

Position Focus Businesses as the core of our growth strategy

- Build an appropriate structure for Base Businesses, regardless of business scale, to support the growth of Focus Businesses
- Position copper and minor metals indispensable to semiconductor and ICT materials as core domains

## Develop Niche Top Products in Line With Next-Generation Trends

The JX 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

100

186

FY2013

FY2022

Elemental technologies cultivated over more than 100 years since our founding

- High purity, surface control, composition, analytical evaluation, etc.
- Technology synergies with Group companies (Toho Titanium, TANIOBIS, etc.)

Identifying new market needs based on strong relationships with existing customers

### New Product Development

Major Product Lines in Focus Businesses

Sputtering target for semiconductors

Treated Rolled Copper Foil

Copper Alloy Strips

High-Purity Tantalum Powder

Products Expected to Become Next-Generation Profit Pillars

Crystal and Photonics Materials

Next-Generation Semiconductor Materials

Energy Materials

InP Wafer

CdZnTe Substrate

Semiconductor precursor raw materials

Cathode materials for fully solid-state batteries

## Two Mainstay Products Supporting Society at its Very Roots

Sputtering Target for Semiconductors

Business Model Supported by Strong Relationships With Semiconductor Manufacturing Equipment Manufacturers (SME Manufacturers)

We offer a variety of sputtering targets for copper, tantalum, titanium, tungsten, cobalt, and more. We produce high-quality products in a stable manner using high purity and other advanced technologies cultivated through our business activities over many years.

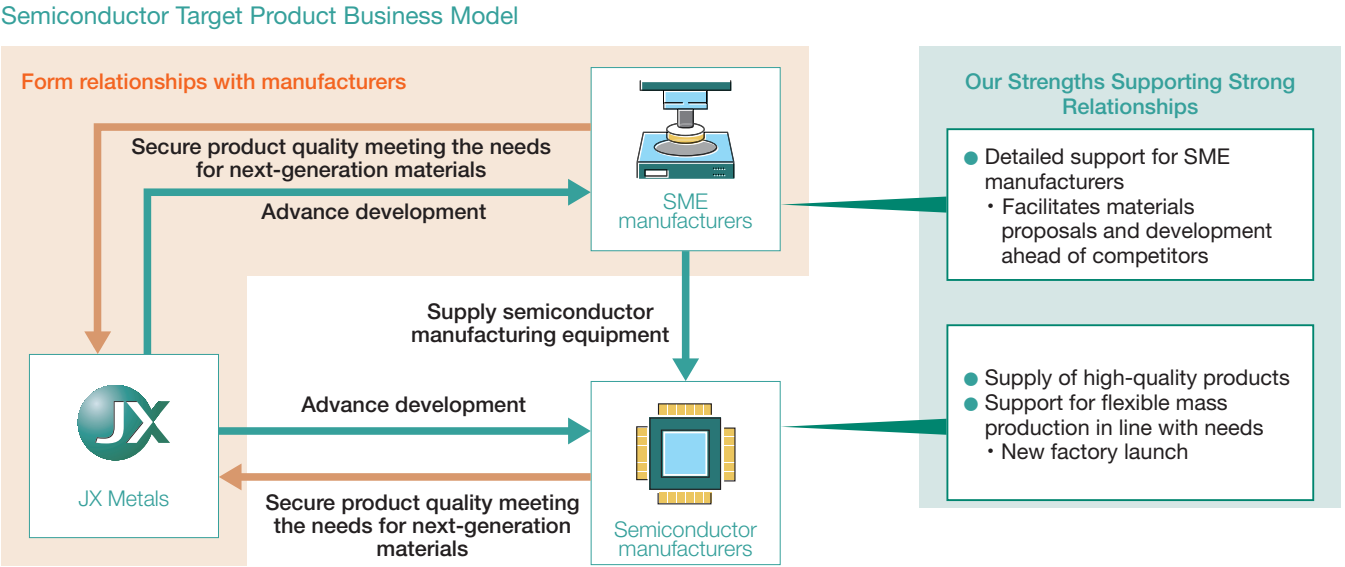
Main Products

Primary Applications

Sputtering target for semiconductors

Semiconductors (logic, memory, etc.)

Global market share: Approximately 60%

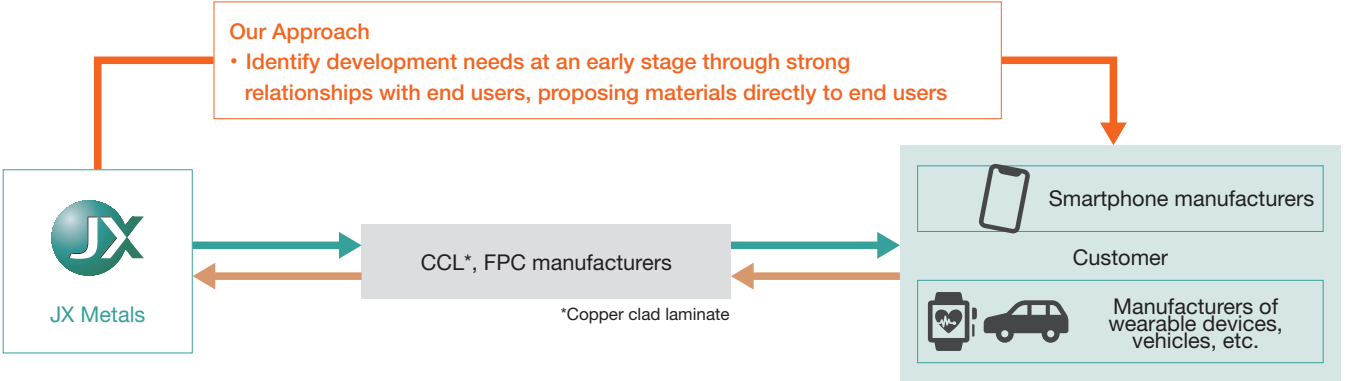


## Treated Rolled Copper Foil

### Strengthening Relationships With End Users Through a Market Development Approach

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. We secured our position as a 1st 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.

### Market Development Approach



Main Products

Primary Applications

Treated rolled copper foil

FPC (flexible printed circuit boards)

Global market share: Approximately 80%

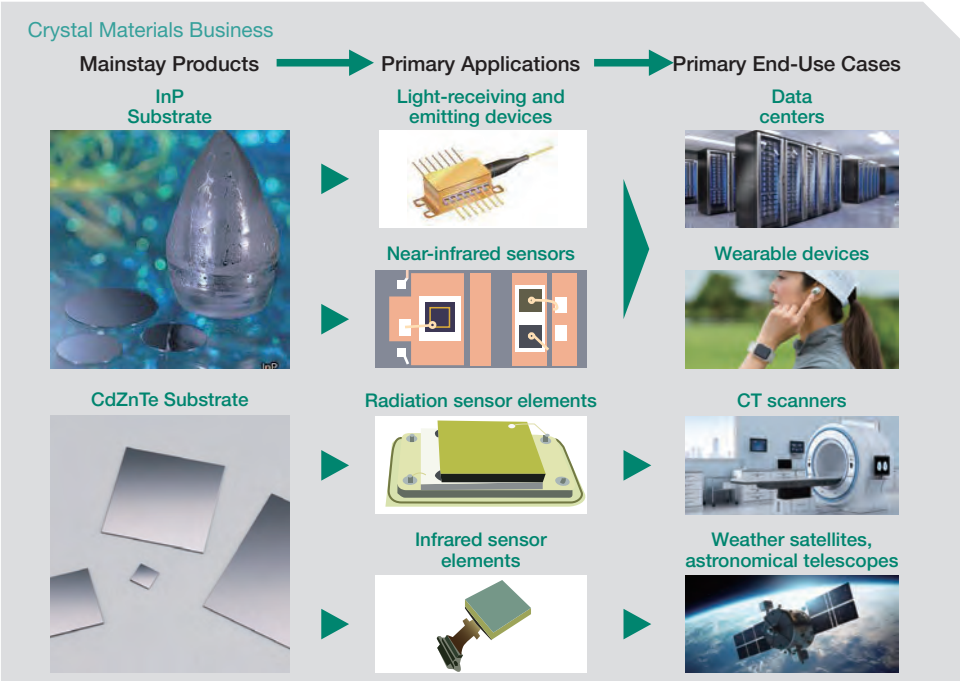


Third Pillar of Profits Supporting Business Area Expansion, Future Society

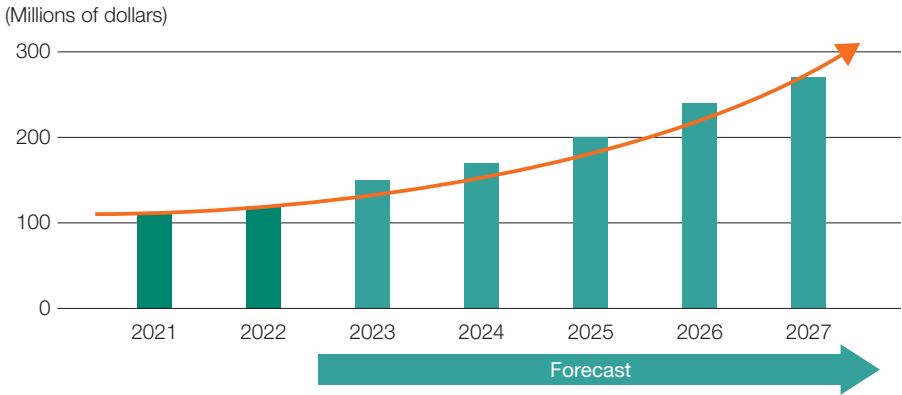
**Crystal Materials**

The spread of the 5th generation mobile communication system (5G) is expected to usher in an advanced digital society in which everything around us is connected to the network. We expect the market for InP Wafer used in data centers and CdZnTe

substrates used in radiation and infrared detection applications to expand further in the future. The JX Metals Group pursues activities to create a product line that will become a third pillar beside our sputtering target for semiconductors and treated rolled copper foil.



InP Substrate Market Forecast



Demand for InP substrates, a crystal material we sell, is increasing for use in data centers and wearable devices. The market is expected to grow at an annual rate in excess of 16% between fiscal 2021 and fiscal 2027.

Source: InP 2022 Market and Technology Report, YOLE Intelligence

**Major Initiatives in the Current Medium-Term Management Plan**

- Strengthen the crystal materials business via new division (by FY2025)
- Expand InP substrate production capacity
  - Expansion at the Isohara Works and consideration of new factory construction
- CdZnTe substrates with larger size and higher quality
- Search for new applications such as defense and medical areas for existing products and expand into related businesses
- Develop new products

Initiatives to Achieve Our Vision

In anticipation of future growth in demand for semiconductor and ICT materials, the Group is expanding production capacity actively in Japan and overseas. Hitachinaka City, Ibaraki Prefecture, is the center of this expansion.

Construction of the New Hitachinaka Factory (Tentative Name)



Rendering of the new factory in Hitachinaka

In March 2022, we acquired a large site in Hitachinaka City, Ibaraki Prefecture, launching construction of the Hitachinaka New Plant (tentative name), which will serve as our new central base. In addition to growth areas such as sputtering targets for semiconductors and treated rolled copper foil, the new factory will be responsible for advanced materials production and other new businesses, looking further ahead beyond 5th-generation mobile communication systems (5G).

We held a groundbreaking ceremony in January 2023 attended by Ibaraki Prefecture Vice Governor Yokoyama Yukinari, Hitachinaka City Mayor Ohtani Akira, and many other local well-known persons. The new factory is scheduled to begin operations in fiscal 2025, eventually employing more than 500 people, which is highly anticipated to contribute to the development of the local economy. In addition to achieving the Group vision, we aim to make the factory suitable for playing a part in increasing the presence of Ibaraki Prefecture and Hitachinaka City as a global supply base for advanced materials.



Commemorative photo at the groundbreaking ceremony

Overview of the new factory in Hitachinaka

Location	Shinko-Cho, Hitachinaka City, Ibaraki Prefecture
Area	240,000m²

Comprehensive Cooperation Agreement With Hitachinaka City

In January 2023, we signed a comprehensive cooperation agreement with Hitachinaka City in connection with the construction of a new factory. Our hope is to serve as a member of the local community, sharing in the development of Hitachinaka City.

In addition to job creation and industrial promotion through the new factory, we intend to support various activities for the future of the community through a 100 million

yen donation leveraging the corporate version of the hometown tax donation program. These activities include support for the operation of a community center in the Ajigaura district, where the new plant is located, as well as programs to foster the next generation.

Reference Regional Cooperation in Ibaraki Prefecture ⇒ P92



Construction of New Factories in Hitachi City

JX Metals was founded in Hitachi City, Ibaraki Prefecture. Here, we are building two new factories to manufacture sputtering targets for semiconductors and treated rolled copper foil.

Hitachi City, Ibaraki Prefecture, is home to our main base, Hitachi Works, where we engage in a variety of businesses that include the manufacture and processing of copper and other nonferrous metal materials, research and development, and recycling, which is essential for protecting the environment.



Construction of the New Hitachi Factory  
(Tentative Name)

Construction of the new Hitachi Factory, which will manufacture treated rolled copper foil, is underway at an investment of 16 billion yen in the Shirogane district within Hitachi Works. Currently, we perform the final surface treatment for treated rolled copper foil at Hitachi Works. However, the rolling process is carried out solely at Kurami Works (Takaza-Gun, Kanagawa Prefecture). By installing a production line for the rolling process at the new factory, we expect to increase production capacity by 25% compared to fiscal 2020 and strengthen our BCP\* structure.

\*BCP: Business continuity planning



New Hitachi Factory

Overview of the New Hitachi Factory

Location	Shirogane-Cho, Hitachi City, Ibaraki Prefecture
Site Area	8,001.77m <sup>2</sup>
Products	Treated rolled copper foil
Employees	20-25 (plan)
Operation Launch	FY2024 (plan)

New Hitachi-kita Factory (Tentative Name)

The new Hitachi-kita Factory will manufacture sputtering targets for semiconductors. Now under construction, the factory represents a 14 billion yen investment located in an industrial park in the northern part of Hitachi City.

In December 2020, we announced a plan to increase production capacity for sputtering targets for semiconductors by 30% compared with fiscal 2020. As the semiconductor industry continues to grow beyond expectations, we announced a plan to invest a total of 32 billion yen and increase production significantly by 80% compared with fiscal 2020. The construction of the new Hitachi-kita Factory is part of this effort. This factory will be responsible for melting and rolling processes of sputtering targets for semiconductors.



New Hitachi-kita Factory

Overview of the New Hitachi-Kita Factory

Location	Sunazawa-Cho, Hitachi City, Ibaraki Prefecture
Site Area	23,348.04m <sup>2</sup>
Products	Sputtering targets for semiconductors
Employees	30-40 (plan)
Operation Launch	FY2024 (plan)
Installed Equipment	Melting and rolling equipment for sputtering targets for semiconductors (plan)

Construction of a New Factory in Arizona U.S.

JX Nippon Mining & Metals USA, Inc. is located in Arizona, the center of the semiconductor industry in the U.S., and is responsible for the downstream processing of sputtering targets for semiconductors. Under this business, we purchased land of 260,000m<sup>2</sup> (six times the current land used) and began construction of a new factory. In October 2022, we held a ground-breaking ceremony at the planned site of the new factory in Mesa. The ceremony was attended by many people, including government officials and local media.

By securing a sufficiently large site in Arizona, an area of growing concentration in the semiconductor industry, we plan to expand production capacity for sputtering targets for semiconductors further and meet customer needs in a flexible manner. First, we plan to construct new manufacturing facilities scheduled to start operations in or after fiscal 2024. The new factory will not only be a base for sputtering targets for semiconductors, but also a site for new business development, making it a center for advanced business fields in North America.



Rendering of the new factory



Sandra Watson, Arizona Commerce Authority president and CEO



John Giles, mayor of Mesa



Kuwabara Masago, president & CEO, JX Metals USA, Inc.

Establishing a Structure to Promote Innovation

Pursuing *innovation in nonferrous metals*, the JX Metals Group strives to co-create new business with partners across a wide range of fields, focusing on advanced materials and highly functional and multifunctional materials. As part of our efforts, we concluded a comprehensive cooperation agreement with the Ibaraki University College of Engineering in July 2023.

Our main objective in this agreement is to develop human resources who will be active in Ibaraki Prefecture and contribute to the development of the region. We plan to expand the number of students hired from the university by establishing a new course for Ibaraki University students in our internship program. We also plan to conduct tours for College of Engineering faculty members to explore the possibility of joint research. Through the framework of this comprehensive cooperation agreement, we will pursue the development and hiring of the next generation of engineering personnel and potential joint research projects for further innovation.



Cooperation agreement signing ceremony

See the following pages for more information on other initiatives

Reference → Pursuing Open Innovation ⇒ P70-71  
Regional Cooperation in Ibaraki Prefecture ⇒ P92



Special  
Feature  
2

# Sustainable Copper Vision

## JX Metals Vision for Sustainable Copper

In August 2022, the JX 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. We will continue pursuing Green Enabling Partnerships, which are collaborations and cooperation with partners involved in the supply and use of copper, for the development and wider dissemination of this vision.

### Green Hybrid Smelting Initiatives

Copper is an essential material for achieving carbon neutrality; therefore, copper suppliers and users are regarded as Green Enablers.

Upstream

Changes in power generation mix


Power generation mix reliant mainly on fossil fuels such as coal and gas

Emergence and expansion toward renewable energy sources such as wind and solar power

4x

Renewable energy requires about four times more copper than fossil fuels per MW of power generation capacity

- Fossil fuels: Up to 1 ton/MW
- Renewable energy: Up to 4 tons/MW



Mid-stream

Expansion of electricity transmission and distribution


Power supply through centralized transmission and distribution systems of electricity

Transition to decentralized transmission and distribution systems

2x

Decentralized network requires about twice as much copper as compared to the conventional supply grid

- Centralized: Up to 10 tons/km
- Decentralized: Up to 20 tons/km



Downstream

Transformations in electric power usage


Vehicles and supply chains designed based on using internal combustion engines as an energy source

Conversion of energy sources in connection with the spread of environmental friendly vehicles (EVs, FCVs\*, etc.)

4x

Electric vehicles incorporate and use about four times more copper than internal combustion vehicles

- Internal combustion engine vehicles: 24 kg/vehicle
- Electric vehicles: 94 kg/vehicle

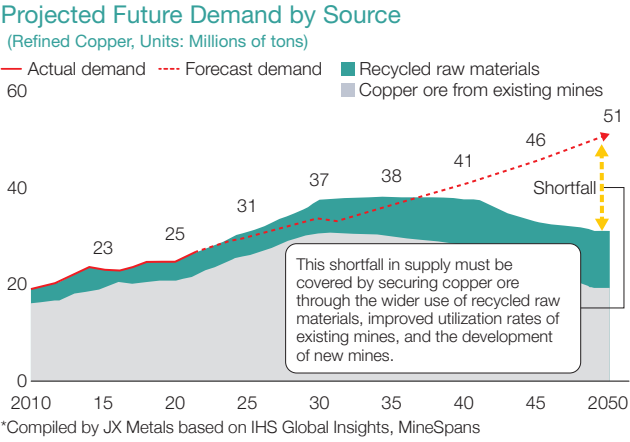


\*Fuel cell vehicles

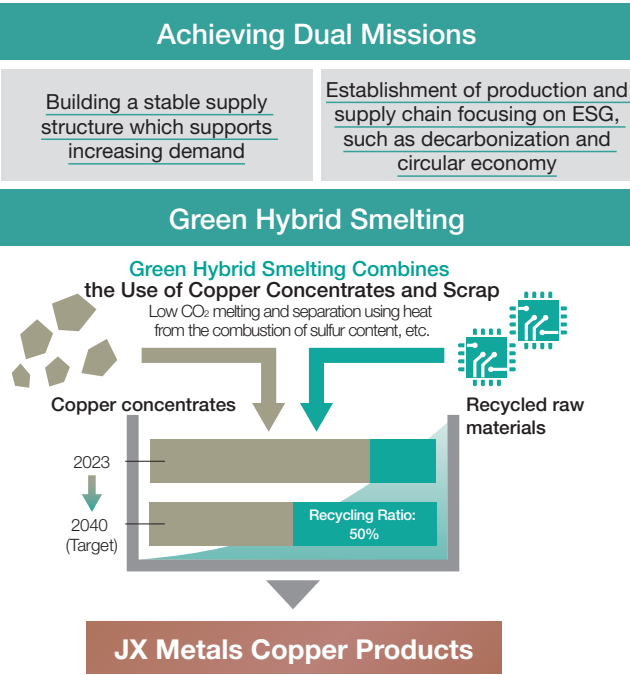
### What is Sustainable Copper?

Meeting increasing demand for copper requires a stable supply of copper ore and recycled raw materials.

While demand for copper will continue to grow over the long term, the supply of copper ore and recycled raw materials from existing mines is limited, and the supply-demand balance for copper is likely to be very unstable. This delicate balance is why copper ore and recycled raw materials will be essential in meeting the demand for copper, without which the world cannot achieve decarbonization.



### 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.

### Four Key Initiatives to Develop and Popularize Sustainable Copper

1

Reduce CFP




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.

2

Increase Recycling Ratios




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
- Expand facility capacity to increase recycled raw materials collection, etc.

3

Promote Responsible Procurement and Other Measures




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)

4

Form Green Enabling Partnerships



Evolvement 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.



Four Key Initiatives to Develop and Disseminate Sustainable Copper

1 Reduce CFP

Third-Party Assurance for Electrolytic Copper CFP

The JX Metals Group calculates electrolytic copper CFP produced at each of our facilities. We became the first copper smelter in Japan to obtain third-party assurance for the results of our calculations.

Under this initiative, we calculated the cradle to gate greenhouse gas emissions (raw materials procurement to product shipment) per kilogram of electrolytic copper produced at the Saganoseki Smelter & Refinery and Hitachi Works in fiscal 2021. Our calculations were in accordance with the GHG Protocol, which is an international calculation and reporting standard. Our results were certified by DNV Business Assurance Japan K.K., a third-party certification organization.

We plan to disclose the calculation results to our electrolytic copper customers in the future. We plan to discuss the results of our calculations with companies participating in the Green Enabling Partnership, addressing the low CFP (calculated using the mass balance method\*), the high recycling ratio, and other significant environmental values associated with the supply of electrolytic copper.

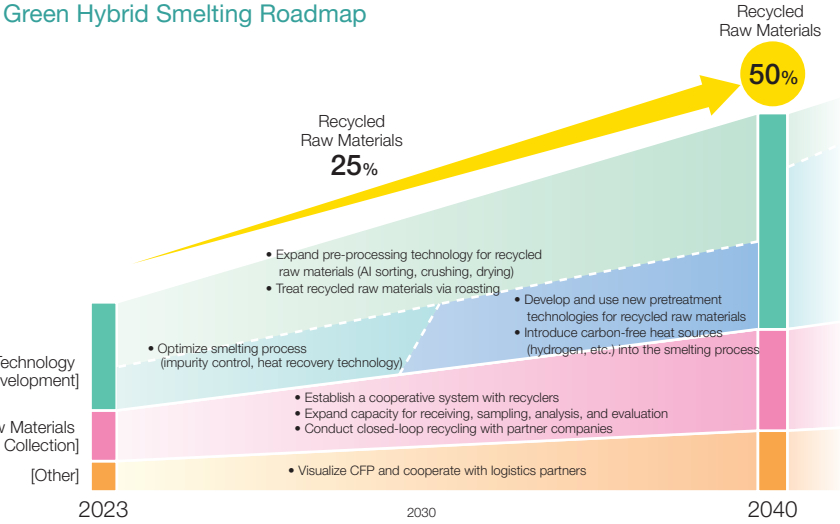
\*Mass balance method: A method in which a portion of a product is considered to possess properties derived from those of the raw material, depending on the input ratio of raw materials with said properties.



Third-party certification

2 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.



3 Promote Responsible Procurement and Other Measures

Acquisition of The Copper Mark

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



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



The Copper Mark Certification

commitment to the green energy transition.

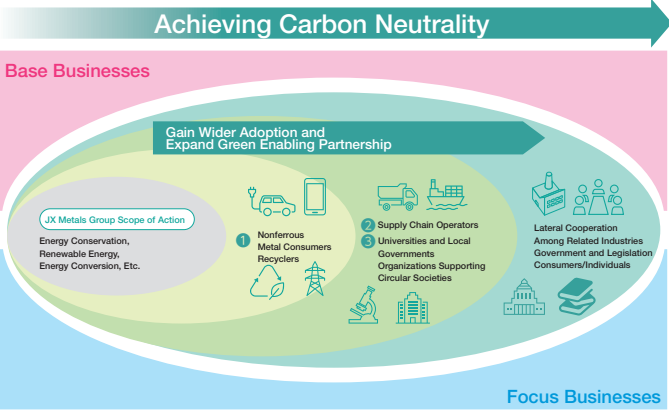
The Copper Mark is a certification program established in 2019 requiring compliance with 32 standards, including standards for the environment, human rights, community, and governance. Both of the business sites will continue to undergo evaluations based on the various standards established under The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

In January 2023, the Caserones Copper Mine (Chile), in which we hold a partial interest, began the process for obtaining The Copper Mark. As international demands for ESG initiatives increase, we will continue efforts to strengthen the competitiveness of sustainable businesses.

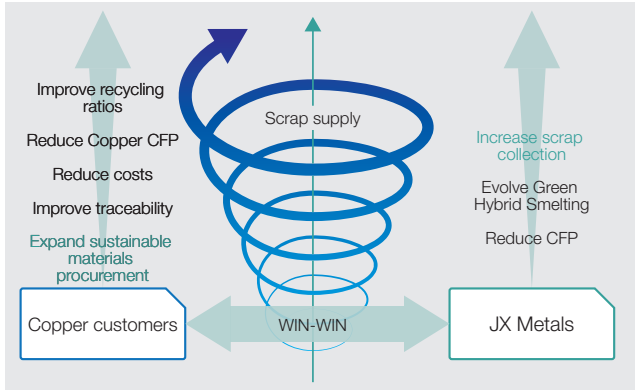
4 Form Green Enabling Partnerships

We form Green Enabling Partnerships 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.

Green Enabling Partnerships Concept



Spiral Model With Partner Companies



1 Partnership With Intel

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. We supply products to Intel, receiving the 2023 EPIC Distinguished Supplier Award. With this new partnership, our relationship with Intel has become even stronger. Under the partnership, we will continue to work toward the evolution and dissemination of sustainable copper.

In terms of increasing recycling ratios, we work with Intel to ensure the effective use of copper resources. Now, we plan to explore the potential of recycling other copper-related materials used in the manufacture of semiconductors. In terms of promoting responsible procurement and other initiatives, our two companies intend to continue efforts to build a responsible and sustainable copper supply chain.



The EPIC Distinguished Supplier Award recognizes suppliers that demonstrate outstanding performance across all evaluation criteria. To be eligible for the award, suppliers must achieve high goals that meet expectations and score 80% or higher in performance evaluations throughout the year.



2 Partnership With BHP

In July 2023, we formed a Green Enabling Partnership with BHP, a leading global resources company. Under this partnership, we will continue to develop a responsible copper supply chain by strengthening traceability and certification of origin for raw materials, pursuing ongoing efforts to develop a responsible copper supply chain. We will work with BHP to reduce GHG emissions from the marine transportation of copper concentrates and sulfuric acid and share knowledge regarding the calculation of electrolytic copper CFP.



3 Partnership With Waseda University

In January 2023, we signed an agreement with Waseda University to establish an endowed chair program\* that contributes to carbon neutrality, the circular economy, and our Sustainable Copper Vision, in particular. Waseda University published a carbon neutrality declaration in 2021 and the university aims to achieve net zero CO<sub>2</sub> emissions at each of its campuses by 2032, which is the 150th anniversary of its founding. Under the terms of the agreement, JX Metals and Waseda University will collaborate in the development of highly specialized human resources and the pursuit of basic research related to sustainable copper smelting technology.

\*Endowed chair program: A program under which an endowment fund is established using new donations from outside a university, with the funds used to hire faculty members.





Special  
Feature  
3

# Human Capital Management

Aiming to be the Global Leader in Advanced Materials

Improving human capital will be essential if we are to contribute to the development and innovation of society as a global leader in advanced materials. The global competitive environment for metal materials is changing rapidly, particularly for semiconductor and ICT materials and others in which we do business. To respond to these changes, we must employ human resources from diverse backgrounds who strive to maximize their abilities, think independently, and embrace change.

## The JX Metals Group Approach

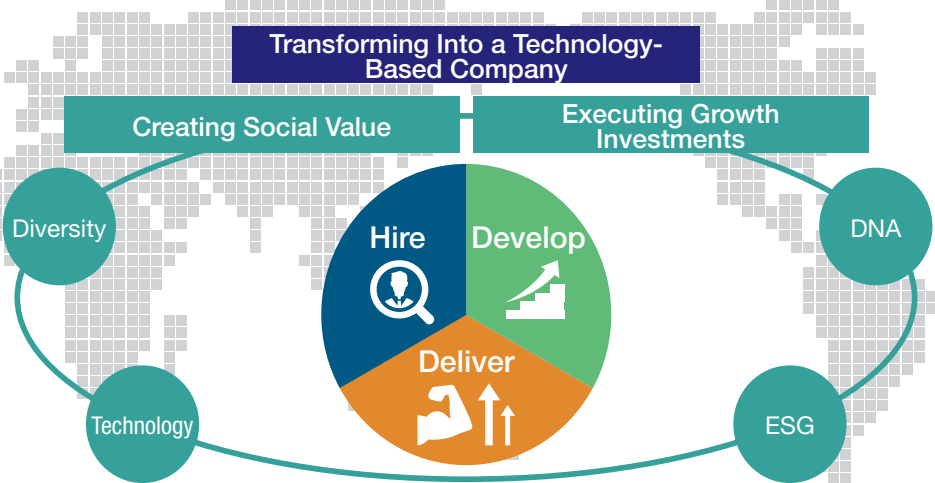
Since announcing our long-term vision in 2019, we have pursued measures to transform ourselves into a technology-based company. Our Medium-Term Management Plan for Fiscal 2023 to 2025 calls for measures under a policy of steady investment in growth, which is essential for transforming into a technology-based company. At the same time, our plan describes how we create value through ESG activities, paving the way toward maximizing corporate value. We know the power of people is indispensable, and we consider maximizing the motivation and capabilities of our people to be an important management issue.

Under a corporate culture of mutual respect and friendly competition, we respect the ingenuity and ideas of every employee toward achieving our long-term vision. We believe the growth of our people is linked to the sustainable growth of the company. We will also strive to hire and develop human resources who create added value while respecting the Company's DNA. More than ever before, we intend to proactively build an organizational structure that encourages diverse human resources to maximize their abilities.



JX Metals Corporation  
Senior Executive Officer  
Komatsuzaki Kan

### Contributing to Social Development and Innovation as a Global Leader in Advanced Materials



## Attracting and Hiring Talent

### Core HR Values

The following definitions represent the type of human resources we believe will create new and added value.

Human resources who lead innovation by understanding diversity, accepting diversity, and working in collaboration with stakeholders of various circumstances

Human resources who take a sense of ownership, think, act, and embrace on their own

Human resources who envision an ideal future in response to changes in the environment, and who are eager to act in achieving that vision



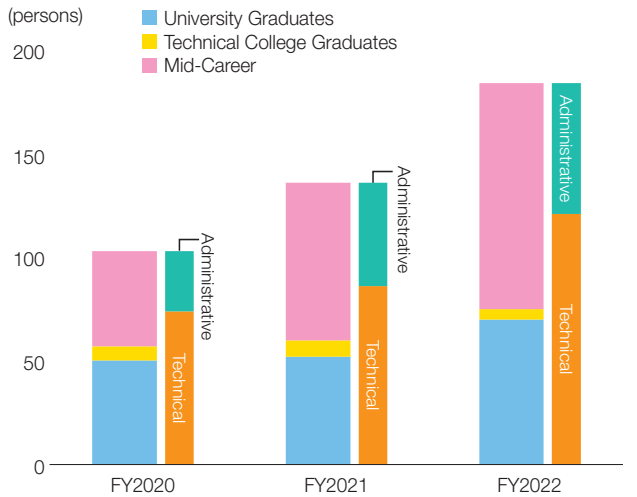
### Fostering Diverse Values

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 are also extending our reach for

mid-career hires. Over the past three years, the ratio of new graduates to career hires has been approximately fifty-fifty. We are hiring an increasing number of university graduates, technical college graduates, and mid-career hires, ensuring quality, quantity, and diversity in our workforce. This increase has led to the development of an open-minded corporate culture that seeks to share new knowledge, technologies, and ideas.

Recruitment Ratio for FY2020 to FY2022	
New Graduates	5 : Mid-Career 5
Ratio of Career-Track Employees in Entry-Level Positions	
New Graduates	6 : Mid-Career 4
Technical Candidate Recruitment for FY2020 to FY2022	
281 Employees	

### Recruitment Results (JX Metals Corporation)



### 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 college 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.)



Strengthening Human Resources Development

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**

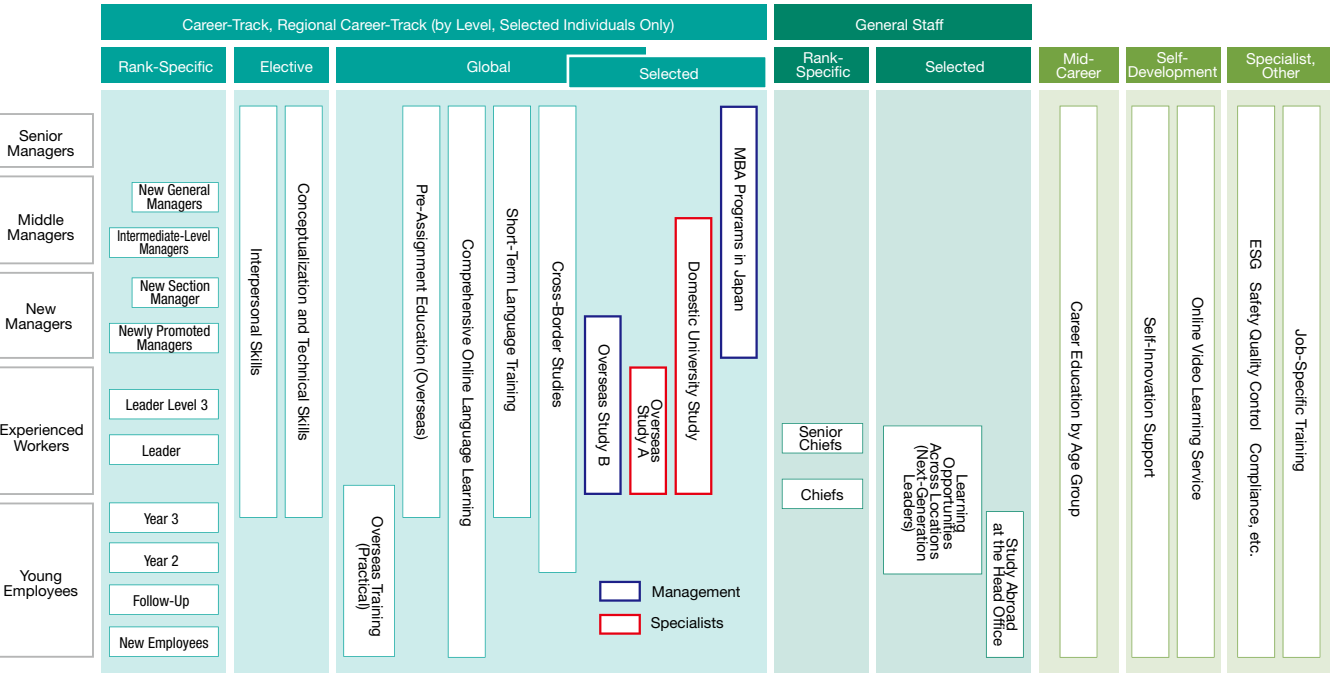
- We develop human resources systematically (select, assign, and train) to become management candidates, global business operations leaders, new business developers, etc. By enhancing educational opportunities for specialists, we develop human resources capable of supporting technology-based businesses.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

\*Target talent: Specific employees identified for individual training.

Creating a New Training System

Historically, human resource development at JX Metals has been under a training system based on rank-specific education and on-the-job training (OJT) for newly graduated employees. However, we are hiring an increasing number of mid-career professionals every year, and employees from various backgrounds play active roles in the Company. In addition, we are offering greater diversity in career paths, including earlier promotion to manager positions and transfers across job categories. Given this situation, we revised our training system from a uniform,

passive structure to one offering flexible and active education. Our vision is to become a technology-based company, expanding our existing businesses and creating new businesses on a global scale. To achieve this vision, it is critical that we develop management candidates who can guide businesses, global personnel who can take charge of overseas business development, specialists who can lead the Company with expert knowledge, and personnel who can improve our competitiveness in the field. We are building and improving training programs for selected individuals who demonstrate this potential.



Policies

**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.

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.

**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.

**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**

**Self-Innovation Support and Online Video Learning Service**

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.



VOICE

Testimonial From an Overseas Study Program Graduate

I studied for my MBA at the Stephen M. Ross School of Business, University of Michigan, as a company-sponsored student under the overseas study program. The Global MBA program, which I attended, is an intensive two-year MBA course compressed into just 14 months. I had many opportunities to talk with people of different cultures and values about unfamiliar topics, gaining a new perspective every time. I went to the U.S. with my wife and three children. I had a difficult time persuading my children to go back to Japan when it was time to go home, as they had become so fond of the area. The opportunity turned out to be a wonderful experience for us as a family. Currently, I am a member of the Structural Reform Team working in the IPO Preparation Office. I work as hard as possible to demonstrate the leadership skills I learned from my MBA experience.



JX Metals Corporation  
Human Resources Department  
and IPO Preparation Office  
**Oshikawa Tomoaki**



# Creating an Environment for Employees to Maximize Their Abilities

## Revising Our Human Resources System

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 revised our human resources system to select and foster outstanding employees, regardless of job type, department, or grade. These are employees we believe will manage our businesses from a long-term, company-wide perspective and play a central role in management.

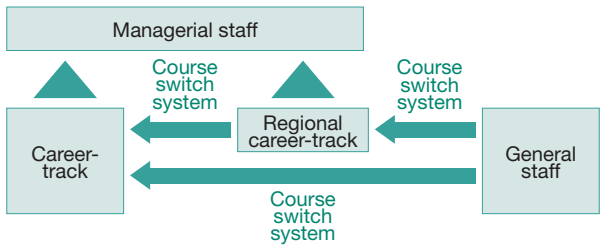
Specifically, we clarified the classification of line managers with subordinates as management personnel. We also implemented consistent compensation based on the scope of responsibilities and endeavor to promote individuals to managerial positions earlier in their careers.

### Revision of Human Resources System for Non-Management Employees

We revised our system 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 in Ibaraki Prefecture, allow diverse human resources, including seniors, to play active roles, etc. Specific measures in our revised system are as follows.

#### 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.



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 <sup>*1</sup>	Manage and develop businesses and functions in the area in accordance with the company-wide business plan
General staff	Head office and operating sites <sup>*2</sup>	Manage and execute the operations of a specific department at a given business location

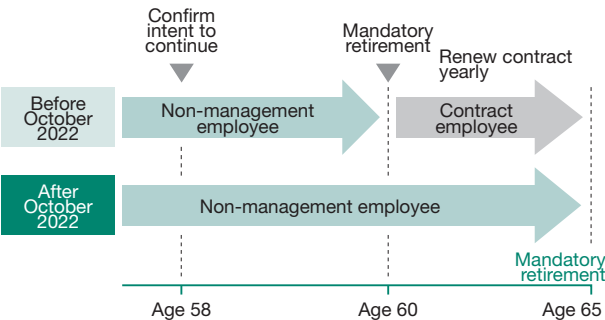
<sup>\*1</sup> In principle, there are no transfers involving relocation  
<sup>\*2</sup> In principle, there are no transfers out of the prefecture involving relocation

#### 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).

#### 3. Extension of retirement age

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



## Column

# 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 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 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 duties. 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 plan to launch a Cheerful Support cleaning team by April 2024 to bring head office cleaning in-house. Cleaning services are currently 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.

## Community contribution activities

In cooperation with Minato Ward Disabled Persons' Welfare Section and Minato Ward Board of Education, Cheerful Support members gave presentations about their efforts to find employment, etc., to approximately 10,000 teachers and guardians at special-needs schools. In April 2023, the office gave a tour to all first-year students of Eifuku Gakuen, a special-needs school, explaining their work and talking about the satisfaction of work.



Presentation at the Minato Ward



Workplace tour for Eifuku Gakuen

## 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 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 7,000m<sup>2</sup> 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

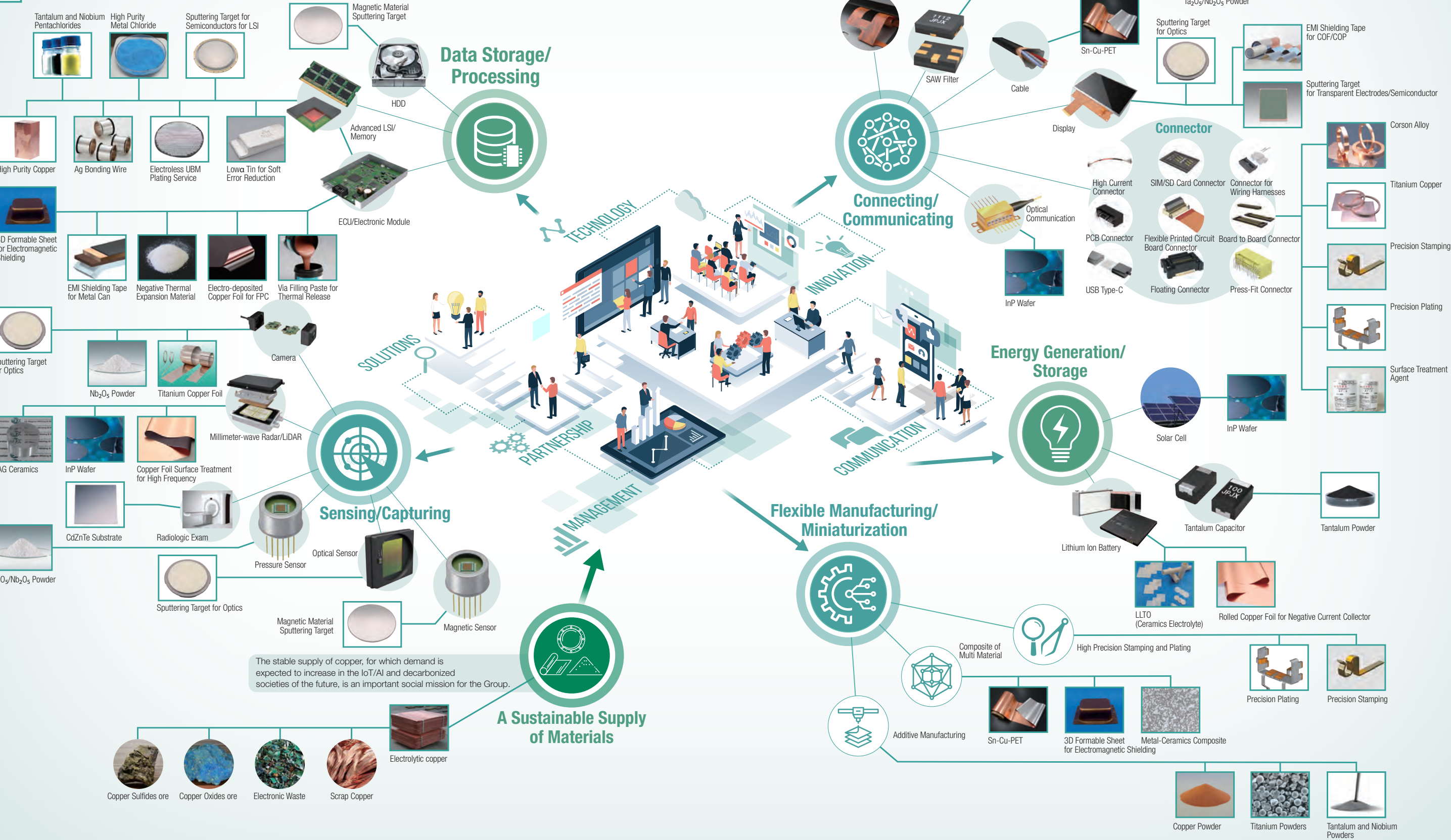


# The JX Metals Group for the Future Society

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.

 = The JX Metals Group's advanced materials





Semiconductor Materials Segment

# Thin Film Materials Business

Employing world-class nonferrous metal manufacturing technologies, we are a supplier of a wide variety of sputtering targets including targets for semiconductor applications, compound semiconductor materials, high-purity metals, and surface treatments. 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 FY2022

In the first half of fiscal 2022, semiconductor-related markets remained as robust as they had been in fiscal 2021, due to the continued strong demand for semiconductors driven by the growth in digital transformation (DX). However, in the second half of fiscal 2022, demand for consumer electronic devices in general, such as smartphones, tablets, and PCs, began to decline, which led to a marked adjustment of inventory across the supply chain.

Against this backdrop, and in anticipation of medium- to long-term market growth, we are taking steps to strengthen our supply system. These steps include starting construction of a new plant in the U.S. and the decision to increase our production capacity of sputtering targets for semiconductors in Taiwan by approximately 80% from the current level. In addition, while we continue to strengthen our ESG initiatives overall, Isohara Works can be singled out specifically for receiving a perfect 200-point score when audited under the Validated Assessment Program (VAP). This was an evaluation of the facility's compliance with the Responsible Business Alliance (RBA) Code of Conduct and further demonstrates our commitment to the ESGs.

Outlook for FY2023

The adjusting of inventory levels across the supply chain, which began in the second half of fiscal 2022, is expected to continue in fiscal 2023. Furthermore, although intensifying trade friction between the U.S. and China and prolonged Russian aggression in Ukraine, amongst other factors, are raising concerns about the current macroeconomic environment, market growth is still expected in various business areas. In the medium- to long-term, growth is anticipated particularly in semiconductor-related markets due to the full-scale rollout of 5th generation (5G) mobile communication systems, electrification of vehicles, and the acceleration of decarbonization. Consequently, the demand for the division's advanced materials is expected to further increase.

To meet this growing demand, we will make sound, intelligent capital investments, which will include the construction of new plant to raise production capacity and the creation of a flexible supply system. This in turn will earn us the trust of our customers. In addition to contributing to the achievement of the SDGs through our products, we also intend to meet society's expectations by keeping our attention on new development trends in response to various market changes and solving problems through internal and external collaboration.

TOPICS

## Increased Production Capacity for Sputtering Targets for Semiconductors in Taiwan

At our Taiwan facility, production capacity of sputtering targets for semiconductors will be expanded, increasing capacity by approximately 80% from the current level. We will have the new line designed, built, and commissioned to begin operating in the second half of fiscal 2024 or later as needed.

Sputtering targets for semiconductors are a mainstay product of our Thin Film Materials Business. They are used in manufacturing various semiconductor devices, including leading-edge logic and memory products. Our decision to increase production capacity is in keeping with our long-term view that demand is expected to increase as the semiconductor industry expands in step with ongoing global digitalization. This expansion will lead to a supply system that can flexibly respond to customer demands and earn us their trust.



Taiwan facility earmarked for increased production capacity

Semiconductor Materials Segment

# Tantalum and Niobium Business

Germany-based Group company TANI OBIS GmbH (hereinafter "TANI OBIS") is one of the world's leading manufacturers of tantalum and niobium materials, with manufacturing and sales locations all around the globe. The Group, TANI OBIS, and Tokyo Den kai 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

- Create resilient supply chains in our existing businesses
- Leverage specific features and strengths of each site to increase productivity and improve quality
- Strengthen our customer-focused business model
- Make sound, intelligent capital investments
- Create and commercialize new products to expand our business base

Review of FY2022

In the strong market of the first half of fiscal 2022, our main existing business supplying high-purity tantalum powder used in capacitors and sputtering targets for semiconductors did well; however, we entered a period of adjustment in the second half due to the effects of a downturn in the electronics sector.

The market is expected to bottom out in 2023 and then recover. To meet the anticipated steady growth in demand that will follow, we have made the decision to expand production capacity at Tokyo Den kai Co., Ltd., a wholly owned subsidiary since April 2022. As an example of how we are creating a raw material procurement portfolio that is resilient to fluctuations in supply and demand, prices, and other risks, the decision was made to invest in the Mi bra Mine in Brazil. This decision means that TANI OBIS will now be able to purchase tantalum concentrates produced at the mine on a preferential basis. In addition to the activities described above, we took aim at expanding our global market share by promoting 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 FY2023

We expect the recession in the electronics sector to bottom out in 2023 and then recover, and we believe that demand for our mainstay product of high-purity tantalum powder used in capacitors and also in sputtering targets for semiconductors, will improve in the same manner. Given that demand is expected to grow, we will promote customer-oriented sales activities, in which sales and engineering are integrated to further expand our market share. At the same time, we will further strengthen our competitiveness by leveraging the specific features and strengths of each of our sites to optimize our product mix and reduce costs. We shall also ensure that our raw material procurement is resilient and implement approved investment projects, such as the expansion of our production facilities in Thailand.

In addition, there will be collaboration between TANI OBIS, Tokyo Den kai Co., Ltd. and other Group companies to strengthen our new-business development system, not only in our tantalum and niobium business, but also across the entire range of minor metals. We shall also seek to quickly make new businesses profitable.

TOPICS

## Tokyo Den kai Co., Ltd. Becomes Subsidiary

In April 2022, Tokyo Den kai Co., Ltd. became a wholly owned subsidiary, bringing to the Group its superior technology and production capacity in the smelting and refining of high-melting-point metals. The company manufactures ingots to be used for tantalum sputtering targets and has been an important partner in the sputtering target business of our Thin Film Materials Division. Along with TANI OBIS business of powdered tantalum for sputtering targets, the addition of Tokyo Den kai will further strengthen our vertically integrated supply chain and can only improve the resilience of the supply system we have in place for these products. Furthermore, Tokyo Den kai and our Group will accelerate the creation of synergies across the entire range of minor metals, including the expansion of business related to niobium, a metal that has great potential in innovative technologies such as superconductive materials.



Completed ingots



Information and Communication Materials Segment

Functional Materials Business

Employing advanced metal fabrication technology developed over many years of business, JX Metals has become a global supplier of treated rolled copper foils used in flexible printed circuit boards, as well as of precision Cu alloy products, including titanium copper, Corson alloy, and phosphor bronze, which are used in connectors, semiconductor lead frames, and other components.

Key Strategies

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

Review of FY2022

Sales volumes of our main products in the first half of fiscal 2022 continued to be strong due to demand created by people tele-commuting and their other online activities during the COVID-19 pandemic. In fact, sales volumes reached a half-year record high during the period. In the second half of fiscal 2022, however, sales volumes were significantly lower compared to the same period of the previous year. This reduction was due to the economic slowdown caused by restrictions on economic activity in China, as well as other factors, and the resulting adjustments made to inventory levels in supply chains.

Although these effects are expected to continue in the next fiscal year, in the medium- to long-term, as the data society advances, we anticipate further expansion in the markets for data centers, telecommunications infrastructure, power devices and for various electronic devices, such as smartphones and tablets. In addition, we envisage demand for high-performance metals to further increase with the electrification and automation of vehicles. In response to future growth in demand, we will achieve further improvements in efficiency and productivity, and by bolstering Group manufacturing facilities, will increase manufacturing capacity at each of the Group's sites thus expanding

our production structures and strengthening our business foundations.

Outlook for FY2023

We expect that the economic slowdown in China and other overseas countries will continue in fiscal 2023, as will adjustments to inventory levels in the supply chain, with it taking some time for demand to recover. However, over the medium- to long-term, we anticipate demand for the high-performance metals used in IT-related equipment will continue to grow.

Fiscal 2023 will be important for us as we will gain a foothold in this year from which we can strengthen our overall structure so as to expand sales when things pick up in the future. We will make capital investments in rolling mills at the Hitachi New Plant (tentative name) and Hitachinaka New Plant (tentative name), while at the same time increasing production capacity at existing facilities by improving yields and productivity. In addition, we will pursue alliances with other companies, such as outsourcing manufacturing and forming joint ventures to ensure our production system is flexible, and we shall also move forward with our Business Continuity Plan (BCP) and ensure we have risk diversification.

TOPICS

Construction of R&D Tower at Kurami Works

We have constructed a new building for R&D at Kurami Works, our main business base. The goal here is to enhance the way we conduct R&D in response to the further development of the IoT and AI society. The facility was brought online in stages as equipment was installed, and operations started in March 2023.

Kurami Works, one of the main bases of our Focus Businesses, develops, produces, and supplies high-value-added products such as treated rolled copper foil, used in flexible circuit boards, and high-performance copper alloys, which are used in various advanced devices. Such alloys include titanium copper and Corson alloys.

The strength of Kurami Works has always been its highly customer focused, fast-track development capabilities. This allows customer needs to be swiftly identified and products quickly developed and launched that meet these needs ahead of our competitors. In addition to further accelerating our efforts to improve our existing products and develop new alloys and alloy foils, we will also work to improve how we find new applications and develop new materials that have a high degree of affinity with our proprietary technologies. We will also further enhance our core technologies, which include melting, rolling, and heat treating, and this will lead to more efficient material development, productivity improvements, and better designed plant and facilities.



R&D Tower Kurami Works (Kanagawa Prefecture)

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

- Optimize titanium price standards
- Expand production capacity to meet increased demand
- Generate and pursue new businesses

Review of FY2022

Sales of titanium were significantly higher than the previous year due to a recovery in passenger demand for aircraft applications, replacement demand for Russian-made mill products, and steady sales of high-purity titanium for general industrial and semiconductor applications. Profits increased compared to the previous year despite higher costs due to soaring prices of imported raw materials, electricity, and supplementary materials. This improvement was due to price adjustments by some customers, an increase in shipment volume resulting from inventory shipments, and an increase in export revenues due to the weaker yen. One-time positive factors such as the payout and reversal of inventories manufactured before the cost increase also had a positive impact. Sales volume in the catalyst business decreased from the previous year due to softening demand for polyolefin catalysts in Asia, mainly resulting from the economic slowdown in China. Sales volume in the chemical business decreased from the previous year due to lower demand for multilayer ceramic capacitors (MLCCs), which are the main

application for ultra-fine nickel powder, our mainstay product. This lower demand is a result of the economic stagnation caused by the rising interest rates in the U.S. and the lockdowns in China.

Outlook for FY2023

We expect titanium sales to remain firm due to a recovery in demand for titanium in aircraft applications and continued demand to replace Russian-made wrought products. On the other hand, we expect sales in the catalyst and the chemical businesses to remain soft for the time being, as we anticipate that it will take more time to see a full-fledged economic recovery in China and other countries. We expect profits to be significantly pressured in the titanium business, despite price corrections. Impacts include the disappearance of one-time positive factors that manifested themselves in the previous year, such as the reversal of inventories with low manufacturing costs, as well as the full-scale disbursement of products with high manufacturing costs from the second half of fiscal 2022.

TOPICS

Boosting Production Capacity Through the Construction of a New Catalyst Plant

THC catalyst (Toho High Efficiency Catalyst) is the mainstay product of the catalyst business of Toho Titanium Co., Ltd. This catalyst is a unique high-performance catalyst used in the production of polypropylene and is a magnesium-titanium type called a Ziegler-Natta catalyst. Polypropylene has a wide range of applications, including automotive interiors and exteriors, home appliances, packaging materials, and food containers. Toho Titanium Co., Ltd. develops, manufactures, and sells environmentally friendly catalysts to respond the urgent need to address environmental issues, such as stricter regulations on chemical substances.



New catalyst production facility at the Chigasaki Plant (Kanagawa Prefecture)



## Metals &amp; 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. We will work to build a sustainable, recycling-oriented society under the concept of the Green Hybrid Smelting process, which maximizes the use of reaction heat from copper concentrate. With this concept, we aim to increase the ratio of recycled raw materials (either in raw material input or in product content) to at least 50% by 2040.

## Key Strategies

- Promote various measures to realize Green Hybrid Smelting
- Pursue our total best and improve productivity from a bird's-eye view of the supply chain
- Encourage measures to evolve and establish an industry-wide Sustainable Copper Vision

## Review of FY2022

In fiscal 2022, we worked to optimize the composition of raw materials, focusing on increased processing of recycled raw materials. We also pursued our total best from a bird's-eye view of the supply chain, and strengthened our competitiveness by streamlining logistics between locations and increasing the operational efficiency at each manufacturing site.

In the Recycling Business, the volume of recycled materials collected overseas decreased due to higher transportation and processing costs resulting from soaring energy prices. However, this decrease was compensated for by strengthening the collection of materials from Japan. In addition, we acquired all shares of eCycle Solutions Inc., a Canadian E-waste (waste home appliances and electronic devices) collection and processing company, as part of our efforts to strengthen our Recycling Business initiatives.

Copper prices declined in the Metals Business in the first half of the year due to concerns of the global recession. However, prices rose in the second half of the year due to expectations of a recovery in demand in China. Purchase margins copper concentrates increased from the previous year against the backdrop of factors such as production ramp-ups at new mines. In the sulfuric acid market, market prices remained high in the first half of the year due to the ongoing tight environment from

the previous year. From the second half of the year, market prices fell sharply and remained at low levels due to a sharp drop in sulfur prices and a deteriorating supply-demand environment.

## Outlook for FY2023

The current environment is expected to face further challenges in the procurement of copper concentrates and the collection of recycled raw materials. In response, we will strive to maximize earnings and improve capital efficiency by addressing materialities.

We expect demand for copper will continue to grow, with supply falling short of demand. Therefore, we must expand the use of recycled raw materials, in addition to copper concentrates, to meet this growing demand. We formulated our Sustainable Copper Vision in August, 2022, to fulfill our missions to (1) Establish a stable supply system to support growing demand and (2) Achieve ESG-oriented production and supply (decarbonized, circular economy, etc.). In fiscal 2023, we will pursue the following four measures to evolve and spread sustainable copper:

- (1) Reduce carbon footprint
- (2) Increase recycling ratio
- (3) Promote responsible procurement and ESG initiatives
- (4) Form Green Enabling Partnerships

## TOPICS

### Promoting Responsible Procurement

On December 15, 2022, JX Metals Smelting Co., Ltd. obtained The Copper Mark certification at the Saganoseki Smelter & Refinery and Hitachi Works. The Copper Mark, founded in 2019, is a highly reliable guarantee framework that encourages responsible production practices and demonstrates a commitment to green transition in the copper industry.

JX Metals Smelting Co., Ltd. became the first copper smelter in Japan to obtain certification after undergoing an audit by an independent third-party organization. The Copper Mark recognizes our compliance with a wide range of criteria, such as environmental, human rights, community, and governance standards across 32 categories. This certification will strengthen the competitiveness of our sustainable businesses in the face of growing international demand for ESG initiatives.



The Copper Mark logo

## Metals &amp; 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. Not only do we operate and manage mines, we also actively engage in the investigation and development of new projects, such as future exploration activities.

## Key Strategies

- Increase the business value of the Caserones Copper Mine through synergies with Lundin Mining Corporation
- Further discover and pursue new projects (exploration, development, operational) that also take into account supplying raw materials to midstream and downstream businesses

## Review of FY2022

As announced in our news release issued on March 28, 2023, we decided to transfer our 51% stake in SCM Minera Lumina Copper Chile to Lundin Mining Corporation of Canada. SCM Minera Lumina Copper Chile is now the operating subsidiary of our Caserones Copper Mine. The participation of Lundin Mining Corporation as a management partner of Caserones Copper Mine is expected to generate many synergies, including productivity improvements and enhanced cost competitiveness. In terms of operations, the Caserones Copper Mine reached a cumulative production of 1 million tons of copper to date, despite production declines resulting from heavy snowfall and water restrictions. Production at the Los Pelambres Mine was reduced due to delays in expansion plan progress.

In new mine development projects, we established a cross-divisional project team to ensure stable supply of raw materials for downstream operations. This team evaluated and studied specific projects focused on tantalum and titanium. As a result, we launched a joint venture (JV) with AMG Brasil SA ("AMG") and began production of tantalum concentrate in January 2023. This concentrate is produced from ore at the Mibra Mine operated by AMG.

## Outlook for FY2023

Caserones Copper Mine works to improve productivity and strengthen cost competitiveness through their partnership with Lundin Mining Corporation, a company which has an excellent mine operating capacity. The mine will also participate in integrated development in a Lundin Group exploration project nearby, which will enable extended mine life and other long-term business operations. Going forward, the Caserones Copper Mine will continue to support the Copper Smelting Business as an important raw material supplier. The Los Pelambres Mine will focus on increasing production during fiscal 2023 through the completion of the expansion plan.

In addition to our participation in the Mibra Mine (tantalum business), we will move forward with the investigation and survey of various minerals around the world, including minor metals, copper, and silica ore. Here, we aim to achieve stable supplies of raw materials based on future needs in our midstream and downstream businesses, as well as commercialize our business.

## TOPICS

### Participation in Tantalum Concentrate Production Processes at Mibra Mine

At JX Metals, we decided to participate in the production of raw tantalum materials as our first step toward expanding our resource business into the Minor Metal Business. Since January 2023, we have produced tantalum concentrate at the Mibra Mine, operated by AMG, under a joint venture (JV) between JX Metals and AMG. Tantalum and many other minor metals are expected to become increasingly important as raw materials for use in advanced materials. Securing long-term, stable supplies of these raw materials will be vital, as companies will be required to take proactive steps toward ethical and sustainable responsible procurement that takes safety and human rights into consideration. JX metals will further pursue long-term, stable supply of raw materials and responsible procurement through our part participation in this project.



Overhead view of Mibra Mine and operating plant















## Materiality and ESG Management

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

The JX 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, administers this system, measuring and assessing levels of achievement for these KPIs.

	Materialities	Initiatives	FY2022 KPIs	Related SDGs
Environment	Contributing to Environmental Conservation P53	● Contribute to global environmental conservation by creating a carbon-free and recycling-oriented society	Total in-house CO <sub>2</sub> emissions: Promoting initiatives to achieve net zero CO <sub>2</sub> emissions in fiscal 2050 and 50% reduction in fiscal 2030 (vs. fiscal 2018)	 
			Increase percentage of recycled raw materials: Expand the breadth of recycled materials to be treated	
			Landfill disposal rate: Less than 1% in fiscal 2022	
Social	Provide Advanced Materials That Support Lives and Lifestyles P66	● Advance development of new technologies and contribute to an IoT/AI society	Develop advanced materials needed by the IoT/AI society	  
			Build a framework to support technology-based management	
	Create Attractive Workplaces P77	● Create a healthy, safe, and peaceful working environment for all employees ● Create an environment in which diverse employees feel fulfilled and fully express their talents	Reduce serious occupational accidents: Less than 0.70 accidents (four days or more of lost work time) per 1,000 workers in fiscal 2022	  
			Increase annual leave utilization rate: 80% or more in fiscal 2022	
			Implement initiatives to revitalize people and organizations	
			Initiatives for health promotion: Cancer screenings for 70% of employees or more in fiscal 2022	
	Respect Human Rights P83	● Conduct business activities that respect the human rights of all throughout the supply chain, including local community residents, customers, employees, and business partners	Percentage of employees taking human rights training (100% in fiscal 2022)	 
			Conduct survey of human rights in supply chains	
	Coexistence and Co-Prosperity With Local Communities P90	● 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	 
Governance	Strengthen Governance P94	● Ensure sound, transparent business management via thorough compliance and risk management activities	Steady operation of group-wide risk management	—
			Compliance training tailored to business characteristics and social movements, etc.	

### 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.



### ESG Promotion System

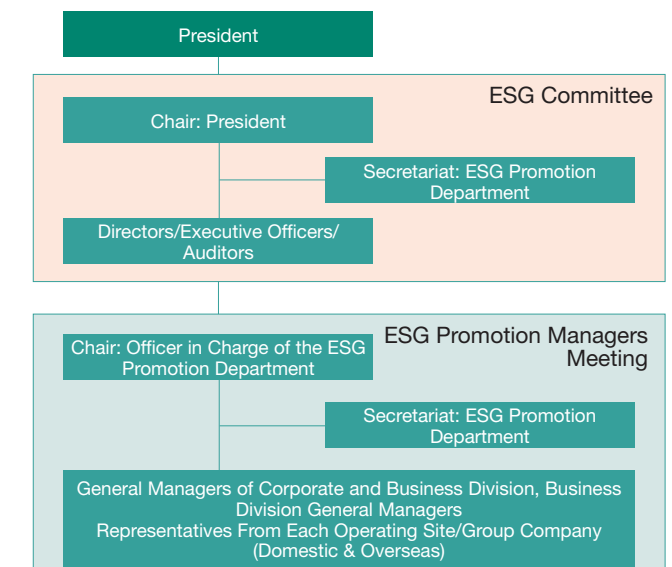
Though the Group has taken a variety of actions over the years toward social contribution and environmental conservation, it has become necessary to strengthen organizational response to global ESG trends and take actions toward ESG management from a Group-wide perspective. Therefore, in October 2020, 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 2022, 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 2022, 4,814 of 5,652 eligible employees responded to the survey, resulting in a response rate of 75%.



Training slide materials

### Excerpt of Questionnaire Responses

Q: Do you understand our ESG management initiatives?

Yes ..... 81.9%  
 Unsure ..... 14.8%  
 No ..... 3.1%  
 No answer ..... 0.2%

Q: Do you understand and agree with the JX Metals Group Code of Conduct?

Yes ..... 96.2%  
 No ..... 2.8%  
 No answer ..... 1.0%

Q: Do you think materialities are well understood in your organization and workplace?

Yes ..... 69.1%  
 No ..... 29.2%  
 No answer ..... 1.7%

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

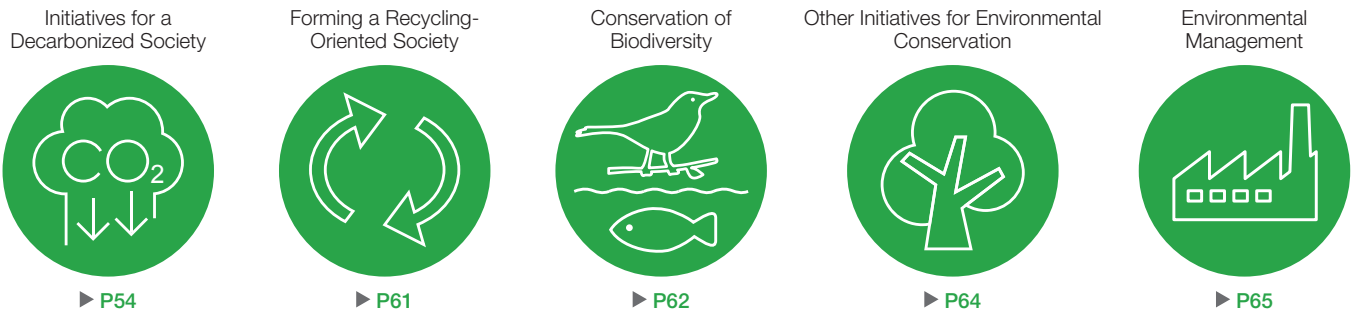




# Environment

## 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	FY2022 Results/Progress	Assessment
Total in-house CO <sub>2</sub> emissions: Promoting initiatives to achieve net zero CO <sub>2</sub> emissions in FY2050 and 50% reduction in FY2030 (vs. FY2018)	We continued our activities through the Carbon Free Project, which was launched to achieve these targets, and promoted a variety of initiatives for decarbonization, including the introduction of CO <sub>2</sub> free electricity at each of our sites and the creation of roadmaps per division toward net zero emissions.	😊
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.	😊
Landfill disposal rate: Less than 1% in FY2022	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 2022 was 0.92%.	😊

### Initiatives for a Decarbonized Society

The JX 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<sub>2</sub> emissions and are further accelerating our efforts to achieve this goal.

#### 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.



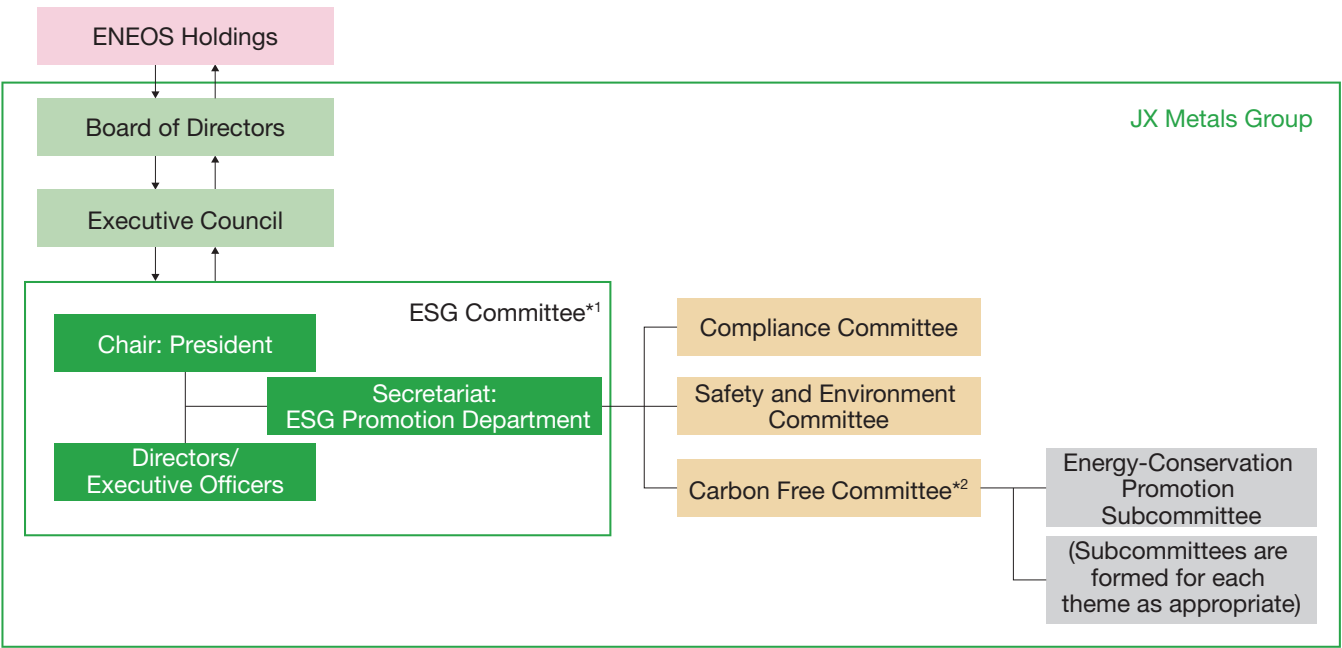
##### ● Governance

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 on a wide range of risk factors associated with climate change impacts, including regulations and business impacts, and 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<sub>2</sub> emissions



● Metrics and Targets

▶ The JX Metals Group’s Decarbonization Vision

Reduce total in-house CO<sub>2</sub> emissions by 50% in FY2030 versus FY2018, achieve net zero by FY2050

The Group has established our in-house CO<sub>2</sub> 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.

● 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 referred to the World Energy Outlook (WEO) of the International Energy Agency (IEA), the New Policies Scenario (NPS) of the WEO 2018, the Sustainable Development Scenario (SDS) in light of the Paris Agreement, as well as the Net Zero Emissions by 2050 Scenario (NZE Scenario) published in 2021. Furthermore, our analysis adopts global warming scenarios (from RCP2.6 to RCP8.5) from the Fifth Assessment Report (released in 2014) of the United Nations Intergovernmental Panel on Climate Change (IPCC).

<Identification of climate change-related 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. 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.

Identified Risks and Opportunities

Category	Impact	Risk/Opportunity	Measures
Transition Risks	Policies and Regulations	Increased costs to achieve net-zero CO <sub>2</sub> 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
		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 ● Evolving sustainable copper 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

2. Scenario Analysis

With the transition to a decarbonized and resource-recycling society, demand for nonferrous metals and advanced electronic materials related to our Group’s businesses is expected to grow, and we believe that the key point is how to realize capacity expansion, technology development, and partnership-building

in order to meet this demand.

However, the results of the scenario analysis revealed the importance of smoothly transitioning the JX Metals Group to carbon neutrality and evolving our BCPs to mitigate physical risks associated with natural disasters and minimize their impact when they occur.

(1) Transition Risks

(1) Increased costs to achieve net-zero CO<sub>2</sub> emissions

Electricity accounts for approximately 60% of our Group’s total CO<sub>2</sub> emissions (Scope 1 and 2), and we are switching to CO<sub>2</sub>-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<sub>2</sub>-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<sub>2</sub> emissions. If a carbon tax is introduced, the annual cost increase is expected to be approximately 5 billion yen\*.

The Group has established a roadmap toward carbon neutrality and is steadily implementing various initiatives to reduce CO<sub>2</sub> emissions, so the cost burden is expected to

be relatively insignificant.

\* Fiscal 2018 Scope 1 and 2 emissions x 50% (2030 target): t-CO<sub>2</sub>e x USD50/t-CO<sub>2</sub>e x assumed exchange rate

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

If CO<sub>2</sub> 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 (see page 33). We are also building partnerships with external parties to achieve and disseminate the Sustainable Copper Vision.



Physical sorting technology for recycled materials

(2) Physical Risks

(1) Damage to facilities and shutdowns due to extreme weather events

Extreme weather events, including intensifying typhoons, may cause damage to the Group’s various facilities at operating sites in Japan and overseas. In addition, damage to our supplier and logistics networks increase the risk that we cannot sustain normal operation.

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 nonferrous metals 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 and other nonferrous metals will be increasingly used in these areas. The JX Metals Group earned operating profit of approximately 18.7 billion yen in fiscal 2022 in the Mineral Resources Business and Metals & Recycling Business, and this growing demand is expected to provide opportunities for further sales and earnings 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 ore and recycled raw materials, in order to establish a stable supply system.

(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 maintains product families with high global market share in the area of electronic materials, including sputtering targets and treated rolled copper foil for FPC, and in fiscal 2022, related businesses generated approximately 56.4 billion yen in operating profit.

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 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.



Illustration of the completed Hitachinaka New Plant (tentative name)

(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.

(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.



Bench scale equipment for LiB recycling

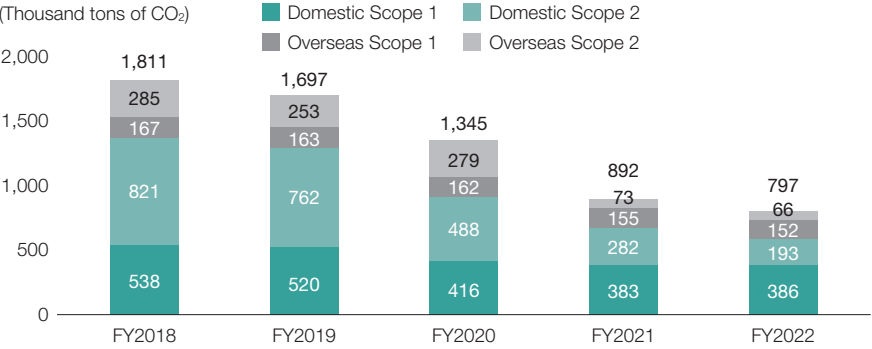
Initiatives From FY2022 to Today

● Reduce CO<sub>2</sub> Emissions (Scope 1 and 2)

Toward the goal of reducing our total in-house CO<sub>2</sub> emissions in fiscal 2030 and fiscal 2050, we are working on four priority activities: (1) Introduction of CO<sub>2</sub>-free electricity, (2) Generation of renewable energy, (3) Promotion of zero energy loss activities, and (4) Fuel switching and technology development toward decarbonization.

As a result, our in-house CO<sub>2</sub> emissions in fiscal 2022 (total of Scope 1 and 2) were 797 thousand t-CO<sub>2</sub>.

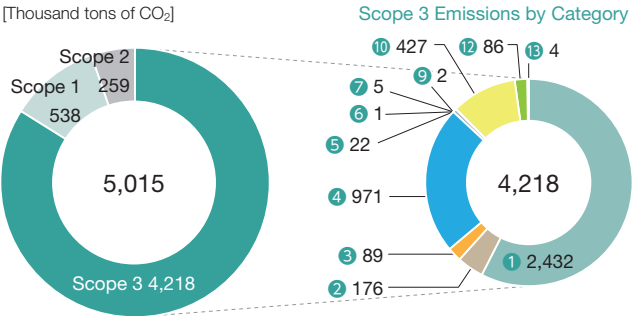
JX Metals Group Scope 1 and 2 Emissions



● Calculate of CO<sub>2</sub> Emissions (Scope 3)

In addition to existing data for Scope 1 and 2 CO<sub>2</sub> emissions, in fiscal 2021 the Group began calculating indirect Scope 3 emissions in order to determine the overall CO<sub>2</sub> emissions generated by our operations and products. Through a Group-wide initiative centered on the Carbon Free Project, we calculated emissions results for each fiscal year while obtaining insights from outside experts. Going forward, we will study ways to improve calculation methods and accuracy for each category, as well as to establish and implement emission reduction targets.

Scope 1, 2, and 3 Emissions (FY2022 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. Categories 3, 10, 14, and 15 were not calculated because the Group has no relevant activities in these areas.

Scope 3 Categories

- ① Purchased goods and services
- ② Capital goods
- ③ Fuel- and energy-related activities not included in Scope 1 or 2
- ④ Upstream transportation and distribution
- ⑤ Waste generated in operations
- ⑥ Business travel
- ⑦ Employee commuting
- ⑧ Upstream leased assets
- ⑨ Downstream transportation and distribution
- ⑩ Processing of sold products
- ⑪ Use of sold products
- ⑫ End-of-life treatment of sold products
- ⑬ Downstream leased assets
- ⑭ Franchises
- ⑮ Investments

Achieving Net Zero

● The Group's CO<sub>2</sub> Emissions

In our assumptions for fiscal 2050, emissions are expected to increase due to business expansion over the course of time. In response to this, we aim to achieve net-zero total in-house emissions (Scope 1 and 2) in fiscal 2050 by combining energy conservation, purchase and in-house generation of renewable energy, electrification and fuel switching, process modification, and carbon capture and recycling\*, centered on the four priority activities we have already launched.

\* Includes the effects of recovery of CO<sub>2</sub> and other forms of carbon (pyrolysis oil, etc.) through combustion, etc., of recycled materials, enhanced physical sorting of recycled materials, increased ratio of biomass plastic in procured recycled materials, and CO<sub>2</sub> absorption through in-house efforts with forests, etc.

● Society's Total CO<sub>2</sub> Emissions

Through our recycling business, specifically the evolution of Green Hybrid Smelting, and supply of advanced technological materials and products, we contribute to the reduction of CO<sub>2</sub> emissions in society as a whole. We not only strive to reduce the Group's CO<sub>2</sub> emissions to net zero, but also to reduce the CO<sub>2</sub> emissions of society as a whole.



Priority Activity #1

Introduction of CO<sub>2</sub> -Free Electricity

Since approximately 60% of the Group's in-house CO<sub>2</sub> emissions come from electricity, we began introducing CO<sub>2</sub> -free electricity\* in fiscal 2020. In fiscal 2022, the switch to CO<sub>2</sub> -free electricity was completed at all major operating sites in Japan, except for some sites with contractual re-

strictions. We are also gradually switching electricity at our operating sites outside Japan.

\* CO<sub>2</sub> -free electricity: Electricity derived from virtually non-fossil-fuel power sources, etc., that does not result in CO<sub>2</sub> emissions, with an adjusted CO<sub>2</sub> emission factor of 0.00 t-CO<sub>2</sub> /kWh. This may include nuclear power as well as renewable energy such as hydro, wind, solar, etc.

Priority Activity #2

Generation of Renewable Energy

The JX Metals Group is engaged in generating our own renewable energy. To date, we have introduced hydroelectric, binary, and solar power generation facilities at our operating sites in Japan and overseas. In June 2022, our second on-site solar power generation facility using a PPA\* began operation at the Isohara Works.

In April 2023, we implemented an off-site PPA model for the 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 the system the largest off-site PPA solar power generation systems for a single business site in Japan. In addition to this solar off-site PPA model, we installed solar power generation equipment in the newly constructed R&D building at the Kurami Works to meet a portion of electricity needs.

\* 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



Example of a solar power generation system installed by a PPA operator

Renewable Energy Facilities and Total Electricity Generation (FY2022) (Thousands of kWh)

Site	Method	Generated
Kakinosawa Power Plant, JX Metals Corporation	Hydroelectric	24,629
Kakegawa Works, JX Metals Precision Technology Co., Ltd.	Solar	2,351
Isohara Works	Solar	211
Shimoda Hot Springs Co., Ltd.	Geothermal	36
Nikko Metals Taiwan Co., Ltd.	Solar	205
Nippon Mining & Metals (Suzhou) Co., Ltd.	Solar	71
JX Metals Korea Co., Ltd.	Solar	112
Materials Service Complex Coil Center (Thailand) Co., Ltd.	Solar	14

Priority Activity #3

Promotion of Zero Energy Loss Activities

As a Group that operates in an electricity-intensive industry, 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<sub>2</sub> emissions. For example, we will take on the challenge of achieving zero energy loss by soliciting ideas from all

Group employees, such as updating facilities with a focus on CO<sub>2</sub> reduction that goes beyond cost reduction, and fundamentally reviewing facility operation methods.

In June 2023, we established the Manufacturing Technology Office in the Advanced Technology & Strategy Department under the Technology Group. This organization aims to optimize production processes across the JX Met-

als Group by sharing production technologies developed individually by each department. As part of these efforts, we pursue further energy conservation, the installation of

waste heat recovery equipment, and other measures to reduce CO<sub>2</sub> emissions across the Group.

Priority Activity #4

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<sub>2</sub> emissions from these sources. One candidate to achieve this is fuel switching. In the industry, technologies are being developed for new fuels such as hydrogen and ammonia, and we will also consider the use of these fuels.

We established the Carbon Free Committee in fiscal 2022 as an organization to discuss and determine company-wide policies and specific measures toward net zero CO<sub>2</sub> emissions. The committee is led by the ESG Promotion Department and membership includes executives from each business unit and production site, the Technology

Group, and management from Group companies. Since its inception, the committee has been studying decarbonization and resource recycling measures that contribute to improving business competitiveness and added value from a company-wide and strategic perspective toward net zero CO<sub>2</sub> emissions. These studies consider (1) The JX Metals Group Long-Term Vision and Medium-Term Management Plan for 2023-2025, (2) The Sustainable Copper Project, and (3) Social conditions, etc. Based on these considerations, the committee has decided to focus on the early adoption of carbon-neutral plants (net zero CO<sub>2</sub> Scope 1 and Scope 2 production sites, and, particularly, a comprehensive reduction of fuel-derived CO<sub>2</sub> emissions).

Priority Activity #5

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 Metals Group became the first in the Japanese nonferrous metals industry to develop a transition-linked loan framework (TLLF). This framework was developed with the support of Mizuho Bank, Ltd. and has acquired a third-party assessment regarding its applicability to various principles and guidelines, including the Basic Guidelines on Climate Transition Finance established by the Ministry of Economy, Trade and Industry, the Ministry of the Environment, and the Financial Services Agency. We have established two sustainable performance targets (SPTs) in our TLLF and linked the achievement of these SPTs to the interest rate terms of the TLL, thereby establishing a mechanism for us to commit to the implementation of our transition strategy.

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 nonferrous

industry in Japan, and will be used to cover the environmental costs of the New Hitachi-kita Factory (tentative name), a new production base for sputtering targets for semiconductors currently under construction in Hitachi City, Ibaraki Prefecture.

Specific Targets for TLLF Initiatives

- SPT 1: Maintain 50% reduction of CO<sub>2</sub> emissions by FY2030 (vs. FY2018)
- SPT 2: Increase the percentage of recycled raw materials to 25% by FY2030



New Hitachi-kita Factory (tentative name)



Priority Activity #6

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 Metals will participate actively in discussions and information exchange toward the achievement of GX.



Forming a Recycling-Oriented Society

At the Group, we recognize that the mission of players involved in the materials industry is to minimize resource final disposal through an ongoing cycle while maintaining the maximum value of these resources. Based on this concept, we aim to achieve a circular economy.

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. A scaled-up version of the process is in place at JX Metals Circular Solutions Co., Ltd. (Tsuruga, Japan), and we are performing proof-of-concept test operations. In addition to the operation of a high-purity nickel sulfate recovery facility (launched in 2021) and a high-purity cobalt sulfate recovery facility (2022), we began operations of a high-purity lithium carbonate recovery facility in April 2023. In the future, we will provide high-purity recycled metal salts to the supply chain for tests of closed-loop recycling.



Bench-scale equipment at Hitachi Works

Participating in a Consortium to Develop LiB Recycling Technology in Germany

To demonstrate the closed-loop recycling of automotive LiB using our process in the German government-supported

HVBaTCycle Consortium (adopted in 2022), we built a bench-scale plant similar to Hitachi on the TANI OBIS yard (Goslar), which began operations in March 2023. Using the black mass (cathode active material powder recovered from discarded batteries) provided by Volkswagen, we work with project partners to optimize the process.

Selected as a NEDO Green Innovation Project

In April 2022, the New Energy and Industrial Technology Development Organization (NEDO) adopted our project for the Development of Technology for Closed-Loop Recycling for Automotive LiB for their Green Innovation Fund. Utilizing this fund in cooperation with academia, we are conducting the following studies according to schedule: (1) Establishment of a life cycle assessment (LCA) evaluation method for LiB recycling, (2) Advancement of metal recovery technology using hydro-metallurgical processing, and (3) Advancement of metal recovery technology in the detoxification pretreatment process.

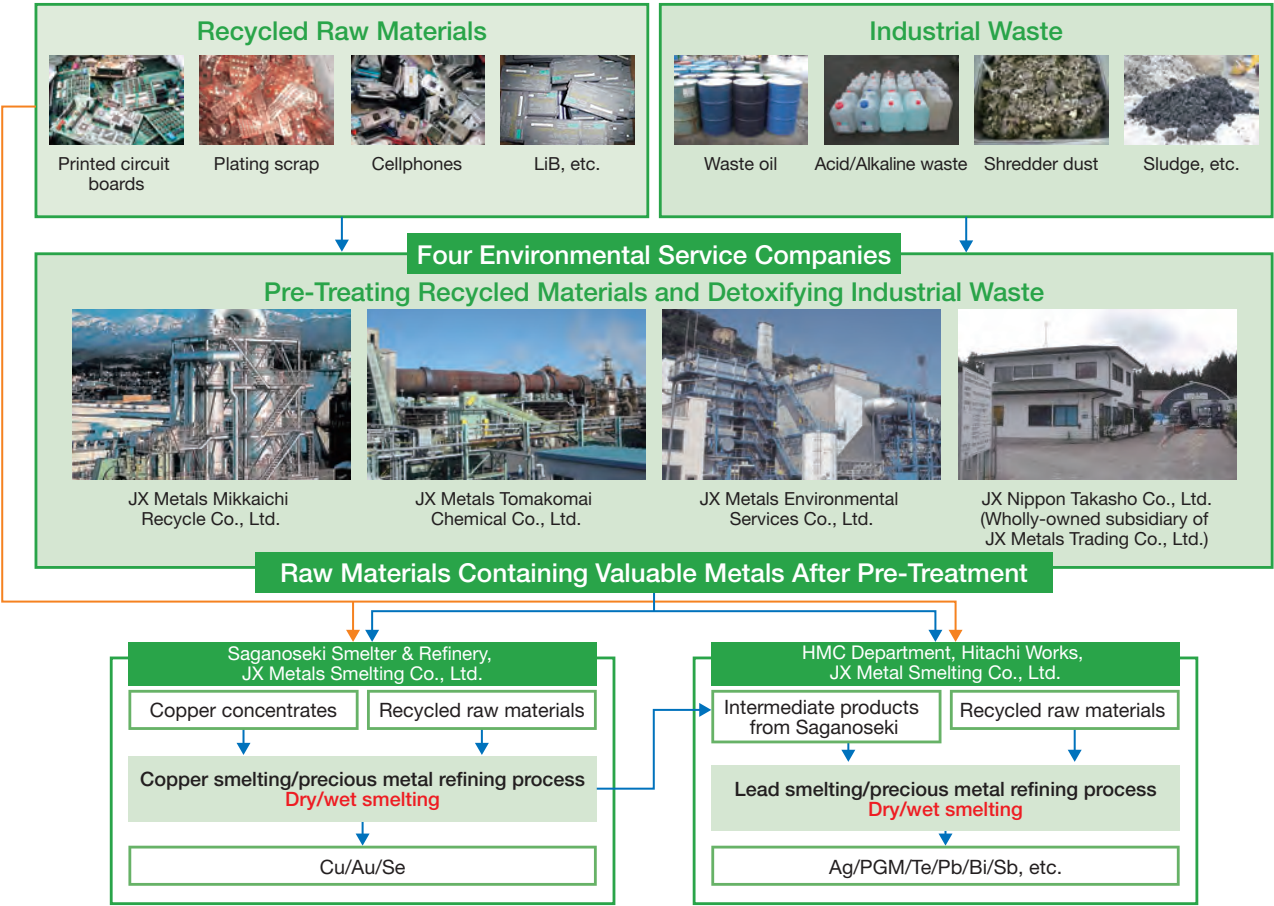
Initiatives for Zero Emissions

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 Metals Group strives for zero emissions by combining our environmental and recycling businesses to build and operate a sys-

tem to recycle these secondary wastes and the valuable metals contained therein. Affiliated companies involved in our Environ-

mental Business work with the Metals and Recycling Business sites to achieve a recycling-oriented society.



Conservation of Biodiversity

The Group recognizes that biodiversity conservation is an important management issue. Mining operations, in particular, interact closely with local ecosystems. This interaction requires careful consideration, and we carry out various initiatives as appropriate.

Biodiversity Risk Assessment

Using the Integrated Biodiversity Assessment Tool (IBAT), we surveyed a 5-kilometer radius around each of our six sites in Japan to determine whether protected areas exist in the vicinity of our sites. Our assessment revealed no areas identified as strict nature reserve, wilderness areas, national parks, or natural monument or feature (Ia, Ib, II, III: See the table to the right).

Category I a Category I b	Strict nature reserve Wilderness area	Protected areas managed primarily for the purpose of academic research or wilderness conservation
Category II	National park	Areas managed primarily for ecological protection and recreation
Category III	Natural monument or feature	Areas managed primarily for the protection of special natural phenomena
Category IV	Habitat/species management area	Areas managed primarily for conservation through human management
Category V	Protected landscape or seascape	Areas managed primarily for landscape protection and recreation
Category VI	Protected area with sustainable use of natural resources	Areas managed primarily for the sustainable use of natural ecosystems



Management Operations at Closed Mines

Since our founding in 1905, the JX 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.

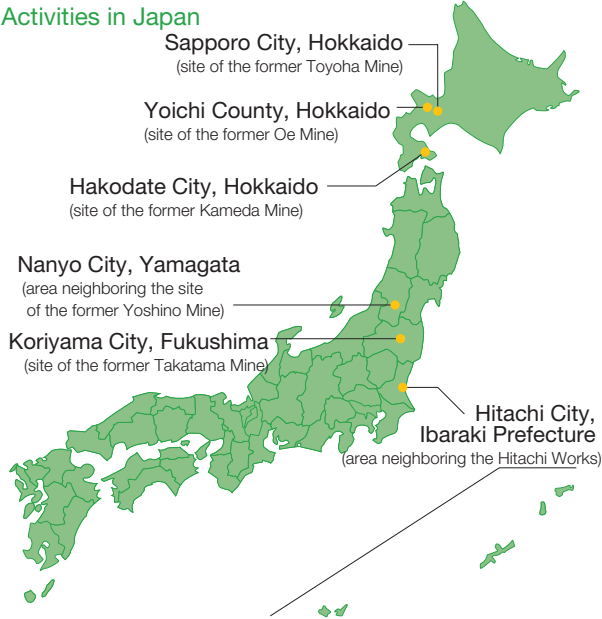
JX Nippon Mining Ecomanagement, Inc. oversees the closed mines managed by the Company. The work mainly consists of detoxifying acid mine drainage (AMD) and maintaining and preserving the tailings dams and galleries of the mining sites. AMD occurs when rainwater or other water comes into contact with 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

Forest Maintenance Activities in Japan

The Group has been promoting reforestation activities throughout Japan, especially at the sites of closed mines. Employees and their families participate in these activities to communicate the importance of protecting the local environment through contact with nature.



TOPICS

Participation in the 16th Mt. Kurakakeyama Cherry Blossom Mountain Development and Maintenance Activity

The 16th Mt. Kurakakeyama Cherry Blossom Mountain Development and Maintenance Activity was held. A total of 26 Company volunteers from the Hitachi area participated, including the general manager. Other companies, civic groups, and neighborhood residents in Hitachi City participated, bringing the total number of participants to about 150.

In the Taisho and Showa periods, Hitachi Mine workers planted as many as 10 million trees in the area. As a result, many cherry trees have grown wild in Hitachi City. The development and maintenance activity has been organized by Hitachi City since 2008 to create a mountain and cherry blossoms for future generations over the next 100 years. This was the first time in four years that the city held the activity. On the day of the event, under clear, sunny skies, participants were divided into groups, working hard at clearing fallen trees, cutting underbrush, and pruning branches. After about an hour of work, participants received rice ball lunch boxes from Hitachi City. The local JX Metals office donated apples from Daigo Town. One participant commented that they looked forward to seeing the cherry blossoms next year.



Participant group photo



General Manager Suzuki was interviewed by cable TV station JWAY



JX Metals volunteers pruned and cleared brush

Other Initiatives for Environmental Conservation

Conservation of Water Resources

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

Each manufacturing site monitors its own emission standards, which are stricter than the legally mandated standards. In addition, each site manages operations appropriately to ensure emission 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 2022, 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 detoxifying hazardous waste through our treatment businesses for low-concentration PCBs and asbestos. In 2014, JX Metals Tomakomai Chemical Co., Ltd. became the first firm in Hokkaido to receive certification from the Minister of the Environment as a detoxification facility for treating low-concentration PCB waste. In addition, JX Metals Environmental Services Co., Ltd. is engaged in the melting and detoxification of asbestos. The company treated approximately 2,800 tons of waste asbestos in fiscal 2022.

We are also proceeding with treatment of Group-owned equipment with high-concentration PCBs at the Japan Environmental Storage & Safety Corporation (JESCO). We plan to complete the treatment of this equipment by the prescribed disposal 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.



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



Environmental Management

JX Metals Group Basic Environmental Policy

As a comprehensive manufacturer of nonferrous metals and advanced materials, the JX 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 2022, 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 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 2022.

Operating Sites That Have Obtained ISO 14001 Certification (as of March 31, 2023)

43 Operating sites (Japan: 27, overseas: 16)

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 19 business sites in fiscal 2022.

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

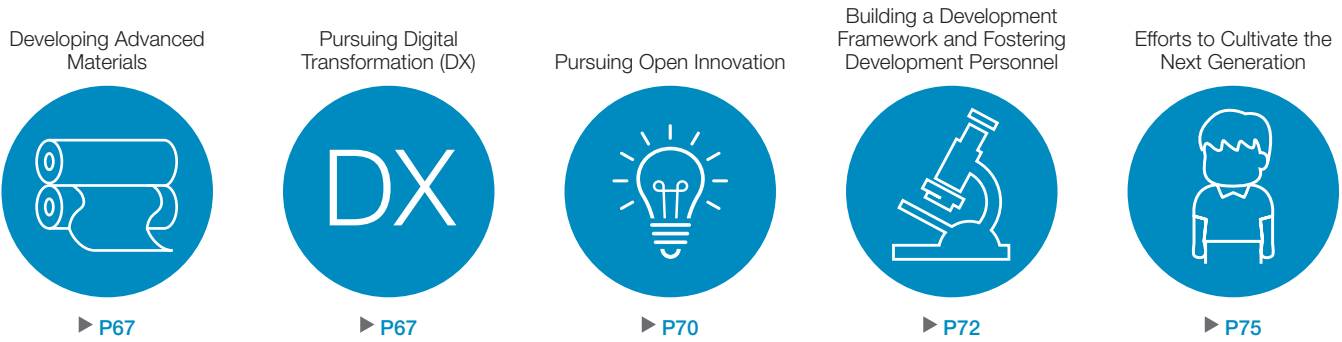
The Group has set a Green Purchasing Policy, aimed at reducing environmental and other social impacts when procuring materials and equipment. Based on this policy, we have drawn up Green Purchasing Guidelines setting out specific requirements for choosing suppliers. These guidelines contain requirements 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. In fiscal 2022, 85% of suppliers responded to our survey.

Social

Materiality 2 Provide Advanced Materials That Support Lives and Lifestyles

The excellent properties of the major base metal of copper and a variety of minor and precious metals have supported the evolution of electronic devices. The JX 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.



KPIs and Progress

Assessment: 😊 Achieved/Steady Progress ☹ Not Achieved

KPI	FY2022 Results/Progress	Assessment
Develop advanced materials needed by the IoT/AI society	In order to capture growing demand, we have announced a series of production capacity expansion plans, including the construction of new plants and site acquisition, as well as measures to strengthen our supply chain. Continuing from fiscal 2021, we have pursued open innovation through collaboration with companies and universities to develop advanced materials needed by the 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 built a framework for development and worked to foster development personnel to generate new innovations and diversify human resources.	😊



Developing Advanced Materials

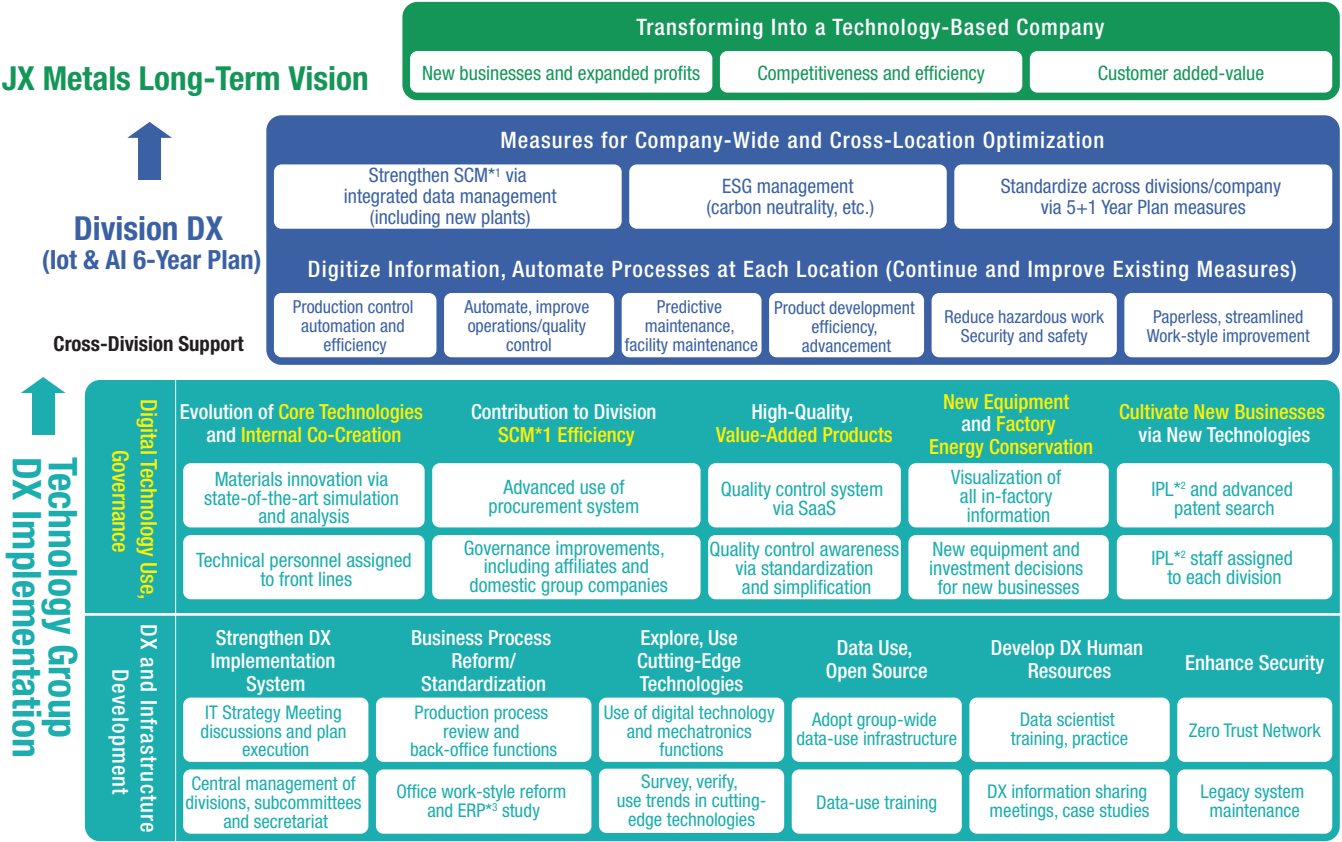
In order to contribute to the development of a sustainable society, the Group relentlessly pursues innovation by advancing and utilizing core technologies accumulated to date, as well as co-creation with outside resources.

Reference [Special Feature 1](#)  
Contributing to Sustainable Societies Through Advanced Materials ⇒P27-32

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 our 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 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.

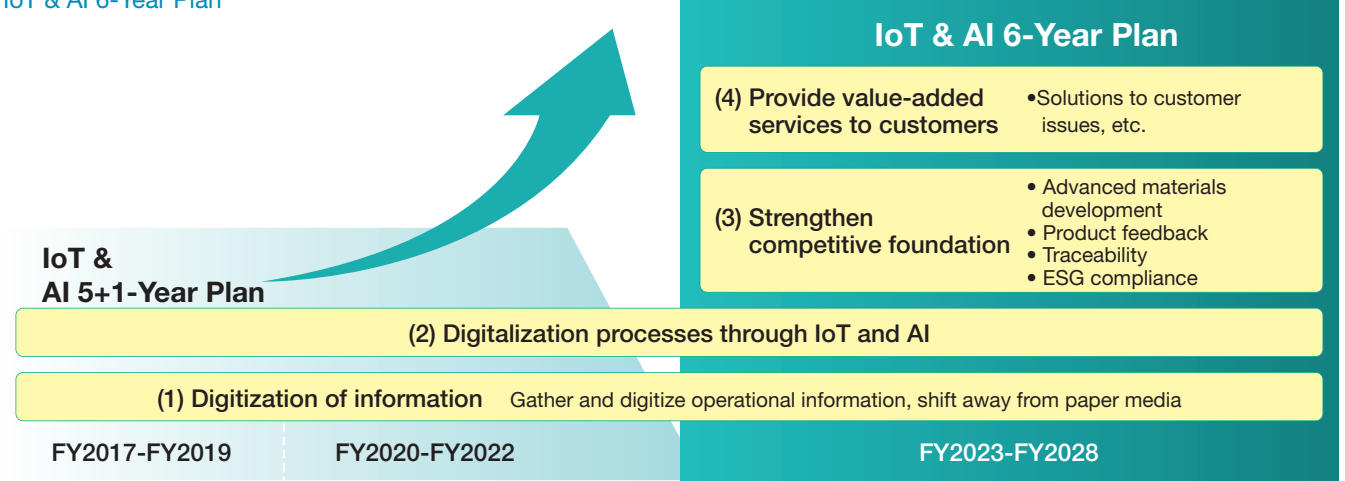
\*3 ERP (Enterprise Resource Planning): A concept that aims to improve and optimize overall management efficiency through the integrated management of human, physical, and financial resources.

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 digitization 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 chang-

es in our businesses, strengthening our competitive foundation, creating value for customers, and addressing ESG issues such as decarbonization, etc. As in the past, our Technology Group exercises overall control, while subcommittees established in each division act as the main force in driving implementation. Digital innovation staff in the IT Department serve as the secretariat providing implementation and technical support.

IoT & AI 6-Year Plan

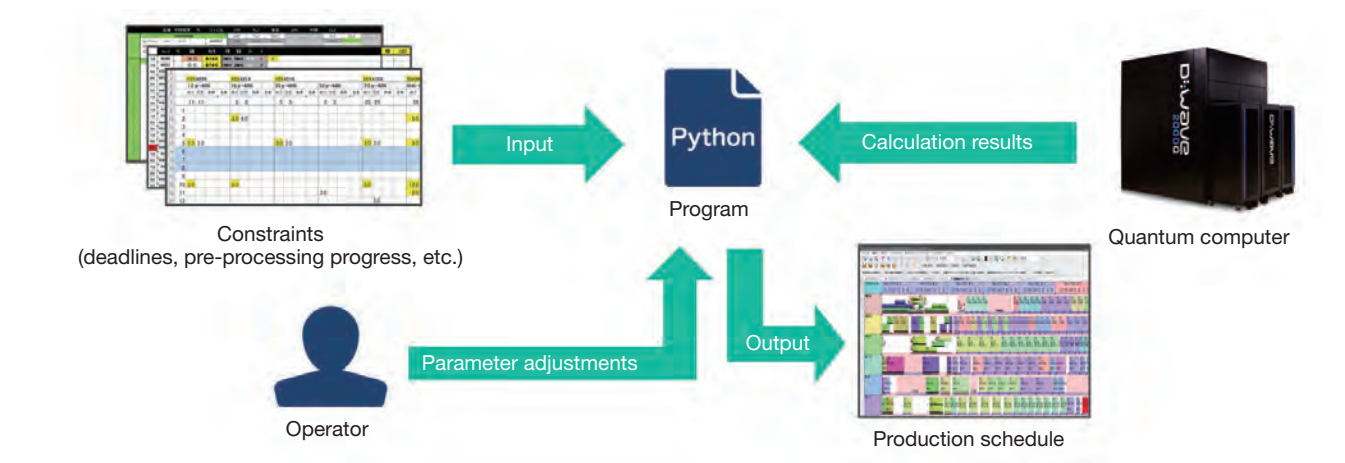


Foundation Supporting DX

Exploring Cutting-Edge Technologies

We conduct proof-of-concept tests to verify the newest technologies and consider applicability to our operations. Test content includes the application of optimization calculation technology to planning tasks using quantum annealing technology and AI-camera-based human detection technology.

Quantum Annealing Used in Production Planning



We adapt optimization techniques to highly challenging planning tasks that combine various constraints, etc. In this way, we avoid dependence on the accumulated skills of veteran staff and improve work efficiency.



Proof-of-concept tests of automated human detection on forklift trucks equipped with AI cameras



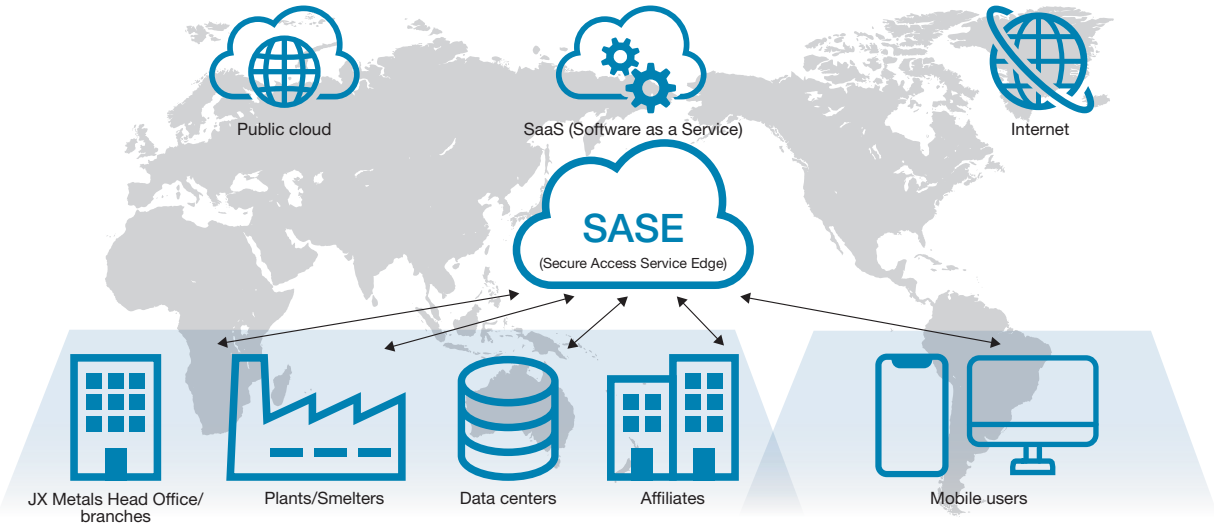
AI cameras are positioned in all directions to detect humans, strengthening and making safety measures more reliable

Strengthening DX Infrastructure (Zero Trust Network)

In response to changes in work styles amid the COVID-19 pandemic and requests from business partners to strengthen security measures, the Group has been upgrading our own network based on the concept of zero trust. This is the most advanced cloud-based security service available today, enabling

security management at the terminal and user level that cannot be achieved with conventional perimeter security networks, thereby raising the security level of the entire Group in a uniform manner. This system is already in operation at JX Metals Head Office and operating sites, and will be rolled out to Group companies in Japan and overseas in stages.

Next-Generation IT Infrastructure Using a Zero Trust Model



Developing 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. We are also working to improve the level of our DX education by strengthening cooperation with educational institutions, such as 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.

Investment in North American Venture Capital Fund, Accelerating Collaborations With Startups

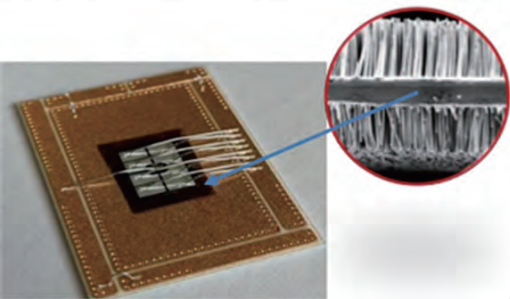
JX Metals Corporation invested as a limited partner in Pangaea Ventures Impact Fund, LP, a venture capital fund managed by Pangaea Ventures. Pangaea Ventures is based in Canada and the U.S. The purpose of the fund is to contribute solutions to social issues such as decarbonization, climate change, and water resources by reducing CO<sub>2</sub> emissions by 550 million tons by 2030. The fund will accomplish this objective by investing in startup companies with innovative technologies. The fund has an extensive network of startups in advanced materials and hard tech in North America.

Through this investment, we intend to accelerate open innovation and new business development in North America, tying investments to collaborations with North American startup companies that boast superior technologies.

Investment in German Company, Collaboration in Metal Nanowires

JX Metals made the decision to invest in NanoWired, a German startup. Germany is home to a flourishing environment in cutting-edge research in IoT, AI, and more. NanoWired develops technologies and manufacturing equipment for growing nanowires of less than 1μm diameter on various substrates. Growing nanowires on substrates enables bonding at room temperature or lower and at higher density in a shorter time, making it possible to achieve high electrical and thermal conductivity and bonding strength.

Through this investment JX Metals intends to strengthen this relationship with NanoWired and undertake various forms of collaboration. Examples include providing materials required for nanowire growing processes, such as copper foil and plating materials; joint development focused on future social trends, including those in the semiconductor mounting field, where growth is expected to accelerate; and application of nanowire technologies to the JX Metals products.



Nanowires grown on metal surfaces

Speaking at the German-Japanese Innovation Initiative 160 Pre-Event

On December 5, 2022, we presented the collaboration between JX Metals and NanoWired as a best practice case study at the German-Japanese Innovation Initiative 160 pre-event held in Berlin, Germany.

The Japan External Trade Organization (JETRO) and the Germany Trade and Invest (GTAI), in cooperation with the Japanese and German governments and industry support organizations, launched the German-Japanese Innovation Initiative 160 in December 2021. The first event marked the 160th anniversary of the signing of the Treaty of Amity and Commerce between Germany and Japan and aims to achieve the SDGs by solving climate change and other global issues. In the year or so since its inception, the event selected five cases as best practices, including the JX Metals collaboration with NanoWired.

In addition to in-person participation, the event was broadcast live online, closing on a high note with more than 100 participants from around the world.



Frankfurt Office General Manager Tsuchiya speaking from the podium



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 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



At the press conference for the start of Phase 3  
From left to right: Executive Officer Suwabe, Senior Executive Officer Tani, Project Professor Kurokawa, Project Professor Tokoro, Deputy Chief Executive Officer Sugawara, Director General and Project Professor Okabe, Project Professor Sugano, Project Lecturer Ouchi

Received the 2022 Shokumon Award from the University of Tokyo

In recognition of activities at the JX Metals Endowed Unit, we received the 2022 Shokumon Award\* from the University of Tokyo. The University of Tokyo’s Shokumon Award was established in 2002 to recognize individuals, corporations, and other organizations that have made major contributions to the growth of The University of Tokyo, either through volunteer work or endowed courses and research centers. The award was given in recognition of our outstanding contributions to creating a center for research, exchange, and education that has attracted outstanding human resources and advanced information from all over the world for many years.

\* Shokumon is the name of the castle gate in the capital of the ancient Chinese state Qi (now Shandong Province) during the nation's civil war era (403-221 B.C.). The name of the award is derived from a legend that the king of Qi treated scholars well, which led to the gathering of the wisest minds in the capital of Qi and the flourishing of academic activities.



Presentation of the Shokumon Award plaque (Prof. Fujii Teruo, President of The University of Tokyo (left) and Chairman Murayama Seichi, JX Metals (right))

JX Metals Endowed Unit

Members (FY2022)

\* Positions and other information as of FY2022

Project Professor

Okabe Toru H.

Director General, Institute of Industrial Science, The University of Tokyo  
Professor, Research Center for Sustainable Material Energy Integration

Project Professor

Tokoro Chiharu

Professor, Faculty of Science and Engineering, Waseda University  
Professor, Graduate School of Engineering, The University of Tokyo  
Project Professor, Institute of Industrial Science, The University of Tokyo

Project Professor

Kurokawa Harumasa

Project Professor, Institute of Industrial Science, The University of Tokyo

Project Professor

Sugano Tomoko

Professor, Institute of Industrial Science and Deputy Director General, Division of University Corporate Relations, The University of Tokyo  
Director, Public Relations Strategic Planning Office, Division for Strategic Public Relations, The University of Tokyo  
Patent Attorney

Project Lecturer

Ouchi Takanari

Lecturer, Institute of Industrial Science, The University of Tokyo  
Lecturer, Research Center for Sustainable Material Energy Integration  
(Yamanaka Shunji, distinguished professor at the University of Tokyo, joined as a project professor in April 2023)

Main Activities in FY2022

▶ November 18, 2022  
Science Council of Japan Open Symposium (cosponsored by JX Metals Endowed Unit)  
Why the SDGs? SDGs and Carbon Neutrality in Resource and Material Circulation

▶ January 6, 2023  
10th Precious Metals Symposium Frontier of Extraction and Recycling Technology for Precious Metals



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 generating topics and ideas. These efforts are handled by the Advanced Technology & Strategy Department, a department dedicated to the planning and formulation of Group-wide technology strategies.

Introduction of the Stage-Gate Process

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 Advanced Technology & Strategy Department's initiatives, is a platform to encourage employees to generate and cultivate ideas. It provides support for the conception of ideas, support for internal reviews, and

discussions among members. It also offers a forum for employees from different departments and sites can interact with each other, providing them stimulus to give shape to their own ideas. One of these ideas generated at the ISB has even been approved as a development theme for one of our divisions in August 2021.

Internal Training Held by the Advanced Technology & Strategy Department

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

VOICE

Comments From an ISB Member

Even when joining the ISB, I was never confident that I could offer new ideas easily. Or even if I did offer a new idea, I never believed it would become a reality. But before anything else, IBS provided an opportunity for new relationships. It started with a pleasant chat at a lunch meeting. After attending a seminar on ideation, members worked together to come up with ideas for solving business issues in their own departments. I look forward to engaging in exciting work together with my new friends.



JX Metals Corporation  
NPM Promotion Department  
Shibuya Norimitsu



Basic Policy on Intellectual Property Strategy

Intellectual property is an important asset for the technology-based company that the JX Metals Group aims to be. In fiscal

2022, we formulated the JX Metals Group Basic Policy on Intellectual Property. Under this policy, we engage in intellectual property activities throughout the Group.

JX Metals Group Basic Policy on Intellectual Property

We, the JX 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 knowhow.
- 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.

Using Intellectual Property Information

The JX 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, by combining internal and external patent information with business and market information, we conduct research and analysis (IP landscape) to anticipate changes in customer needs and technology trends, propose business strategies, contribute to the creation of development themes, and search for partners.

We also encourage the use of intellectual property information by others besides personnel in charge of intellectual property directly. In fiscal 2022, we held internal workshops with external lecturers, using hypothetical examples to create a mock IP landscape with IP and marketing personnel.

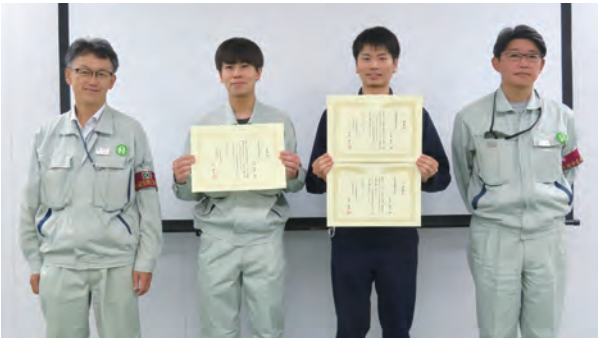


A workshop in progress

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 2022, five inventions were eligible for awards, including the development of new copper foil, increased copper foil productivity, and new sputtering target. In addition, we also recognize inventions that are kept secret as expertise, as well as patents.

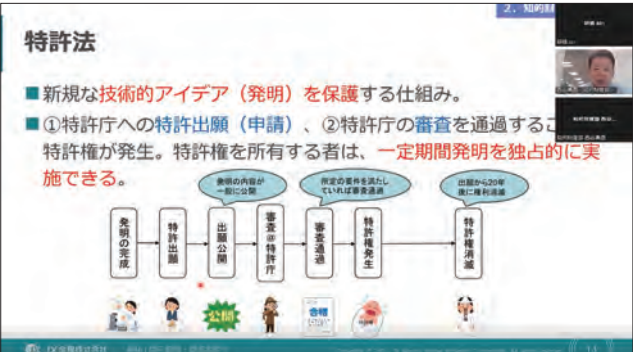


Fiscal 2022 award ceremony

Developing Intellectual Property Human Resources

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.

In addition, in order to address intellectual property work that is becoming more sophisticated every year, the Intellectual Property Department encourages the acquisition of patent attorney qualifications and intellectual property analyst certifications from the Association of Intellectual Property Education, etc. The department conducts study groups internally to improve practical skills and enhance expertise further.



Intellectual property training (online)

Leveraging Intellectual Property to Contribute to the SDGs

Since fiscal 2021, we have been participating in the SDGs Project, an activity of the Japan Intellectual Property Association (JIPA).

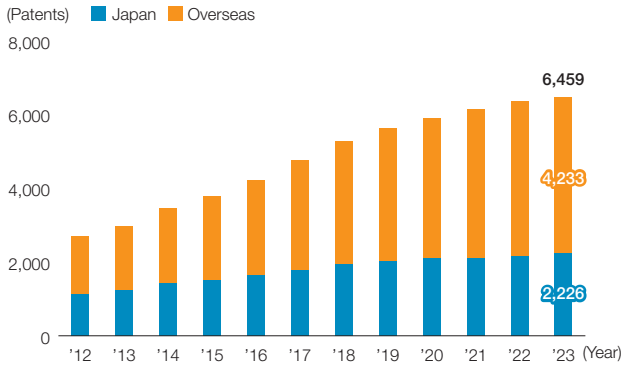
In fiscal 2022, we conducted studies and activities to contribute to the SDGs through intellectual property, working together with other participating companies. We continue to leverage our intellectual property to contribute to the SDGs through this project and other activities.



Status of Held Patent Rights

Our Group is actively promoting research and development to become 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.

Number of Patents Held



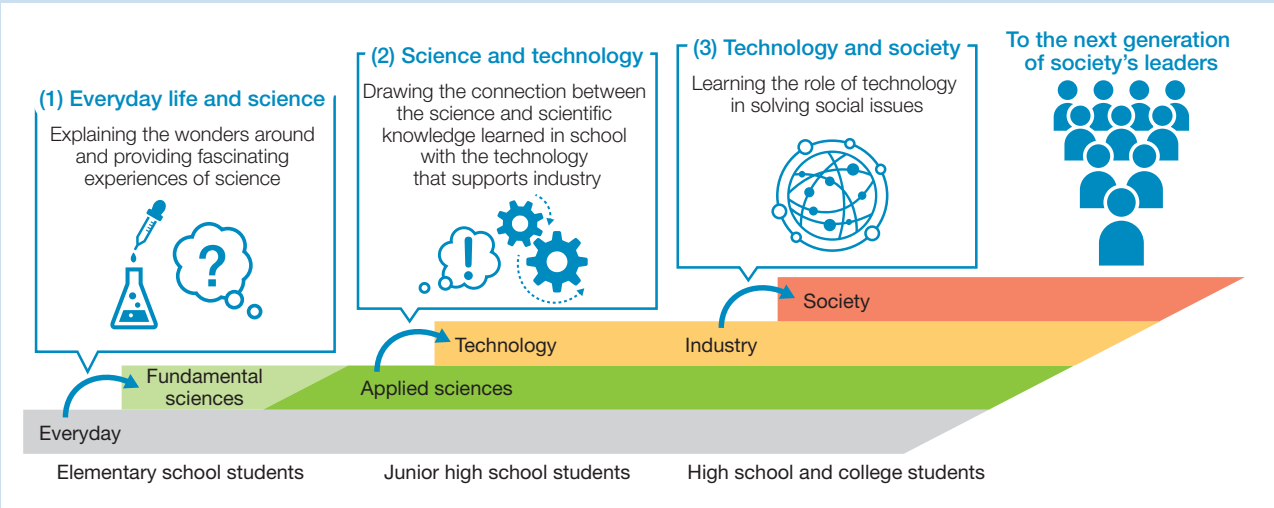


Column

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 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



(1) Science and everyday life

Copper Study Event in Collaboration With the Shiba Regional City Office in Minato City

On July 30, 2023, we sponsored the Shiba Nature University, an event for elementary school students organized by the Shiba Regional City Office. As part of the event, we hosted a copper study event. This year's event marked the fifth such school. We invited 19 pairs of elementary school students and their parents (40 participants) to our head office to learn about the properties of copper through fun quizzes, videos, and experiments. In the post-event questionnaire, participants commented that they became more familiar with copper.



JX Metals employees teach about copper recycling

(2) Science and technology

Copper Laboratory

On September 3, 2022, the International Copper Association, Japan Copper Development Association, and Leave a Nest Co., Ltd. co-sponsored a lab event called *The Surprising Power of Everyday Copper: Super Antibacterial Properties!* The event was held at the Square Lab space in our head office. A total of 13 junior and senior high school students participated in experiments on the super antibacterial properties of copper and copper alloys, which inhibit the growth of bacteria. Participants also experimented on the antiviral performance of copper and copper alloys, which inactivate viruses (rendering them less infectious). At the workshop held after the experiments, students proposed unique ideas for use in everyday life. Ideas included applying copper-containing film to mold-prone areas in bathrooms and on mirrors and coating keyboards with copper.

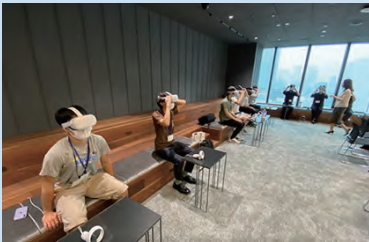


Workshop on the use of copper

(3) Technology and society

Major Lecture at the Department of Materials Engineering, Graduate School of Engineering, The University of Tokyo  
Head Office Tour for University Students

On July 15, 2022, we invited 32 students and eight faculty members of the Department of Materials Engineering to visit our head office. Through a simulated experience of the Saganoseki Smelter & Refinery's operations using virtual reality (VR), participants learned about the processes by which copper and other nonferrous metal materials are provided to society and contribute to social development. We also held a workshop titled *A Future With Next-Generation Communications and Sensors*. The workshop addressed next-generation technology and product development and included lively discussions. The experience was valuable for us as well, as we gained fresh insights from the students.



Participants experienced a refinery tour via VR

Initiatives to Popularize STEAM\* Education

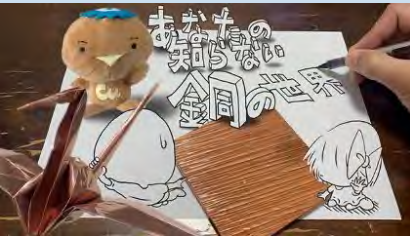
A Collaboration of Nonferrous Metals and Comedy

JX Metals has been a regular member of the Platform for Learning Innovation-Japan (PLIJ) since its establishment. PLIJ is an organization established by the Cabinet Office and the University of Tokyo to enrich and promote STEAM education content. Together with Yoshimoto Kogyo, another PLIJ member, we created content and videos in a cross-industry collaboration of nonferrous metals and comedy as part of our work to develop human resources who will lead the future.

\* STEAM education: An educational concept that combines the initial letters of five words: Science Technology, Engineering, Arts, and Mathematics.

1 Learn With *Paraderu Manga!* The Unknown World of Copper

As the first part of the collaboration project, we published a *paraderu manga* together with artist Honda Osamu, *The Unknown World of Copper*. The term *paraderu* is a combination of words meaning *flip book* and *pop-up*, and *paraderu* videos have become very popular. This particular work depicts clearly how copper is manufactured and utilized, from recycling to resource circulation, in a comical manner.



2 Educational Variety Shows by Comedians

Another part of the project consists of quizzes and on-location refinery videos presented by popular comedians, including *Chocolate Planet*, *Kaeru Tei*, and *Rice*. The program content educates viewers in an enjoyable way, communicating a wide range of copper-related knowledge, from copper's properties and smelting methods to the appeal of copper materials that support today's digital society and the importance of resource recycling.



Artist: Tong Haolin  
Title: Armadillo  
A whole-body skeleton of a Brazilian three-banded armadillo used as a motif to express a rounded charm and gallantry characteristic of a skeleton

The JX Metals Prize at the Tokyo University of the Arts

We established the JX Metals Prize to recognize outstanding students who represent the next generation of metal casting artists. 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.

We held the ceremony for the JX Metals Prize 2022 on October 25, 2022. This year's winner was Tong Haolin, a second-year student in the MFA program at the university's Graduate School of Fine 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.

Materiality 3    Create Attractive Workplaces


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

Ensure Safety and Promote Health



► P78

Develop Human Resources



► P80

Promote Diversity



► P81

KPIs and Progress

Assessment:😊 Achieved/Steady Progress    😞 Not Achieved

KPI	Fiscal 2022 Results/Progress	Assessment
Reduce serious occupational accidents: Less than 0.70 accidents (four days or more of lost work time) per 1,000 employees in FY2022	In fiscal 2022, the annual rate was 0.74 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.	😞
Increase annual leave utilization rate: 80% or more in FY2022	Despite only reaching 77.1%, the annual leave utilization rate improved versus 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.	😞
Implement initiatives to revitalize people and organizations	We are also taking action to build an environment in which diverse human resources can play an active role. To do so, we enhanced a variety of measures for Activity-Based Working (ABW) and vitalizing communications, secured and utilized both highly specialized and senior citizen employees, and introduced a new personnel system.	😊
Initiatives for health promotion: Cancer screenings for 70% of employees or more in FY2022	Each operating site formulated measures to increase the screening rate and held seminars on cancer prevention by medical specialists. These and other efforts tailored to their respective environments resulted in a 78.1% screening rate, a significant improvement from the previous year (63.1%). For fiscal 2023, we are promoting activities aimed at further increasing the screening rate by carrying out e-learning for all employees, distributing leaflets recommending cancer screening, and holding cancer prevention seminars.	😊
Maintain and improve hiring rate for disabled persons: 2.3% or more in FY2022	In fiscal 2022, employees with disabilities comprised 2.10% of our total number of employees. We will continue to maintain and improve the hiring rate for disabled persons through bolstering the newly-established Cheerful Support Office in fiscal 2021. Furthermore, we will actively provide support and roll out measures for enabling disabled persons to lead fulfilling social lives.	😞

Ensure Safety and Promote Health

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

JX 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 Metals Group and create attractive workplaces by providing safe, secure, and healthy working environments.

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

Organization for Occupational Health and Safety Management

The Group maintains health and safety committees and other bodies at operating sites and Group companies in keeping with the Industrial Safety and Health Act. We have also established a system to have discussions with workers, including those from subcontractors stationed permanently, within the framework of our management system. At our head office, the Central Health and Safety Committee meets once a year, attended by representatives (key safety managers and labor union branch committee chairs) from the divisions and operating sites. The Central Health and Safety Standing Committee meets five times a year, attended by standing committee members of the former (safety managers at each division and the three officers from the Central Labor Union). 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 2022, we generally held hybrid in-person/online meetings in light of the impact of the spread of COVID-19. Joint labor/management health and safety visitations were held in person at operating sites with infection control measures in place.

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. Audits were conducted at 19 sites, including four sites for which on-site audits were postponed in fiscal 2022 due to the spread of COVID-19. No major issues were identified.

Acquiring ISO 45001 Certification

We had acquired OHSAS 18001 certification at 11 operating sites in Japan and at two operating sites overseas. However, we are currently preparing with the introduction of ISO 45001 (JISQ 45100) following the abolition of OHSAS in March 2021. Compared to ISO 45001 (JISQ 45001), ISO 45001 (JISQ 45100) enables the promotion of Group-wide occupational health and safety activities that involve more on-site workers. We are revising and creating new management documents including OHS manuals, and are systematically converting and acquiring new certifications, aiming to further improve health and safety levels.

We completed conversion at these sites in fiscal 2021, and have been introducing this occupational health and safety management system at more sites since fiscal 2022. In doing so, we aim to obtain new certification at sites yet to be certified.

Management Policy on Health and Safety for 2022

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

[Key Measures]

- Promoting inherent safety (strengthening activities to prevent serious accidents from occurring)
- Expanding health and safety education
- Strengthening systems for safer construction execution

[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. Statutory regular health checkups: 100%
4. Cancer screening rate: 70% or more
5. Influenza vaccination rate: 100%
6. Traffic accidents (as perpetrator or victim): Reduction by 10% or more from the average in the previous three years

- 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 midsize education facilities at our core operating sites to improve the sensitivity to hazards and safety awareness of not only our Group employees but also those of our Subcontractors. The Safety Education Center and the midsize education facilities work in unison to eradicate occupational accidents among workers.



VR experiential education

Raising Safety Awareness Through Various Tools

The Group strives to ensure the safety and health of all persons connected to our business, and to elevate safety-first awareness and sensitivity to hazards. We strive to raise safety awareness and prevent recurrence of accidents by producing safety educational materials such as disaster reproduction videos, based on actual accidents and disasters, and safety awareness posters, based on actual accidents that have occurred within and outside the Group.



Actual safety awareness posters in use

Activities in 2022 to Ensure Safety

● Risk assessments

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

In fiscal 2022, we aimed to further strengthen these risk assessment activities by focusing on significant residual risks at

each operating site and reinforcing management aspects to prevent serious occupational accidents. Improving the level of our risk assessments is an issue that we will continue to work on in the future. Our measures going forward include visualizing the progress of residual risk management and other risk mitigation, further promoting intrinsic safety measures that incorporate the concept of machine safety, and training risk assessment promoters and instructors at each operating site.

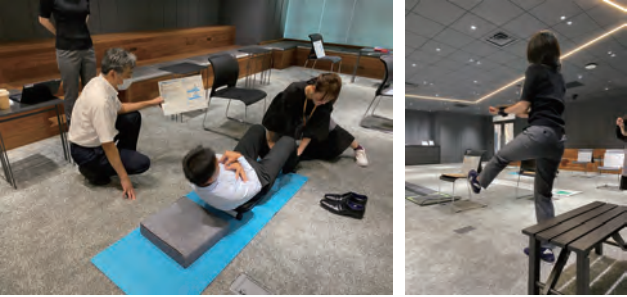
● Project to establish a health management system

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. We spread information to employees and conducted e-learnings, aiming to improve cancer screening rates. Through these efforts, we intend to encourage employees to undergo screenings for early detection as a way to learn about and strive to prevent cancer. As a result, the Group-wide average screening rate in fiscal 2022 was 78.1%, up 15% from the previous fiscal year. In addition, we conducted physical fitness tests to help employees understand their current physical strength, flexibility, and sense of balance. In doing so, we aim to motivate all employees to main-

tain and improve their physical fitness.

Regarding mental health, we work to build an environment in which employees feel comfortable consulting with industrial physicians. We do this by providing regular opportunities for employees to meet with these physicians and providing education to responsible parties at each operating site.

We introduced a health management support system as the foundation to support these activities. This system enables centralized management of various health checkup results and working hour records. In addition, we are assigning public health nurses to all operating sites.



Physical fitness tests

Develop Human Resources

In order to achieve becoming a technology-based company set forth in the 2040 Long-Term Vision, the JX Metals Group is working to secure and develop human resources capable of creating added value.

Reference Special Feature 3 Human Capital Management ⇒ P37-42

Creating a Work Environment That Supports the Autonomous Growth of Human Resources

Creating a workplace environment that encourages the independent and autonomous growth of each employee is essential to manage human capital. We actively work to create an environment that enables a diverse range of people to work with a sense of motivation.

Various mechanisms are in place at our head office, which was relocated to Toranomon 2-chome, Minato-ku, Tokyo in June 2020. These mechanisms support the autonomous growth of employees through efforts such as the introduction of ABW\* and the use of ICT tools, based on the following three concepts: 1) Increase productivity, 2) Greater interaction with technology, and 3) More interpersonal connection. Our innovative office space aims to enhance our flexible development. Through this space, we aim to create an organization that enables employees to actively interact with each other, shares information across the organization, and creates new proposals and challenges.

\*Activity-Based Working (ABW): A way of working that eliminates fixed seating and allows workers to choose where they work based on the nature of their work



Layout configuration that encourages meetings and work in open, non-confined, spaces



Establishment of a showroom with hands-on exhibits that enable an intuitive understanding of technical characteristics, etc.

Promote Diversity

In compliance with relevant laws and regulations in Japan and overseas, the JX 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.

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 es-

sential products to society. Even after the COVID-19 pandemic subsidies, we will 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.

Employing and retaining people with disabilities

Reference → [Employing and Retaining People With Disabilities ⇒ P42](#)

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.

VOICE

Testimonial From an Employee Taking Childcare Leave

I work in the Intellectual Property Department where several people had already used the childcare leave system. This precedence encouraged me to use the system. I was also encouraged by listening to the experiences of those who actually took the leave, which gave me insight on what it would be like to return to work. My supervisors and coworkers were very accepting, for which I am very grateful.

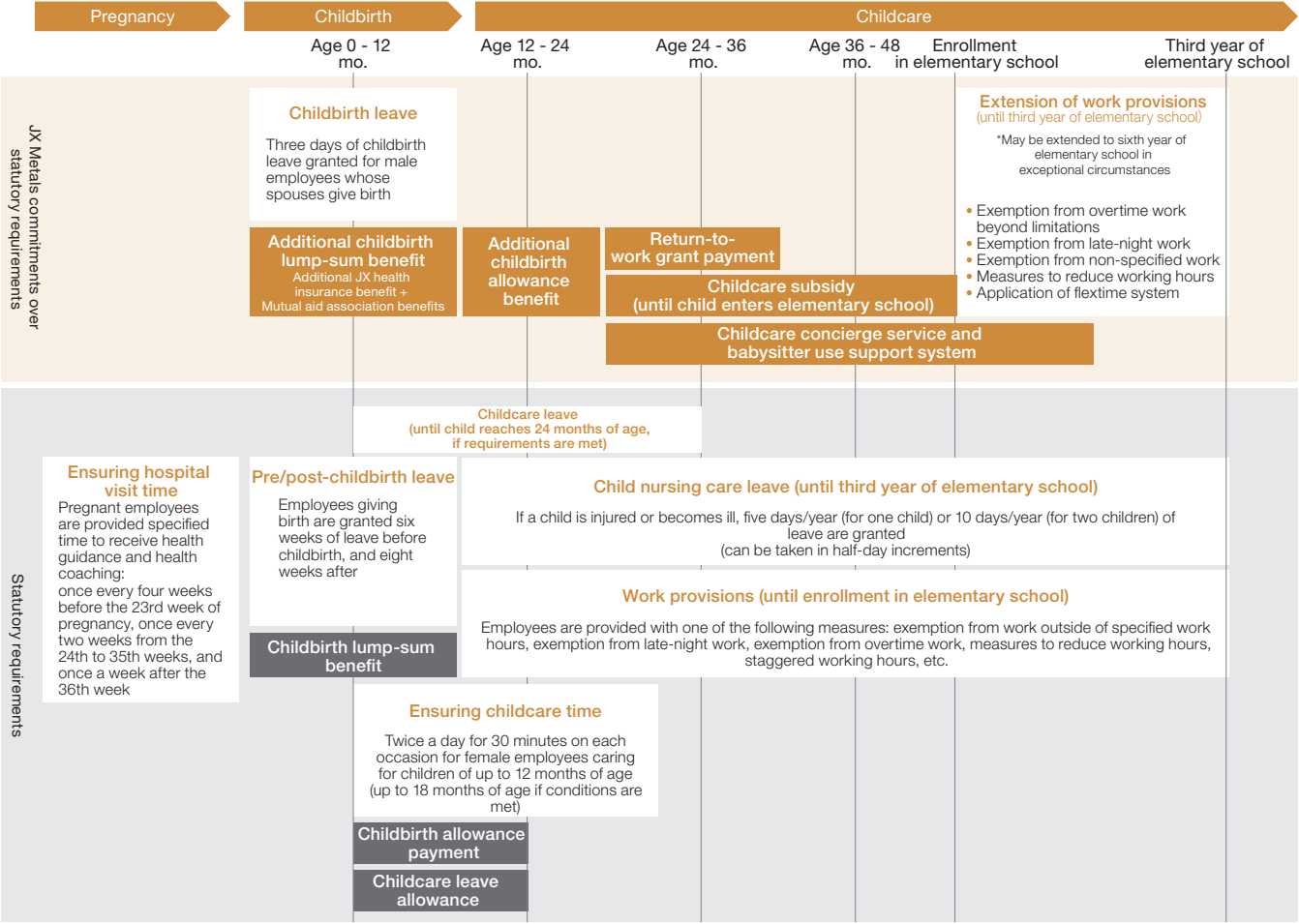
When I handed over my work, my supervisor assigned me a successor for each work item based on an organized list of tasks and labor-hours. This allowed me to completely focus on childcare during those three months, without worrying about work. I would like to put forth my best effort and help others at work take childcare leave when the time comes.



JX Metals Corporation  
Intellectual Property Department  
Watanabe Sho

Systems for childbirth and childcare

The Group provides legal standard systems related to childbirth and childcare, and offer our own unique systems as well.



Systems for family care

The following programs are available if an eligible family member requires constant care.

	Statutory Requirements	Statutory Requirements
Time Off	<ul style="list-style-type: none"><li>For one family member requiring care: 5 days/year (can be taken in half-day increments)</li><li>For two or more family members requiring care: 10 days/year (can be taken in half-day increments)</li></ul>	
Leave	<ul style="list-style-type: none"><li>Maximum of 93 days may be taken in up to three periods</li></ul>	<ul style="list-style-type: none"><li>A total of up to 730 days may be taken over the course of four leave periods</li><li>Family care subsidy and leave allowance (financial support)</li></ul>
Work Provisions	<ul style="list-style-type: none"><li>Exemption from overtime work beyond limitations (exemption from overtime work in excess of 24 hours/month and 150 hours/year)</li><li>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)</li><li>At least two times in three years (measures to reduce working hours)</li><li>Application of flextime</li><li>Exemption from non-specified work</li></ul>	<ul style="list-style-type: none"><li>Reduction of working hours to a minimum of two hours per day, multiple times in three years</li></ul>



Materiality 4

Respect Human Rights

The JX 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.



KPIs and Progress

Assessment:😊 Achieved/Steady Progress 😞 Not Achieved

KPI	FY2022 Results/Progress	Assessment
Percentage of employees taking human rights training (100% in FY2022)	In addition to stipulating respect for human rights in the Group Code of Conduct and other internal rules, we continue to carry out human rights training and e-learning programs at Group companies to raise awareness of human rights and prevent human rights violations. In fiscal 2022, 100% of our officers and employees participated in these ongoing human rights training programs.	😊
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 2022, our external audits covered not only gold, silver, tantalum, platinum, and palladium but also copper. These audits determined that we were taking appropriate action. We also had our suppliers complete a CSR Questionnaire.	😊

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 JX Metals Group Human Rights Policy

We adopted JX Metals Group Human Rights Policy on August 1, 2023. This Group policy is based on the United Nations Guid-

ing 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 Metals Group Human Rights Policy

JX Metals Group understands that human rights of individuals must be respected in all countries and regions in which it conducts business activities, and as the guidelines for fulfilling its responsibility and obligation for ensuring the above, hereby stipulates this “JX 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. JX Metals Group positions this Policy as the primary policy on human rights in conducting its business activities and continues to promote its efforts in upholding human rights.

1. Commitment to Respecting Human Rights

While understanding that its business activities may have a direct or indirect impact on an individual's human rights, JX Metals Group fulfills its 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 its business activities.

JX 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”, which stipulates the fundamental rights of workers such as their 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

JX Metals Group complies with laws and regulations applicable in each country and region in which it conducts business activities, and in the event of a conflict between internationally-recognized human rights codes and the laws of each respective country and region, JX 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, JX 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 it 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 JX Metals Group discovers that it has caused or contributed to any negative impact on human rights, it will endeavor to correct such a situation as seen fit. All parties involved, including, but not limited to, employees, employees in its supply chain, local residents, and other stakeholders, will be referred to an ever-improving complaint hotline where they can file formal complaints.
4. Education

JX Metals Group will provide appropriate education to its officers and employees to ensure that this Policy is incorporated into the business activities of all JX Metals Group companies.
5. Information Disclosure

JX Metals Group will disclose the progress and results of its efforts in respecting human rights under this Policy on its website, in a report or other forms.
6. Dialogue / Consultation

JX 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 it (JX Metals Group) can understand and address the issue from the view of the potentially affected individuals.
7. Scope of Application

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

The Policy has been approved by our Board of Directors and signed by our president and chief executive officer.

August 01, 2023

President and Chief Executive Officer, JX 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 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 Organisation for Economic Co-operation and Development (OECD) related to raw materials procurement from conflict-affected areas, and control supply chains in an appropriate manner.

Policy for Selecting Procurement Partners

In the conduct of our business operations, it is necessary, not only that we in the JX 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 environmental laws and regulations
  - 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. Based on the JX Metals Group Green Purchasing Guideline, build environmental management systems and properly manage specified chemical substances.
4. Offer stable supply capacity and satisfy the quality, price, delivery, and service requirements of the JX Metals Group.
5. Possess technological capabilities that meet the requirements of the JX 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.

In fiscal 2022, we had 183 suppliers complete a CSR Procurement Questionnaire with questions covering nine subjects, including compliance, supply chain, environment, human rights, and labor. Aggregating the responses confirmed that we had no significant issues to address. 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.

Underwent VAP Audit by RBA\*

Corporate social responsibility and the demands of our corporate customers are increasing every year, and to appropriately respond to these, the Group is actively implementing initiatives in line with international standards. In fiscal 2019, audits under the RBA's Validated Audit Process (VAP) were conducted at the Chigasaki Plant of Toho Titanium Co., Ltd. and at the Mito Plant of Isohara Works in fiscal 2020.

The RBA VAP audit is an assessment of maintenance and compliance with standards and management systems related to labor, safety, health, the environment, and ethics, in accordance with the RBA Code of Conduct. In fiscal 2021, the Chigasaki Plant of Toho Titanium Co., Ltd. received Platinum certification, the highest level in the RBA certification program, with Isohara Works receiving the same level of certification in fiscal 2022. Going forward, we will implement PDCA (Plan-Do-Check-Act) cycles to continuously improve our performance, which in turn will enable us to contribute to the realization of a sustainable society across our entire global supply chain.

\* Responsible Business Alliance (RBA)  
A business alliance created with the goal of realizing responsible behavior in the electronics industry supply chain. This organization establishes standards to ensure safe working environments, dignity and respect in worker treatment, and responsible business activities vis-a-vis the environment.



Isohara Works



Chigasaki Plant, Toho Titanium Co., Ltd.



RBA-issued VAP audit certificates  
(Left) Isohara Works, (Right) Chigasaki Plant of Toho Titanium Co., Ltd.

The Copper Mark\* Awarded to Saganoseki Smelter & Refinery and Hitachi Works

In March 2022, JX Metals Smelting Co., Ltd. began the process of obtaining certification under The Copper Mark for its Saganoseki Smelter & Refinery and Hitachi Works. After an audit conducted by an independent third-party organization, in January 2023, it became the first company in Japan to obtain this certification.

Both plants have been pursuing responsible production for a number of years, and The Copper Mark is an objective recognition of compliance at the plants across 32 criteria that cover a wide range of standards, including those on the environment, human rights, community, and governance. Going forward, both plants will continue to be evaluated on their compliance with the various standards necessary to maintain The Copper Mark.

\*The Copper Mark  
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. The Copper Mark is certification based on an independent, third-party assessment of compliance with environmental, human rights, community, and governance standards. Evaluations are conducted by an independent third-party organization, and after initial certification, evaluations of a certified company's continued compliance are conducted every three years.



The Copper Mark awarded to Saganoseki Smelter & Refinery



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\*<sup>1</sup>, LPPM\*<sup>2</sup>, 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

Initiatives for the Tantalum Supply Chain

TANIOBIS GmbH, a producer of tantalum powder, implements a strict program of purchasing checks based on international standards for procuring raw materials from conflict-affected and high-risk areas. For example, it purchases materials guaranteed by the ITSCI\* to have no involvement in infringements of human rights, and it conducts supply chain due diligence. As a result of these efforts, TANIOBIS has been included in the RMAP Conformant Smelters list in recognition of its appropriate measures taken to exclude conflict minerals.

In addition, as of fiscal 2019, TANIOBIS began use of a supply chain due diligence system similar to the ITSCI, by means of the Better Sourcing Program (BSP) provided by the RCS Global Group, an international auditing organization for the raw materials supply chain.

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

Initiatives for Local Residents

Development and operation of mines can have a particularly significant impact on the surrounding environment. It is therefore essential to pay due consideration to the human rights of local residents. SCM Minera Lumina Copper Chile, the operator of the Caserones Copper Mine, applies a basic three-point policy for supporting local communities: respect for the lifestyles of local residents, protection of the community and environment, and respect for applicable laws. In keeping with this policy, since the launch of this project in 2007, the operator has held briefings and engaged in dialogue with the Collas, indigenous people living in the area around the mine site, endeavoring to build trust. As in earlier years, we found no violations of the rights of local residents in fiscal 2022.



Briefing session for residents

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

Activities	
1	Making suggestions and cooperating in logistics improvements
2	Separating driving from ancillary work
3	Studying modal shifts for CO <sub>2</sub> 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 Metals Group Compliance Regulation (Excerpt)**

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

**Prevention of harassment**  
JX Metals Group companies and their officers and employees shall work proactively to prevent sexual harassment (including gender harassment) and power harassment.

**Protection of personal information**  
JX 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 child labor and forced labor**  
JX 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

In fiscal 2022, we conducted training for all Group employees on human rights on the subject of Business and Human Rights. This subject was chosen to deepen the multilayered understanding of human rights issues in line with the increasing importance of companies addressing such issues, which now extend along the entire supply chain. To make it easier for employees to learn about this important subject, we created videos on why it is necessary for companies to address human rights issues and the various human rights initiatives our Group companies are taking. The videos are designed to provide employees with a basic understanding of two subjects: Business and Human Rights and the human rights of our stakeholders. This in turn raises the awareness of both subjects among all our employees.

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.

Work Categories



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

FY2022  
**1,077**hours

Human Rights Consultation and Remedies

The Group has established the JX 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. Seven reports were made to the hotline in fiscal 2022.

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 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.

Materiality 5

Coexistence and Co-Prosperity With Local Communities

Since the inception of our business at the Hitachi Mine, the JX 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

▶ P90

Stakeholder Engagement

▶ P93

KPIs and Progress

Assessment:😊 Achieved/Steady Progress ☹ Not Achieved

KPI	FY2022 Results/Progress	Assessment
Continuing dialogue with local communities	Despite the impact of COVID-19, we endeavored to understand the needs of local communities, building trust with stakeholders related to corporate activities through ongoing dialogue.	😊

Social Contribution Activities

With the goal of further strengthening relationships with local communities through social contribution activities, the JX Metals Group conducted community-based initiatives at each of our operating sites in Japan and overseas. While the impact of COVID-19 resulted in restrictions or limitations on our activities, we endeavored to create opportunities for communication with local communities, valuing the spirit of coexistence and co-prosperity that we have pursued since our founding.

Results of Main Social Contribution Activities in FY2022

	Activity	Location	Date	Description
Environmental Conservation Activities	Cleanup around plant areas	Isohara Works	May 2022	Ninety-five employees and their families participated in an environmental beautification campaign organized by Kitaibaraki City to pick up trash around the Otsu Port.
	Sagami River Cleanup Campaign	Kurami Works	May 2022	About 90 employees participated in a beautification activity conducted mainly by local governments to preserve the environment in the Sagami River basin.

Environmental Conservation Activities



Employees participating in the Sagami River Cleanup Campaign



	Activity	Location	Date	Description
Educational Activities	Youth X (Future) Essay and Children X Drawing Contest	Saganoseki Smelter & Refinery, JX Metals Smelting Co., Ltd.	July 2022 - March 2023	The Youth X (Future) Essay and Children X Drawing Contest was held at elementary and junior high schools in the Saganoseki and Kouzaki areas.
	Nippon Mining Museum and plant tours	Hitachi Works	February 2023	We held a plant tour for local residents to further deepen understanding of our business among the local residents who support us. Over the two days, a total of 70 people visited the Shirogane district and the Nippon Mining Museum. We also held a regular meeting with the Shirogane-cho Environmental Liaison Council in conjunction with the tours. Here, we exchanged views on the construction status of the new rolling mill, the Miyata River cleanup, and other environmental activities.
	Cooperation with the Minato Science Festa	Head Office	March 2023	We participated in the Minato Science Festa 2023 - <i>Let's go to the science fair together!</i> held at the Minato Science Museum, where we held a laboratory class.
Community Development	Participation in local festivals	Saganoseki Smelter & Refinery, JX Metals Smelting Co., Ltd.	April and July 2022	We dispatched 10 young employees of the smelter to two local festivals in April and July 2022. Here, they participated in the spring festival at the Shiinetsuhiko Shrine, a well-known shrine dedicated to the god of maritime safety in the fishing town of Saganoseki, and the summer festival at the Hayasuhime Shrine.
	Exhibit at Eco Fest Hitachi	Hitachi Works	July 2022	We set up an exhibition at Eco Fest Hitachi 2022, an event organized by Hitachi City to raise environmental awareness among citizens. The theme of our exhibition was Introducing Businesses that Contribute to a Resource Recycling-Oriented Society. Here, we introduced the history of the Hitachi Works and our business.
Sports Promotion	Regional promotion of corporate sports	Hitachi Works	Year-round	Kendo club members from Hitachi Works coach local students from kindergarten to high school (10-15 students) four times a week.

● Educational Activities



Award ceremony for the Youth X (Future) Essay and Children X Drawing Contest



Participants of the Nippon Mining Museum tour



Laboratory class at the Minato Science Festa

● Community Development



Young employees participating in a festival and carrying the portable shrine



Our booth at Eco Fest Hitachi

● Sports Promotion



Kendo class activities

Column

Regional Cooperation in Ibaraki Prefecture

JX 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.

● Signing a Comprehensive Cooperation Agreement With Hitachinaka City

In January 2023, JX Metals concluded a comprehensive cooperation agreement with Hitachinaka City for the construction of a new factory in the city. This agreement was made in the hope that we could help city development as a member of the local community.

We will contribute job creation and industrial development through the operation of our new plant. In addition, we also donated 100 million yen through the local tax system for corporations. Through this donation, we will support various activities for the future of the community, such as nurturing the next generation and operating the community center in Aijgaura district, where our new plant is located.



● Signing a Comprehensive Cooperation Agreement With Ibaraki University

Reference Establishing a Structure to Promote Innovation ⇒ P32

● Signing a Top Partner Agreement With Mito HollyHock for the 2023 Season

In April 2022, JX Metals concluded our first Platinum Partner Agreement with the professional soccer club Mito HollyHock. In signing this agreement, we have supported efforts to revitalize local communities, foster the next generation, and solve local issues through sports promotion. This partnership was signed for a period of just over six months. During this time, we strongly desired to work with this team that continues community-based activities under the slogan of *Creating a new original landscape for the city*. Therefore, we signed a Top Partner Agreement with the team in October 2022, the highest category of official partner. JX Metals will continue to support the team and their activities in the 2023 season by placing advertisements on the top team uniforms, holding Thanks Matches, and collaborating with soccer schools and other next-generation development activities.



● Donating 100 Million Yen to Nikko Memorial Hospital

Nikko Memorial Hospital was established as an affiliated clinic of the Hitachi Mine, the root mine of the Company. This hospital has long been involved in the health care and medical treatment of employees, their families, and local residents. In 2018, we began planning the construction of a new hospital building due to the deterioration of old building that had been in use since 1981. Construction began in 2019, and in March 2022, the hospital made a comeback with a new integrated health check center and a long-term care medical center. Nikko Memorial Hospital continues to operate as an essential part of community healthcare that protects the health of citizens to this day.

Due to high community expectations for the hospital, JX Metals donated 100 million yen to the hospital in August 2022 to support its operations as much as possible. We hope that Nikko Memorial Hospital will continue to be an integral part of local healthcare.





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
<b>Customers</b> 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.	<ul style="list-style-type: none"><li>• Communication in sales activities</li><li>• Dissemination of information via website and SNS</li><li>• Exhibit at the 9th Highly-functional Metal Expo</li><li>• Invitation to SQUARE LAB</li></ul>	<ul style="list-style-type: none"><li>• Stable supply of highly-functional products</li><li>• Improvement of economic efficiency and added value of products</li><li>• Improvement of environmental performance of products</li><li>• Appropriate disclosure of product information</li></ul>
<b>Shareholders and investors</b> As a major operating company of the ENEOS Group, we will strive to disclose information in a timely and appropriate manner through ENEOS Holdings, a listed company.	<ul style="list-style-type: none"><li>• Publication of Sustainability Report</li><li>• Disclosure of information on website</li><li>• IR news email distribution</li><li>• General meeting of shareholders, financial results briefing, business office information</li></ul>	<ul style="list-style-type: none"><li>• Stable profit return</li><li>• Easy-to-understand information disclosure on management strategies</li><li>• Full disclosure of ESG information</li></ul>
<b>Employees</b> 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.	<ul style="list-style-type: none"><li>• Publication of the group newsletter Cuprum</li><li>• Preparation and distribution of the <i>ESG Handbook</i> and the <i>Handbook for Supporting Balancing Childcare or Nursing Care</i></li><li>• Implementation of self-assessment system</li><li>• Holding online workshops</li><li>• Dialogue between labor unions and management</li><li>• Various employee training and education programs</li></ul>	<ul style="list-style-type: none"><li>• Prevention of occupational accidents</li><li>• Penetration of Group ESG activities</li><li>• Achieving diverse work styles</li><li>• Enhancement of training system</li><li>• Fair and equitable personnel evaluation</li><li>• Maintaining and promoting mental and physical health</li></ul>
<b>Business partners</b> 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.	<ul style="list-style-type: none"><li>• Communication through purchasing activities (CSR Procurement Questionnaire)</li><li>• Operation of an inquiry desk</li><li>• Conducting surveys with business partners</li><li>• Invitation to SQUARE LAB</li></ul>	<ul style="list-style-type: none"><li>• Equal and fair trade</li><li>• Management of occupational safety</li></ul>
<b>Local communities</b> 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.	<ul style="list-style-type: none"><li>• Creation of cooperation agreements with universities and establishment of joint research courses</li><li>• Conducting factory tours, office tours, and visiting classes</li><li>• Participation in and sponsorship of community events</li><li>• Conducting briefings for local residents</li><li>• Participation in local volunteer activities</li></ul>	<ul style="list-style-type: none"><li>• Strengthening cooperation with local communities for their revitalization</li><li>• Cultivation of a new generation and educational support</li><li>• Reduction of the environmental impact of the region</li></ul>
<b>International community</b> We pay close attention to trends in global warming and other international issues. We engage with issues proactively and comply with laws and regulations.	<ul style="list-style-type: none"><li>• Implementation of business practices that support the SDGs</li><li>• Response to TCFD / Endorsement of Challenge Zero / Participation in GX League</li></ul>	<ul style="list-style-type: none"><li>• Establishment of a resource-recycling society</li><li>• Climate change adaptation and mitigation</li><li>• Progress in the Digital Society</li></ul>



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.



KPIs and Progress Assessment:😊 Achieved/Steady Progress ☹ Not Achieved

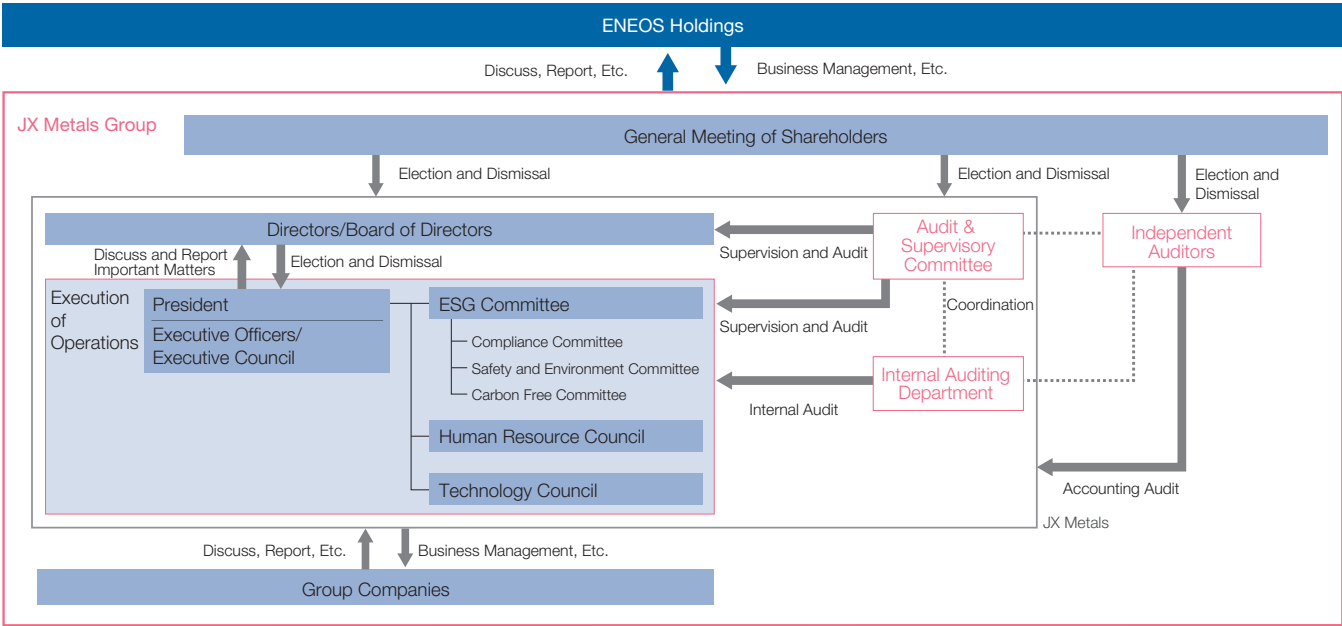
KPI	FY2022 Results/Progress	Assessment
Steady operation of group-wide risk management	The JX Metals Group bases activities on Enterprise Risk Management (ERM), established with reference to ISO 31000, a set of guidelines for risk management. In fiscal 2022, we formulated the <i>JX Metals Group ERM Vision</i> toward ERM that is more conducive to enhancing corporate value. To achieve this vision, we planned and implemented measures to improve our ERM system. We analyzed the gap with our current state and analyzed actions to take based on a maturity model provided by an external organization.	😊
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 2022, in addition to annual the rank-specific compliance training, we once again held training programs in Japan and overseas regarding harassment and the Subcontract Act, tailored to business characteristics, social trends, and other factors.	😊



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. The Company's Board of Directors consists of 12 members: 7 non-Audit & Supervisory Committee members (6 male and 1 female) and 5 Audit & Supervisory Committee members (4 male and 1 female). 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

On June 28, 2023, the Company transitioned to a company with an Audit & Supervisory Committee to strengthen the supervisory function of the Board of Directors and enhance corporate governance further.

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.

● 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 June 2023, 5 of the 12 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.

Executive Officer Compensation System

Company compensation for the executives consists of fixed monthly compensation based on the relevant individual's role and variable performance-based bonus payments. The bonus is determined by the consolidated business results of the Company as well as ENEOS Holdings. The Company does not have an executive officer retirement benefit program. The share-based remuneration system was implemented in July 2017. The share-based payment system applies the Board Incentive Plan (BIP) to Board Members and Executive Officers (excluding directors who are not Audit & Supervisory Committee members and outside directors) to provide ENEOS Holdings shares according to individual role and performance as part of the incentives program. The share-based payment system is designed to strengthen the link between the compensation of eligible individuals and the Company's medium- to long-term strategy, to foster an awareness of the eligible employee's contribution to raising corporate value and engage in shareholder-oriented management, and to pursue efforts toward building a sustainable society, including environmental preservation. In this connection, we adopted the following performance indicators.

- Net income, excluding inventory effects
- Free cash flow
- GHG emission reductions achieved
- Net D/E ratio
- Return on equity (ROE)
- Return on invested capital (ROIC)

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.

Internal Audit

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

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

Rigorous Compliance

JX Metals Group Code of Conduct and the JX 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. At the same time, we have established Compliance Priority Targets for each fiscal year and monitor the real-time status of their implementation. 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 2022, we received seven 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 Metals Group Regulations for Dealing with Anti-social Forces and the JX 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 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 2022, we continued to check the application based on said regulations, confirming that the system was applied properly in general. (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 2022, we continued to check the application based on the aforementioned program, confirming that the program was applied properly in general. (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 two Group sites in fiscal 2022. 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 nine Group sites in fiscal 2022 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 2022, in addition to annual rank-specific compliance training (for directors, managers, new employees, etc.) that is conducted every year, we conducted training sessions on internal controls, security trade controls, harassment, the Subcontract Act, Stamp Tax Act, information security, etc., as theme-specific legal and regulatory education sessions. At overseas bases, we conducted education for expatriates at the headquarters or the bases, taking into account business characteristics and social trends, etc. In the United States, 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 in China by attorney Sun Haiping, Fangda Partners (at JX Nippon Mining & Metals Shanghai Co., Ltd.)

Tax Governance

The JX 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 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.

Reference Basic Policy on Intellectual Property Strategy ⇒ P 73

ment system, advancing our approach to ERM by identifying issues and making improvements under the aforementioned maturity model.

\* RIMS: Headquartered in New York, RIMS is the world's largest risk management organization, consisting of more than 9,000 risk management professionals worldwide.

1. Management Risks
- Risk of obstructing achievement of the management goals of the JX 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 Metals Group. The Executive Council approves and monitors risk response.

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 participate in risk management initiatives.
- Recognize risks linked to business goals and promote them as an organization-wide activity.
- Respond flexibly to risks, taking into account the organization's purpose, mission, and goals, as well as internal and external conditions.
- Continuous improvement based on information from stakeholders and evaluation of the effectiveness of risk management efforts.

Risk Management Promotion System

The JX Metals Group determines material risks, approves response plans for each material risk, and monitors these plans, all under the approval of the JX 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.

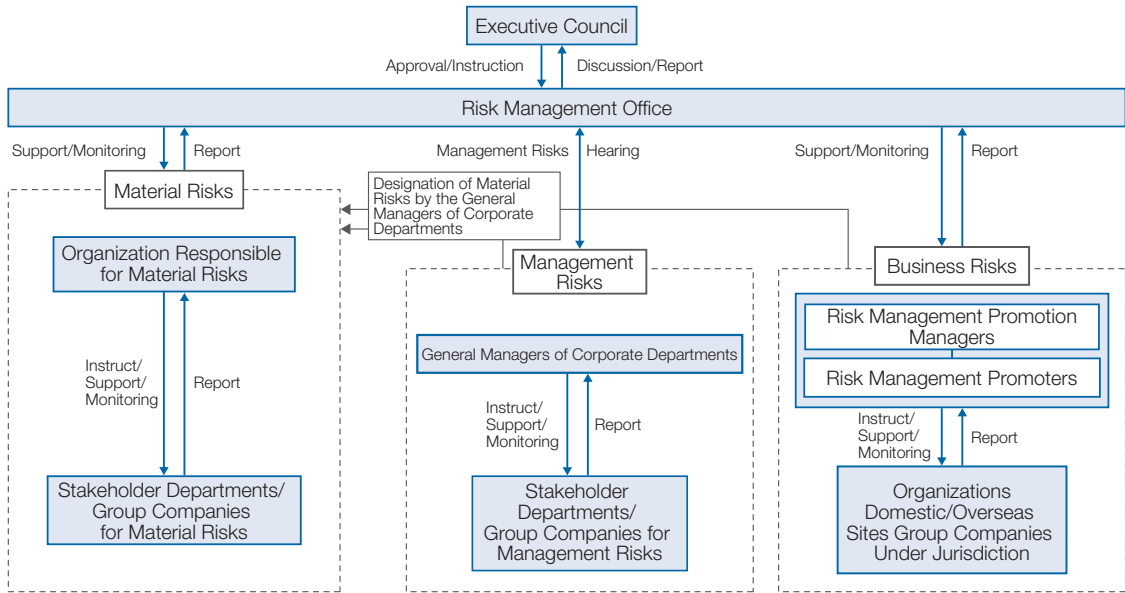
Status of Risk Management Initiatives

Risk is defined as “any and all uncertainty that could have an impact on the management of JX 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 man-

agement, and that should be addressed on a company-wide basis, are designated as material risks by the Executive Council. These material risks include risks related to business continuity and sustainability, such as climate change and risks related to human rights, geopolitics, etc. The organization responsible for material risks takes the lead in responding to these risks. In addition, the Executive Council monitors the status of these actions.

In fiscal 2022, we formulated the JX Metals Group ERM Vision to further advance company-wide enterprise risk management initiatives. To achieve this vision, we joined the Risk Management Society® (RIMS\*), and we implemented various measures using the maturity model published by RIMS. We also collect information on the latest trends in ERM, build networks within the organization and member companies, and reflect the knowledge gained in our various measures. We continue to evaluate the adequacy and appropriateness of our risk manage-

Risk Management Structure



Strengthen Risk Transfer Strategies

Our approach to risk is to select and implement an appropriate response (avoidance, mitigation, transfer, or retention) to the relevant risk based on the results of 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. To enhance the effectiveness of insurance, we worked together with related departments in fiscal 2022 to calculate the probable maximum loss for fires and other specific risks, designing an insurance plan based on these figures. We intend to expand the scope of this initiative in the future.

Promotion of Risk Personnel Education

The JX Metals Group conducts risk management training by rank to foster Group-wide understanding of risk management and improve risk sensitivity. In fiscal 2022, we created an opportunity for management to discuss risk management and the integration of management and business strategy through lectures and group work facilitated by outside experts. Prior to selecting management risks, we also held training for general managers of corporate and business divisions related to risk scenario development based on global risk trends. In this way, we identified comprehensive risks that could affect management from a more medium- to long-term perspective.

To further raise risk management awareness among all employees, we began publishing a regular internal newsletter dedicated to risk management. The newsletter includes messages from top management and case studies of initiatives in each organization. We created original cartoon content about risk management basics to complement basic knowledge, publishing the materials in a serialized format. We continue to raise awareness of risk management, taking into account feedback from directors and employees.

Business Continuity Plan (BCP) Initiatives

The Group has formulated business continuity plans (BCP\*<sup>1</sup>) 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. In addition, we regularly survey the risk of disasters occurring where our major business sites are located to help us make decisions about preventing damage and investing in facilities. Through these efforts, we aim to strengthen our BCPs. We continue efforts to improve initial response through efficient and reliable means of information sharing in the event of a natural disaster.

At the same time, we will continue to conduct business continuity management (BCM\*<sup>2</sup>) by confirming and improving the effectiveness of BCP through regular drills.

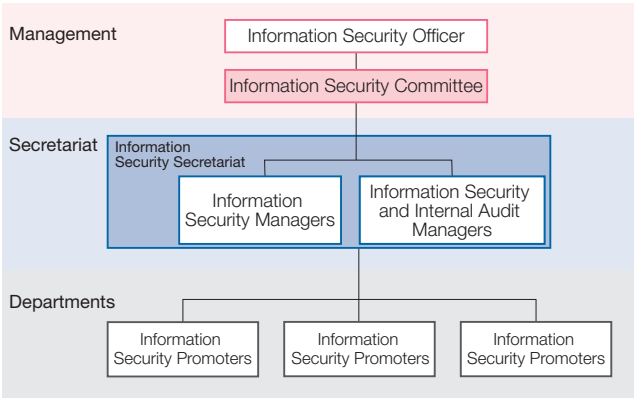
\*1 BCP: Business Continuity Plan  
\*2 BCM: Business Continuity Management

Information Security Initiatives

The Group has taken steps to build an information security management system (ISMS) in compliance with ISO 27001 from the three perspectives of strengthening information security compliance, increasing customer trust, and leveraging information internally and externally. In fiscal 2022, we conducted information security risk assessments, internal audits, rank-based training, and supplier management in each department. These assessments and audits were conducted in accordance with plans approved by the Information Security Officer. To solidify information security measures and awareness within the Group, we established a system for stronger information security by applying the standard 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 Officer, 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 Structure



JX Metals Group Basic Policy on Information Security

As a company with a social mission to provide a stable supply of nonferrous metals and advanced materials, the JX 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 a basic policy for 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. Maintaining and strengthening 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. Contributing 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

In response to changes in work styles amid the COVID-19 pandemic and requests from business partners to strengthen security measures, the Group has been upgrading our network based on the concept of zero trust. This is the most advanced cloud-based security service available today, enabling security management at the terminal and user level that cannot be

achieved with conventional perimeter security networks, thereby raising the security level of the entire Group in a uniform manner. This system is already in operation at JX Metals' Head Office and operating sites, and will be rolled out to Group companies in Japan and overseas in stages.

Reference ➡ Strengthen DX Infrastructure (Zero Trust Network) ⇒ P69

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 Metals Group Basic Quality Policy

The JX 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 Nippon Coil Center Co., Ltd. (Kurami Office, Kawasaki 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.
- JX Metals Precision Technology Co., Ltd. (Esashi Works, Nasu Works, and Kakegawa Works)
- TANIOBIS Japan Co., Ltd. (Head Office, Mito Plant)
- Tokyo Denkai Co., Ltd.
- Toho Titanium Co., Ltd. (Head Office/Chigasaki Plant, Hitachi Plant, Yahata Works, Wakamatsu Works, Kurobe Works)
- Japan Copper Casting Co., Ltd. (Saganoseki Works)
- Furuuchi Chemical Corporation

[Overseas]

- Nippon Mining & Metals (Suzhou) Co., Ltd.
- Nikko Fuji Precision (Wuxi) Co., Ltd.
- JX Nippon Mining & Metals Dongguan Co., Ltd.
- Nikko Metals Taiwan Co., Ltd. (Longtan Works, Kuanyin Works)
- JX 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.
- SCM Minera Lumina Copper Chile

Quality Control Department Activities

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

In fiscal 2022, we conducted internal quality audits on-site at a total of 20 sites (eight overseas and 12 domestic) in accordance with each site's response measures (guidelines) against COVID-19.



On-site audit



Liability Claims

In fiscal 2022, no claims were pursued under the Product Liability Act due to personal or property damage caused by defects in products made by Group companies.

Providing Information on Products and Services

In accordance with the Basic Quality Policy, the Group provides customers with information on our 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 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

# ESG Data Book

## Mass Balance Table for the Group (FY2022)

INPUT		
		
<b>Raw Materials</b> <input checked="" type="checkbox"/>	<b>Energy</b> <input checked="" type="checkbox"/>	<b>Water Resources</b> <input checked="" type="checkbox"/>
<b>Primary raw materials</b>	<b>Fuel</b>	<b>Fresh water</b>
Domestic operating sites 1,597 kt	Domestic operating sites 2,604 TJ	Domestic operating sites 17.4 million cubic meters
Overseas operating sites 15 kt	Overseas operating sites 2,263 TJ	Overseas operating sites 10.2 million cubic meters
<b>Total 1,611 kt</b>	<b>Total 4,867 TJ</b>	<b>Total 27.6 million cubic meters</b>
<b>Recycled raw materials</b>	<b>Electricity and heat*</b>	<b>Seawater</b>
Domestic operating sites 222 kt	Domestic operating sites 4,727 TJ	Domestic operating sites 37.3 million cubic meters
Overseas operating sites 11 kt	Overseas operating sites 3,563 TJ	Overseas operating sites — million cubic meters
<b>Total 233 kt</b>	<b>Total 8,289 TJ</b>	<b>Total 37.3 million cubic meters</b>

### JX Metals Group

OUTPUT	
	
<b>Principal Products</b> <input checked="" type="checkbox"/>	<b>Emissions</b>
Copper concentrate 329 kt	<b>CO<sub>2</sub></b> <input checked="" type="checkbox"/>
Electrolytic copper 427 kt	Total of domestic operating sites
Gold 41 t	Scope 1 386 kt
Silver 334 t	Scope 2 193 kt
Platinum 629 kg	Total of overseas operating sites
Palladium 2,631 kg	Scope 1 152 kt
Other metals (selenium, tellurium) 311 t	Scope 2 66 kt
Electro-deposited and rolled copper foil 8 kt	<b>Total 797 kt</b>
Copper alloy, special steel strips, etc. 26 kt	<b>Final disposal of waste materials</b> <input checked="" type="checkbox"/>
Titanium sponge 22 kt	Domestic operating sites 13.3 kt
Sulfuric acid (by-product) 1,208 kt	Overseas operating sites 46.6 kt
	<b>Total 59.9 kt</b>
	<b>Wastewater</b> <input checked="" type="checkbox"/>
	Domestic operating sites 53.8 million cubic meters
	Overseas operating sites 1.1 million cubic meters
	<b>Total 54.9 million cubic meters</b>
	<b>Chemical substances (release and transfer)</b> <input checked="" type="checkbox"/>
	Total of domestic operating sites 0.39 kt

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

## Environmental Management

Operating Sites That Have Obtained ISO 14001 Certification (as of March 31, 2023)

Domestic Operating Sites: 27	Overseas Operating Sites: 16
Hitachi Works of JX Metals Corporation (including Technology Development Center, Hitachi Works of JX Metals Smelting Co., Ltd., and JX Metals Environmental Services Co., Ltd.) Copper Foil Dept. of JX Metals Corporation (including Hitachi Office of JX Nippon Foundry Co., Ltd. and Ichinoseki Foil Manufacturing Co., Ltd.) Isohara Works of JX Metals Corporation Kurami Works of JX Metals Corporation (including JX Nippon Coil Center Co., Ltd. and the Kurami Office of JX Metals Trading Co., Ltd.) Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd. (including Japan Copper Casting Co., Ltd., and JX Metals Smelting Logitech Co., Ltd.) JX Metals Tomakomai Chemical Co., Ltd. JX Metals Mikkaichi Recycle Co., Ltd. Chigasaki Plant of Toho Titanium Co., Ltd. (including its Kurobe Plant and Wakamatsu Plant and Toho Technical Service Co., Ltd.) Esashi Works, Nasu Works, and Kakegawa Works of JX Metals Precision Technology Co., Ltd. Amagasaki Office of JX Metals Trading Co., Ltd. (including Takatsuki Plant) Shirakawa Plant of JX Metals Takasho Co., Ltd. Tsukuba Factory of Furuuchi Chemical Corporation	JX Nippon Mining & Metals Philippines, Inc. JX Metals USA, Inc. Materials Service Complex Malaysia Sdn. Bhd. JX Metals Korea Co., Ltd. Nikko Fuji Precision (Wuxi) Co., Ltd. Longtan Works of Nikko Metals Taiwan Co., Ltd. Nippon Mining & Metals (Suzhou) Co., Ltd. JX Nippon Mining & Metals Dongguan Co., Ltd. TANIOBIS GmbH (including TANIOBIS Smelting GmbH & Co. KG, TANIOBIS Co., Ltd., and TANIOBIS Japan Co., Ltd.) Valleyfield, Mississauga, Airdrie, and Chilliwack of eCycle Solutions, Inc.

## Raw Materials

### Ratio of Recycled Raw Materials (FY2022)

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

**14.9%** ☒

Ratio of copper from recycled raw materials in electrolytic copper

**24.8%** ☒

### 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 Metals 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

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

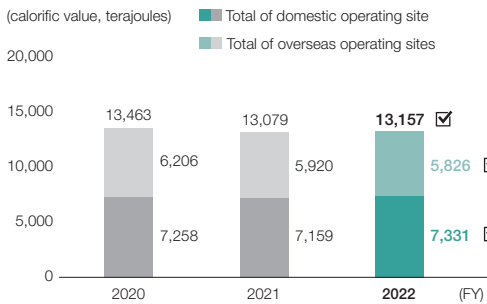
\*2 Cumulative 12-month total of figures calculated monthly with (monthly copper anode charge in the electrorefining process at JX Metals Smelting Co., Ltd.) x (ratio of copper from recycled raw materials in copper anode\*3).

\*3 (Total amount of copper in recycled raw materials processed by JX 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

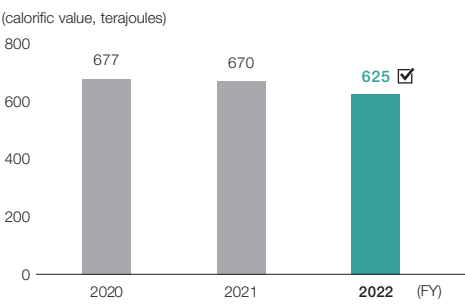
### Energy Consumption



\* 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)

\* We revised calorific value conversion coefficients applied to electricity consumption, retroactively revising figures to fiscal 2020. (3.6 MJ/kWh is applied for electricity consumption)

### Energy Consumption in Logistics Stages (Domestic)



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

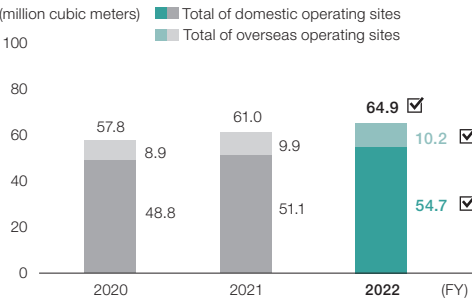


Breakdown by Fuel Type

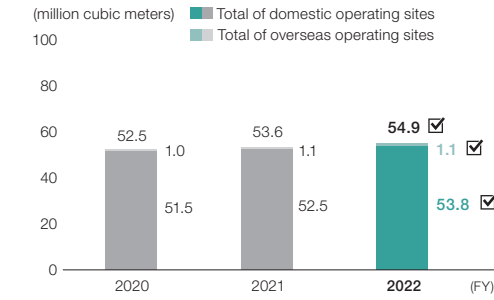
	Domestic Operating Sites	Overseas Operating Sites
Kerosene (kL)	127	0
Gasoline (kL)	130	153
Light oil (kL)	2,940	55,260
Class A heavy oil (kL)	7,895	0
Class B and C heavy oil (kL)	14,847	0
Reclaimed oil (kL)	2,664	0
LPG/Butane (t)	5,657	40
LNG (t)	3,880	683
Coke (t)	1,311	0
Petroleum coke (t)	4,326	0
City gas (thousand cubic meters)	17,291	3,018

Water Resources

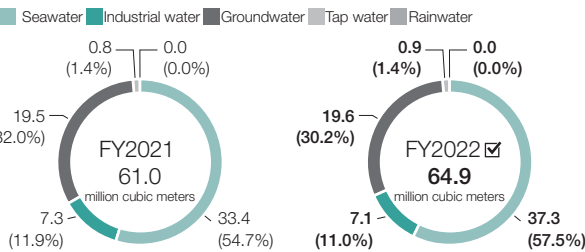
Water Usage\*1



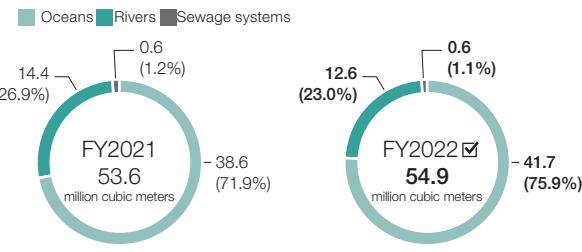
Water Discharge\*2



Total Water Usage\*1



Total Water Discharge\*2

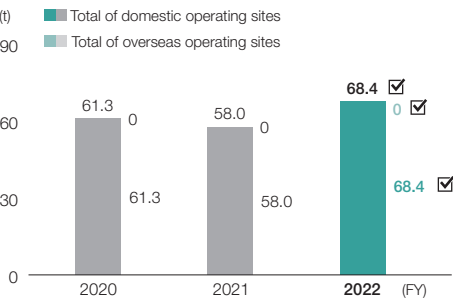


\*1 Seawater usage at the Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd. is calculated based on pumping capacity. Freshwater usage at the Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd. and water usage at other operating sites are based on flowmeter readings or on invoices 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: an amount calculated based on drainage weirs (Hitachi Works , Isohara Works, JX Metals Tomakomai Chemical Co., Ltd., and JX Metals Mikkaichi Recycle Co., Ltd.); an amount obtained by multiplying groundwater usage by a fixed rate (Kurami Works, Toho Titanium Co., Ltd.'s Chigasaki Plant); an amount from invoices (Toho Titanium Co., Ltd.'s Yahata Plant and Kurobe Plant); or an amount based on flowmeter readings (other operating sites). The volume of water discharged into the sewage system at each operating site represents the following: an amount calculated based on daily water discharge (TANIOBIS Co., Ltd.); or an amount based on flowmeter readings or on invoices from the site's respective sewage utility for other operating sites.

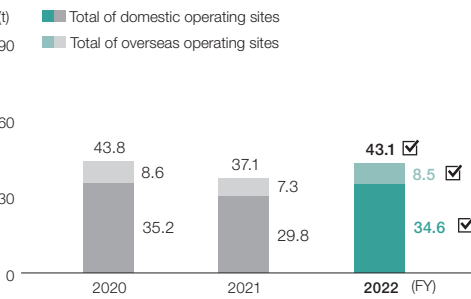
Water Pollutants

COD Load



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

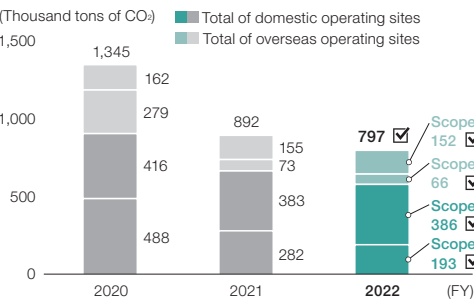
BOD Load



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

Climate Change

CO<sub>2</sub> Emissions From the Entire JX NMM Group (Scope 1 & 2)



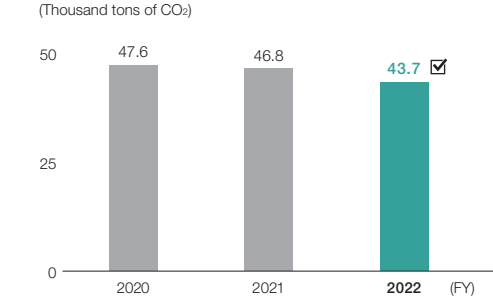
\* Scope 1 emissions are those from energy consumption (fuel), emissions from incineration of waste materials (waste oil, waste plastic, sludge, waste wood), and emissions from reducing agents, neutralizing agents, graphite electrodes, and recycled materials, converted to equivalent CO<sub>2</sub>.

\* Scope 2 emissions are those from electricity or heat consumption converted to equivalent CO<sub>2</sub>. This figure includes emissions from thermal energy (consuming 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

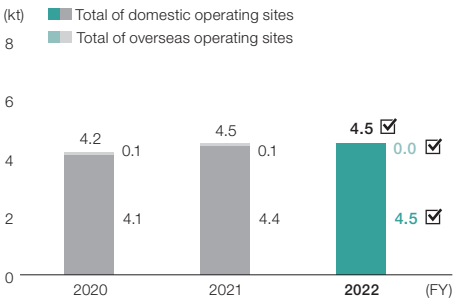
CO<sub>2</sub> Emissions in Logistics Stages



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

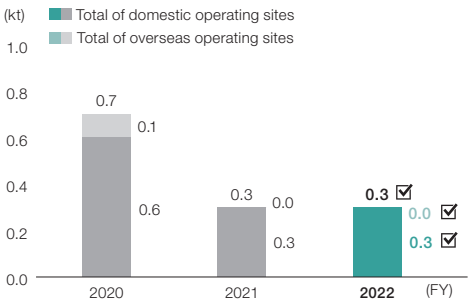
Air Pollutants

SOx Emissions



\* Totals are for operating sites subject to emissions regulations.

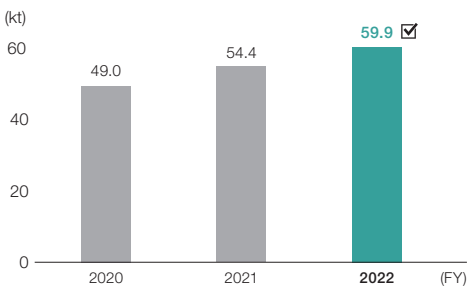
NOx Emissions



\* Totals are for operating sites subject to emissions regulations.

Waste Materials and By-Products

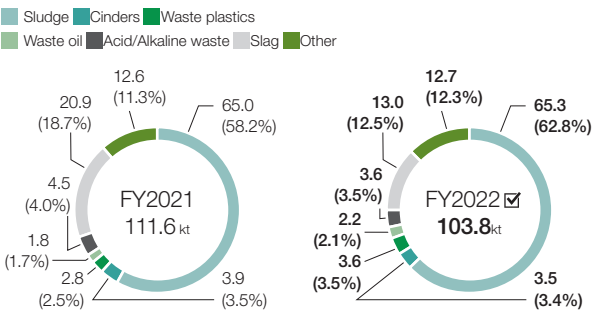
Volume of Final Disposal of Waste



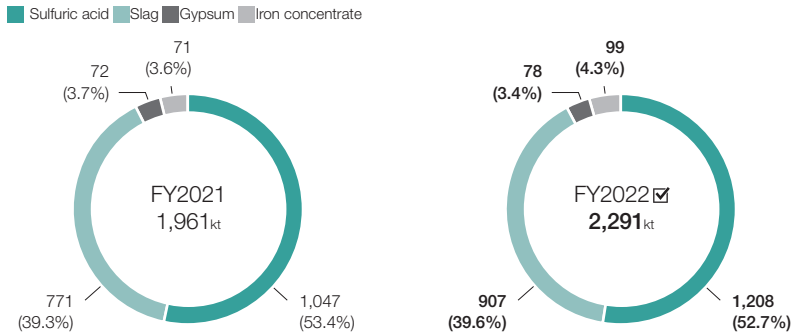
\* These do not include the approximately 26.2 million tons of slag from the Case-rones Copper Mine.

\* 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

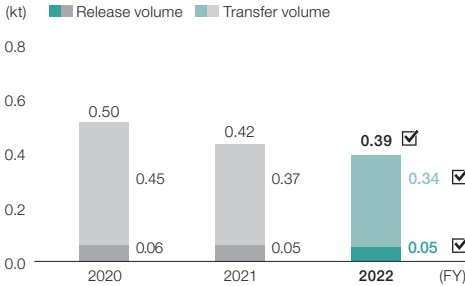


By-Product Production

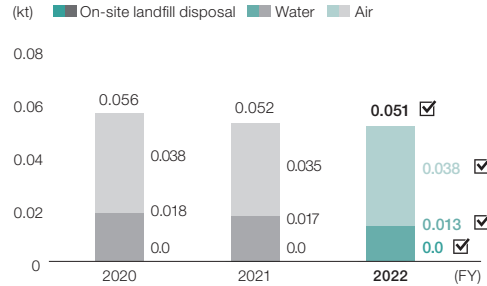


Chemical Substances

Volumes of Release and Transfer of PRTR Substances



Breakdown of Release Volumes of PRTR Substances



Volumes of Release and Transfer of Major PRTR Substances in FY2022

No.	Cabinet Order No.	Chemical Substance	Release Volume			Transfer Volume	
			Air	Water	On-Site Landfill Disposal	Sewage Systems	Waste Materials
1	31	Antimony and its compounds	0.1	0.6	0.0	0.0	6.5
2	75	Cadmium and its compounds	0.1	0.1	0.0	0.0	13.4
3	132	Cobalt and its compounds	0.0	0.2	0.0	0.0	9.1
4	272	Copper salts (water soluble)	0.3	1.6	0.0	0.0	7.0
5	300	Toluene	35.1	0.0	0.0	0.2	235.0
6	305	Lead compounds	0.8	0.1	0.0	0.0	47.8
7	309	Nickel compounds	0.1	0.4	0.0	0.0	8.9
8	405	Boron compounds	0.0	5.4	0.0	0.0	1.5
(g-TEQ)							
9	243	Dioxins	0.1	0.0	0.0	0.0	2.9

The values given are the total amount reported by operating sites subject to reporting requirements under the PRTR Act (the domestic companies defined in Scope of this Report on page 4 as subject to Environment section reporting). Of the 49 chemical substances subject to reporting, those totaling at least 5.0 tons in any category, and dioxins, are listed here. There were no cases of chemical substances released into the soil.

Occupational Health and Safety

Occupational and Other Accidents\*1, \*2

Category				2020	2021	2022
Safety performance at domestic operating sites	Employees (including Group companies)	Casualties of occupational accidents	Fatalities (persons)*3	0	0	0
			Occupational accidents with severe consequences (persons)*3	0	0	0
			Accidents with lost work days (persons)*3	7	10	3
			Accidents without lost work days (persons)*3	13	24	27
			Total (persons)	20	34	30
		Major types of occupational accidents*4	Strain or overexertion (persons)	5	6	2
			Falls on same level (persons)	1	3	4
			Caught in, on, or between machinery (persons)	3	1	7
		Frequency rate of occupational accidents*5	Fatalities*3	0.00	0.00	0.00
			Occupational accidents with severe consequences*3	0.00	0.00	0.00
			Accidents with lost work days*3	0.53	0.74	0.21
	Employees of subcontractors*6	Severity rate of occupational accidents*5		0.03	0.03	0.01
		Cumulative work hours*5		13,290,060	13,442,362	14,365,459
		Casualties of occupational accidents*4	Fatalities (persons)	2	0	0
			Occupational accidents with severe consequences (persons)	0	0	0
			Accidents with lost work days (persons)	2	6	4
			Accidents without lost work days (persons)	6	13	13
			Total (persons)	10	19	17
		Major types of occupational accidents*4	Cut or abrasions (persons)	4	4	1
			Crashes or falls to lower level (persons)	2	2	2
			Struck by object (persons)	0	0	1
		Frequency rate of occupational accidents*5,6	Fatalities*3	0.64	0.00	0
			Occupational accidents with severe consequences*3	0.00	0.00	0
			Accidents with lost work days*3	0.64	1.94	1.47
(Reference) Safety performance at overseas operating sites*9		Severity rate of occupational accidents*5,6		4.82	0.11	0.04
		Cumulative work hours*6		3,117,548	3,090,280	2,726,924
		Total casualties (persons)		30	53	47
		Occupational injury rate per 1,000 employees (four or more lost workdays)*7		1.1	1.7	0.74
		Explosions and fires (incidences)*8		1	0	2
		Fatalities (persons)		0	0	0
		Accidents with lost work days (persons)		13	19	17
		Accidents without lost work days (persons)		5	7	5
		Total (persons)		18	26	22
		Major types of occupational accidents	Caught in, on, or between machinery (persons)	3	8	3
			Falls on same level (persons)	5	4	1
			Strain or overexertion (persons)	3	3	1

\*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.
- Occupational accidents with severe consequences: Accidents resulting in more than six months of lost work days or a disability grade.
- Accidents with lost work days: Accidents requiring one or more days of absence from work for the purpose of examination, treatment or recuperation. These shall in principle be at a physician's discretion. Note that this excludes "Occupational accidents with severe consequences."
- Accidents without lost work days: An accident that does not require one full day or more of absence from work as diagnosed by a physician, and in which the affected worker is able to go to work after the accident.

\*4 Incidences related to the cause of the injury or illness, based on "Types of Accidents," published by the Ministry of Health, Labour and Welfare.

\*5 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).

\*6 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 2022, the frequency and severity rate of occupational accidents for all businesses in Japan were 2.06 and 0.09, respectively (Source: Ministry of Health, Labour and Welfare, "Survey on Industrial Accidents")

\*7 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)

\*8 No physical injuries were caused as a result of explosions/fires.

\*9 While this includes Group companies and subcontractors, this data should be used only for reference as it is difficult to conduct follow-up surveys and aggregate working hours for subcontractors at overseas operating sites, and detailed data such as frequency rates are not disclosed.



Human Resource Development

Training Programs Implemented in FY2022

	Managerial Staff			Non-Management Employees			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total annual program hours (hours)	9,486	379	9,865	62,507	11,530	74,036	71,993	11,909	83,902
Program hours per employee (hours/person)	22	9	21	57	24	47	47	23	41

\* Survey scope: Employees of JX Metals 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 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, 2023)

Employment Status	Contract Type	Male	Female	Total
Full-time	Contracts without fixed terms	8,449	1,383	9,832
	Contracts with fixed terms	634	133	767
Full-time subtotal		9,083	1,516	10,599
Part-time	Contracts without fixed terms	31	47	78
	Contracts with fixed terms	58	24	82
Part-time subtotal		89	71	160
Total		9,172	1,587	10,759

Employment Status	Contract Type	Japan	North America	South America	Asia	Europe	Middle East	Total
Full-time	Contracts without fixed terms	6,763	371	949	1,389	350	10	9,832
	Contracts with fixed terms	567	1	93	70	36	0	767
Full-time subtotal		7,330	372	1,042	1,459	386	10	10,599
Part-time	Contracts without fixed terms	56	0	0	3	19	0	78
	Contracts with fixed terms	79	0	0	1	2	0	82
Part-time subtotal		135	0	0	4	21	0	160
Total		7,465	372	1,042	1,463	407	10	10,759

No. of Employees (by Region; as of March 31, 2023)

	Japan	North America	South America	Asia	Europe	Middle East	Total
Male	6,575	270	947	1,033	337	10	9,172
Female	890	102	95	430	70	0	1,587
Total	7,465	372	1,042	1,463	407	10	10,759

No. of Newly Hired Employees (April 1, 2022 to March 31, 2023)

	Male	Female	Total	Age 29 or Younger	Age 30 to 49	Age 50 or Older	Total
No. of new hires	880	181	1,061	408	520	133	1,061
Percent of total employee count as of March 31, 2023	10%	11%	10%	26%	8%	5%	10%

	Japan	North America	South America	Asia	Europe	Middle East	Total
No. of new hires	672	100	206	71	12	0	1,061
Percent of total employee count as of March 31, 2023	9%	27%	20%	5%	3%	0%	10%

No. of Employees Ending Employment (April 1, 2022 to March 31, 2023)

	Male	Female	Total	Age 29 or Younger	Age 30 to 49	Age 50 or Older	Total
No. of retiring employees	575	129	704	178	326	200	704
Percent of total employee count as of March 31, 2023	6%	8%	7%	11%	5%	7%	7%

	Japan	North America	South America	Asia	Europe	Middle East	Total
No. of retiring employees	276	135	151	128	14	0	704
Percent of total employee count as of March 31, 2023	4%	36%	14%	9%	3%	0%	7%

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

Membership in Labor Unions (as of March 31, 2023)

	Male	Female	Total	Age 29 or Younger	Age 30 to 49	Age 50 or Older	Total
No. of union members	5,690	889	6,579	1,212	4,045	1,322	6,579
Unionization rate	62%	56%	61%	76%	64%	46%	61%

Diversity

Use of Childcare Leave in FY2022 (JX Metals) ☒

(persons)

	Male	Female	Total
No. of employees using leave	22	10	32
No. of employees eligible to use leave*	122	10	132
Percentage	18%	100%	24%

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

Retention Rate After Childcare Leave (Percentage of Those Still Employed 12 Months After Returning From Leave) (JX Metals) ☒

(persons)

	Male	Female	Total
No. of employees who returned to work from childcare leave during FY2021	17	12	29
No. of employees still employed 12 months after returning to work	15	12	27
Percentage	88%	100%	93%

Rate of Return to Work After Childcare Leave (JX Metals)

(persons)

	Male	Female	Total
No. of employees who returned to work from childcare leave during FY2022	22	16	38
No. of employees scheduled to return to work	22	16	38
Percentage	100%	100%	100%

Status of Rehiring Efforts in FY2022 (JX Metals) ☒

(persons)

No. of age-limited retirees	62
No. of these rehired	54
Percentage	87%

Persons With Disabilities as a Percentage of the Workforce in FY2022 (JX Metals) ☒

Percentage of employees with disabilities (statutory minimum: 2.3%)	2.10%
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No. of Locally Hired Senior Managers Overseas (Section Manager or Above) and Locally Hired Employees (as of March 31, 2023)

(persons)

		Number of Senior Managers	Senior Managers as a Share of Locally Hired Employees* <sup>1</sup>	Number of Locally Hired Employees* <sup>2</sup>
North America	Male	40	15%	270
	Female	7	7%	102
North America subtotal		47	13%	372
South America	Male	65	7%	947
	Female	6	6%	95
South America subtotal		71	7%	1,042
Europe	Male	51	15%	337
	Female	8	11%	70
Europe subtotal		59	14%	407
Asia	Male	149	14%	1,033
	Female	67	16%	430
Asia subtotal		216	15%	1,463
Total		393	12%	3,284

Scope of aggregation: Overseas Group companies in which JX 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) × 100  
\*2 The number of employees directly employed by overseas subsidiaries, excluding employees on secondment and employees transferred to overseas subsidiaries

Independent Assurance Report

To the President & Representative Director of JX Metals Corporation

We were engaged by JX 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, 2022 to March 31, 2023 included in its Sustainability Report 2023 (the “Report”) for the fiscal year ended March 31, 2023.

The Company's Responsibility

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

Our Responsibility

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

- Interviewing the Company's responsible personnel to obtain an understanding of its policy for preparing the Report and reviewing the Company's reporting criteria.
- Inquiring about the design of the systems and methods used to collect and process the Indicators.
- Performing analytical procedures on the Indicators.
- Examining, on a test basis, evidence supporting the generation, aggregation and reporting of the Indicators in conformity with the Company's reporting criteria, and recalculating the Indicators.
- Visiting the Company's Kurami Works and making inquiries and reviewing materials including documented evidence of the Saganoseki Smelter & Refinery of JX Metals Smelting Co., Ltd. as alternative procedures to a site visit, 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  
February 9, 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.



GRI Standards Content Index

GRI 1: Foundation 2021		
the statement of use;	JX Metals Corporation referenced the GRI Standards to report the information in this table for the relevant period (April 1, 2022 to March 31, 2023).	
the title of GRI 1 used;	GRI 1: Foundation 2021	

No.	Disclosure	References / Reason for Omission
GRI 2: General Disclosures 2021		
2-1	Organizational details	P17-18: Global Network
2-2	Entities included in the organization's sustainability reporting	P4: Sustainability Report 2023
2-3	Reporting period, frequency and contact point	P4: Sustainability Report 2023 Back cover
2-4	Restatements of information	N/A
2-5	External assurance	P4: Sustainability Report 2023 P114: Independent Assurance Report
2-6	Activities, value chain and other business relationships	P13-16: Long-Term Vision and Medium-Term Management Plan P17-18: Global Network P25-26: Value Creation Model P27-28: Special Feature 1 Contributing to Sustainable Societies Through Advanced Materials P33-36: Special Feature 2 Sustainable Copper Vision P43-44: The JX Metals Group for the Future Society P45-50: Strategy by Segment
2-7	Employees	P111-112: ESG Data Book (Employment and Work Styles)
2-8	Workers who are not employees	—
2-9	Governance structure and composition	P51-52: Materialities and KPIs P95-96: Corporate Governance
2-10	Nomination and selection of the highest governance body	—
2-11	Chair of the highest governance body	P95-96: Corporate Governance
2-12	Role of the highest governance body in overseeing the management of impacts	P51-52: Materialities and KPIs P54-61: Initiatives for a Decarbonized Society P99-102: Risk Management
2-13	Delegation of responsibility for managing impacts	P51-52: Materialities and KPIs P54-61: Initiatives for a Decarbonized Society P99-102: Risk Management
2-14	Role of the highest governance body in sustainability reporting	P51-52: Materialities and KPIs
2-15	Conflicts of interest	P95-96: Corporate Governance
2-16	Communication of critical concerns	P97-99: Rigorous Compliance P99-102: Risk Management
2-17	Collective knowledge of the highest governance body	P51-52: Materialities and KPIs P97-99: Rigorous Compliance
2-18	Evaluation of the performance of the highest governance body	P95-96: Corporate Governance
2-19	Remuneration policies	P95-96: Corporate Governance
2-20	Process to determine remuneration	P95-96: Corporate Governance
2-21	Annual total compensation ratio	—
2-22	Statement on sustainable development strategy	P7-12: Message From the President
2-23	Policy commitments	P1-2: JX Metals Group Code of Conduct P33-36: Special Feature 2 Sustainable Copper Vision P37-42: Special Feature 3 Human Capital Management P53-65: Contributing to Environmental Conservation P77-82: Create Attractive Workplaces P83-89: Respect Human Rights P94-104: Strengthen Governance
2-24	Embedding policy commitments	P51-52: Materialities and KPIs P83-89: Respect Human Rights P94-104: Strengthen Governance

No.	Disclosure	References / Reason for Omission
2-25	Processes to remediate negative impacts	P33-36: Special Feature 2 Sustainable Copper Vision P89: Human Rights Education and Internal Awareness Raising P97-99: Rigorous Compliance
2-26	Mechanisms for seeking advice and raising concerns	P89: Human Rights Education and Internal Awareness Raising P97-99: Rigorous Compliance
2-27	Compliance with laws and regulations	P65: Environmental Management P97-99: Rigorous Compliance P102-104: Quality Control in the Supply Chain
2-28	Membership associations	P19-20: Responding to International Norms and Initiatives
2-29	Approach to stakeholder engagement	P93: Stakeholder Engagement
2-30	Collective bargaining agreements	P111-112: ESG Data Book (Employment and Work Styles)

No.	Disclosure	References / Reason for Omission
GRI 3: Material Topics 2021		
3-1	Process to determine material topics	P51-52: Materialities and KPIs
3-2	List of material topics	P51-52: Materialities and KPIs
3-3	Management of material topics	P51-52: Materialities and KPIs P53-65: Contributing to Environmental Conservation P66-76: Provide Advanced Materials That Support Lives and Lifestyles P77-82: Create Attractive Workplaces P83-89: Respect Human Rights P90-93: Contributing to Environmental Conservation P94-104: Strengthen Governance

Topic Standards

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	P113: ESG Data Book (Diversity)
GRI 203: Indirect Economic Impacts 2016		
203-1	Infrastructure investments and services supported	P27-32: Special Feature 1 Contributing to Sustainable Societies Through Advanced Materials P90-92: Social Contribution Activities
203-2	Significant indirect economic impacts	P27-32: Special Feature 1 Contributing to Sustainable Societies Through Advanced Materials P90-92: Social Contribution Activities
GRI 205: Anti-corruption 2016		
205-1	Operations assessed for risks related to corruption	—
205-2	Communication and training about anti-corruption policies and procedures	P97-99: Rigorous Compliance
205-3	Confirmed incidents of corruption and actions taken	P97-99: Rigorous Compliance
GRI 206: Anti-competitive Behavior 2016		
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	P97-99: Rigorous Compliance
GRI 207: Tax 2019		
207-1	Approach to tax	P97-99: Rigorous Compliance
207-2	Tax governance, control, and risk management	P97-99: Rigorous Compliance
207-3	Stakeholder engagement and management of concerns related to tax	P97-99: Rigorous Compliance
207-4	Country-by-country reporting	—
GRI 301: Materials 2016		
301-1	Materials used by weight or volume	P105: ESG Data Book (Mass Balance Table for the Group)
301-2	Recycled input materials used	P105: ESG Data Book (Mass Balance Table for the Group)
301-3	Reclaimed products and their packaging materials	—

No.	Disclosure	References / Reason for Omission
GRI 302: Energy 2016		
302-1	Energy consumption within the organization	P105: ESG Data Book (Mass Balance Table for the Group) P106-107: ESG Data Book (Energy)
302-2	Energy consumption outside of the organization	P105: ESG Data Book (Mass Balance Table for the Group) P106-107: ESG Data Book (Energy)
302-3	Energy intensity	P105: ESG Data Book (Mass Balance Table for the Group) P106-107: ESG Data Book (Energy)
302-4	Reduction of energy consumption	P105: ESG Data Book (Mass Balance Table for the Group) P106-107: ESG Data Book (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	P64: Other Initiatives for Environmental Conservation
303-2	Management of water discharge-related impacts	P64: Other Initiatives for Environmental Conservation
303-3	Water withdrawal	—
303-4	Water discharge	P105: ESG Data Book (Mass Balance Table for the Group) P107: ESG Data Book (Water Resources)
303-5	Water consumption	P105: ESG Data Book (Mass Balance Table for the Group) P107: ESG Data Book (Water Resources)
GRI 304: Biodiversity 2016		
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	P62-63: Conservation of Biodiversity
304-2	Significant impacts of activities, products and services on biodiversity	P62-63: Conservation of Biodiversity
304-3	Habitats protected or restored	P62-63: Conservation of Biodiversity
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	—
GRI 305: Emissions 2016		
305-1	Direct (Scope 1) GHG emissions	P105: ESG Data Book (Mass Balance Table for the Group) P108: ESG Data Book (Climate Change)
305-2	Energy indirect (Scope 2) GHG emissions	P105: ESG Data Book (Mass Balance Table for the Group) P108: ESG Data Book (Climate Change)
305-3	Other indirect (Scope 3) GHG emissions	P54-61: Initiatives for a Decarbonized Society
305-4	GHG emissions intensity	P108: ESG Data Book (Climate Change)
305-5	Reduction of GHG emissions	P54-61: Initiatives for a Decarbonized Society
305-6	Emissions of ozone-depleting substances (ODS)	—
305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	P105: ESG Data Book (Mass Balance Table for the Group) P108: ESG Data Book (Climate Change, Air Pollutants)
GRI 306: Waste 2020		
306-1	Waste generation and significant waste-related impacts	P33-36: Special Feature 2 Sustainable Copper Vision P61-62: Forming a Recycling-Oriented Society
306-2	Management of significant waste-related impacts	P33-36: Special Feature 2 Sustainable Copper Vision P61-62: Forming a Recycling-Oriented Society
306-3	Waste generated	P108-109: ESG Data Book (Waste Materials and By-Products)
306-4	Waste diverted from disposal	P108-109: ESG Data Book (Waste Materials and By-Products)
306-5	Waste directed to disposal	P108-109: ESG Data Book (Waste Materials and By-Products)
GRI 307: Environmental Compliance 2016		
307-1	Non-compliance with environmental laws and regulations	P65: Environmental Management
GRI 308: Supplier Environmental Assessment 2016		
308-1	New suppliers that were screened using environmental criteria	P65: Environmental Management
308-2	Negative environmental impacts in the supply chain and actions taken	P85-88: Respect Human Rights in Supply Chains

No.	Disclosure	References / Reason for Omission
GRI 401: Employment 2016		
401-1	New employee hires and employee turnover	P111-112: ESG Data Book (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	P113: ESG Data Book (Diversity)
GRI 403: Occupational Health and Safety 2018		
403-1	Occupational health and safety management system	P78-80: Ensure Safety and Promote Health P110: ESG Data Book (Occupational Health and Safety)
403-2	Hazard identification, risk assessment, and incident investigation	P78-80: Ensure Safety and Promote Health P110: ESG Data Book (Occupational Health and Safety)
403-3	Occupational health services	P78-80: Ensure Safety and Promote Health P110: ESG Data Book (Occupational Health and Safety)
403-4	Worker participation, consultation, and communication on occupational health and safety	P78-80: Ensure Safety and Promote Health
403-5	Worker training on occupational health and safety	P78-80: Ensure Safety and Promote Health
403-6	Promotion of worker health	P78-80: Ensure Safety and Promote Health
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	P78-80: Ensure Safety and Promote Health
403-8	Workers covered by an occupational health and safety management system	P78-80: Ensure Safety and Promote Health
403-9	Work-related injuries	P78-80: Ensure Safety and Promote Health P110: ESG Data Book (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	P37-42: Special Feature 3 Human Capital Management P110: ESG Data Book (Occupational Health and Safety)
404-2	Programs for upgrading employee skills and transition assistance programs	P37-42: Special Feature 3 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	P37-42: Special Feature 3 Human Capital Management P113: ESG Data Book (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	P83-89: 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	P83-89: Respect Human Rights
GRI 408: Child Labor 2016		
408-1	Operations and suppliers at significant risk for incidents of child labor	P83-89: 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	P83-89: Respect Human Rights
GRI 411: Rights of Indigenous Peoples 2016		
411-1	Incidents of violations involving rights of indigenous peoples	P83-89: Respect Human Rights
GRI 413: Local Communities 2016		
413-1	Operations with local community engagement, impact assessments, and development programs	P90-93: Coexistence and Co-Prosperity With Local Communities
413-2	Operations with significant actual and potential negative impacts on local communities	P62-63: Conservation of Biodiversity
GRI 414: Supplier Social Assessment 2016		
414-1	New suppliers that were screened using social criteria	P83-89: Respect Human Rights
414-2	Negative social impacts in the supply chain and actions taken	P83-89: Respect Human Rights
GRI 416: Customer Health and Safety 2016		
416-1	Assessment of the health and safety impacts of product and service categories	P102-104: Quality Control in the Supply Chain
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	P102-104: Quality Control in the Supply Chain



We welcome your views and questions regarding this *Sustainability Report 2023*.

Any opinions provided will be used to improve future reports even further.

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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.