

Sustainability
Report
2019





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

Sustainability Report 2019

Editorial Policy

The JX Nippon Mining & Metals Group is committed to fulfilling its corporate social responsibility (CSR) in all its business endeavors, toward the sustainable development of society. We issue a sustainability report each year to disclose appropriate corporate information to a broad range of stakeholders, including customers, suppliers, shareholders and investors, employees, industry-government-academia groups, and local communities. As an important communication tool, this report is designed to enhance stakeholders' understanding of our CSR activities. Sustainability Report 2019 has been prepared in accordance with the GRI Standards* as required by the 10 Principles of the International Council on Mining and Metals (ICMM) and by the ICMM's Assurance Procedures. * International guidelines issued by the Global Reporting Initiative, incorporating standard items for CSR reporting.

The indicators in this report that are assured by a third-party organization are marked with a checkmark.

Definitions of Terminology

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

Publication Date

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Reporting Period

In principle, this report covers our business activities for the period from April 2018 to March 2019 (fiscal 2018). To ensure comprehensive disclosure, however, it also includes certain information regarding important events that occurred prior to or after this period.

Boundary of the Report

This report covers JX Nippon Mining & Metals Corporation as well as domestic and overseas Group companies. The companies for which main indicators must be reported are detailed below, according to the corresponding sections of the report.

Corresponding Sections	Boundary of the Report
Business Overview	Companies included in the consolidated financial statements of JX Nippon Mining & Metals. (The Company and its consolidated subsidiaries below indicated by)
Environment	The Company, its directly controlled operating sites that engage in production activities, and companies that operate factories classified as Type 2 Designated Energy Management Factories under the Act on Rationalizing Energy Use or operating sites of equivalent scale. (Companies below indicated by)
Employees, Society, Corporate Governance	The Company and 82 companies in which the Company has 50% or greater voting rights directly or indirectly. (The main companies covered by this report are those below indicated by)

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 Kasuga Mines Co., Ltd.
 Kaneuchi Mining Co., Ltd.
 Kamikita Mines Co., Ltd.
 Kitaibaraki Precision Co., Ltd.
 Shakanai Mines Co., Ltd.
 Shin-Takutama Mining Co., Ltd.
 Toho Titanium Co., Ltd.
 Toyoha Mine Co., Ltd.
 Namariyama Mining Co., Ltd.
 Nissho Kou-un Co., Ltd.
 Japan Copper Casting Co., Ltd.
 Hanawa Mines Co., Ltd.
 Pan Pacific Copper Co., Ltd.
 Hitachi Mines Co., Ltd.
 Hibi Kyodo Smelting Co., Ltd.
 Hibi Smelting Logistics Co., Ltd.
 Hokushin Mining Co., Ltd.

Hokuriku Mines Co., Ltd.
 Japan Korea Joint Smelting Co., Ltd.
 JX Nippon Mining & Metals Corporation
 JX Nippon Mining Ecomanagement, Inc.
 JX Nippon Environmental Services Co., Ltd.
 JX Nippon Coil Center Co., Ltd.
 JX Metals Trading Co., Ltd.
 JX Nippon Takasho Co., Ltd.
 JX Nippon Exploration and Development Co., Ltd.
 JX Nippon Tsuruga Recycle Co., Ltd.
 JX Nippon Tomakomai Chemical Co., Ltd.
 JX Nippon Foundry Co., Ltd.
 JX Metals Precision Technology Co., Ltd.
 JX Nippon Mikkaichi Recycle Co., Ltd.

Overseas

Nikko Metals Taiwan Co., Ltd.
 Nippon Mining & Metals (Suzhou) Co., Ltd.
 Pan Pacific Copper (Shanghai) Co., Ltd.
 Nikko Fuji Precision (Wuxi) Co., Ltd.
 Caserones Finance Netherlands B.V.
 Compania Minera Quechua S.A.
 Gould Electronics GmbH
 Gould Electronics Inc.
 H.C. Starck Tantalum and Niobium GmbH
 Japan Frontera Resources B.V.
 JX Nippon Mining & Metals Dongguan Co., Ltd.

JX Nippon Mining & Metals Europe GmbH
 JX Nippon Mining & Metals Korea Co., Ltd.
 JX Nippon Mining & Metals Philippines, Inc.
 JX Nippon Mining & Metals USA, Inc.
 Materials Service Complex Malaysia Sdn. Bhd.
 MFN Investment LLC
 MLCC Finance Netherlands B.V.
 Nippon LP Resources B.V.
 Nippon Mining of Netherlands B.V.
 PPC Canada Enterprises Corp.
 SCM Minera Lumina Copper Chile

Message from the President

In keeping with our Long-Term Vision looking ahead to the year 2040, our aim is to be a global corporation that contributes to the sustainable development of society and social innovation.

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



The JX Nippon Mining & Metals Group is a leader in the field of nonferrous metals, and a core member of the JXTG Group, which aims to become one of Asia's leading energy, resources, and materials business groups. Our mission is to provide copper, rare metals, precious metals, and other nonferrous metal resources, as well as electronic materials and other high added value materials.

The Group is committed to helping achieve the sustainable society targeted by the SDGs, in response to the needs of the social environment and the wishes of our stakeholders, through wide-ranging endeavors from resource extraction to product development and recycling.

Show the way forward for growth with a vision of society and the Group in 20 years

In the fiscal year ended March 31, 2019 (fiscal 2018), the Group managed to recover from the downturn in the previous fiscal year and achieved earnings exceeding targets, thanks to such factors as the shift to profitability of the Caserones Copper Mine in Chile on an operating basis. At the same time, however, there were concerning factors, among them a slowdown in the functional materials and thin film materials businesses that had been strong up to the second quarter, affected by market uncertainties caused by US-China trade friction and other developments.

In my position of steering administration of Group business, I strongly feel that challenging times like this

make it all the more necessary to have a clear idea of the kind of corporate group we will grow into, and of how we can go about contributing to society.

The JX Nippon Mining & Metals Group Long-Term Vision 2040 sets out our aim of fostering the development of society's innovation with advanced materials. It enables us to share a common vision for our future and focus on realizing that vision, taking on issues one at a time and building a firm foundation. This Vision being about the future of the Group, we sought and considered as wide a range of views as possible in drawing it up, including those of younger employees representing the next generation.

SDGs
(Sustainable Development Goals)

The SDGs are the international community's shared goals and targets for 2030. They were defined in the 2030 Agenda for Sustainable Development, adopted at the United Nations Sustainable Development Summit in September 2015. They consist of 17 goals and 169 targets, as specific action guidelines for achieving a sustainable society.



Contribute to solving society's problems, drawing on the strength of our value chains

The strength of the Group is the ability to perform a full set of organically connected business operations, from upstream resources development, through midstream operations in the fields of smelting and refining as well as recycling and environmental services, to downstream functional materials, thin film materials, and tantalum and niobium businesses. I believe this makes us an extremely rare business group, possessing supply chains for both technology and management resources.

In Asia and other emerging economies, the growing middle class produced by economic growth is leading to resource shortages. In Japan, meanwhile, the declining birthrate and aging population, along with the hollowing out of industry, are shrinking domestic markets. In response to socioeconomic problems like these, we are able to provide technologies for more

effective use of limited resources, and technologies for conserving the environment. We can also provide new electronic materials demanded by society. In such ways, we can both achieve growth of the Group and contribute to society. What is more, if we make the most of our unique value chains, this should lead to progress toward realization of the SDGs.

The recently announced Long-Term Vision reflects our strong awareness of how we can contribute to the SDGs. The fundamental policy of the Vision is to draw on the technologies and expertise we have developed over the years to grow as a technology-based Group providing advanced, high added value products and technologies, and to contribute toward realization of the sustainable society targeted by the SDGs.

Dealing with nonferrous metals, our businesses relate directly to the issues of the SDGs

As the SDGs become increasingly accepted by society as global values, we are naturally aware that we need to recognize their importance in drawing up our vision. After all, wherever one looks, our business is directly involved in society and the environment. To ensure solid awareness of this involvement, we have laid out 10 Material Issues for CSR Activities.

For example, the issues relating to the environment—namely, using nonferrous metal resources effectively, establishing a recycling-oriented society, and establishing a low-carbon society—are ones where our midstream smelting and refining business or recycling and environmental services business can contribute directly.

We are strengthening our initiatives for reducing environmental impact, including development of technology to extract metals from low-grade raw materials, and establishment of smelting and refining technologies that reduce energy consumption by effectively processing recycled materials from urban mines.

In the downstream functional materials and thin film

materials businesses, assuming the electric vehicles that utilize our products come into even wider use, this should contribute to reducing or replacing fossil fuel use.

Today we have a high share of the worldwide copper market. Looking ahead, our vision is to help solve environmental issues by building supply chains not just for copper but for rare metals and the advanced materials using them.

In the process of putting this growth strategy into practice, we intend to further enhance the internal organizational structure for technology development while also actively engaging with external resources. We have already begun partnering with start-ups through an accelerator program,*¹ and are moving forward with establishing a co-creation-based development organization inside and outside the Group; but we intend to create further added value centering on fields that are logical extensions of existing Group areas or that have high affinity with them, such as by making use of open innovation.

*¹ Accelerator program: A program that enables companies to use a contest format to solicit ideas and proposals from start-ups with a view to cooperation or investment.

Our 10 Material Issues for CSR Activities

- Using Nonferrous Metal Resources Effectively
- Establishing a Recycling-Oriented Society
- Establishing a Low-Carbon Society
- Ensuring Occupational Health and Safety
- Assuring Product Quality
- Developing Human Resources
- Providing a Rewarding Work Experience
- Promoting Community Involvement and Development
- Respecting Human Rights
- Insisting on Full Compliance



Make the most of our spirit of enterprise, aiming for a harmonious relationship with society

What the drafting of the Long-Term Vision has helped to clarify is how the Group will engage with society going forward. Since our business is conducted globally, we inevitably become involved with various stakeholders. In so doing, an important factor determining growth potential is whether or not the business is run with proper attention to such issues as human rights and the environment.

As a first step, we have decided to move our Head Office to the new Okura Prestige Tower in Tokyo's Minato Ward by around June 2020, thereby seeking to create an organizational structure and new corporate climate for achieving the Long-Term Vision. This move is not just to accommodate future personnel growth, but is aimed also at generating new value creation opportunities by renewing our organizational culture and increasing communication inside and outside the Group. After all, the power of an organization is directly influenced by the extent to which the working environment enables personnel to fulfill their potential. This relocation offers us an opportunity to take up the challenge of transforming the work style itself, making a major break from traditional patterns.

In parallel with this, I would like once again to provide education on the SDGs, taking into consideration the features of each business and workplace. In our downstream operations, as we continue using the leading-edge field of electronic materials to drive business

growth, I would like to take initiatives including possible introduction of key performance indicators, so that each employee can be aware of their degree of contribution to the SDGs while they involve themselves in that process.

The roots of the Group go back to the place where JX Nippon Mining & Metals was founded—the Hitachi Mine, opened more than 110 years ago. In an age when there was no technology for recovering sulfur dioxide generated in the smelting process, the Company built a giant smokestack 155.7 meters high to protect the people in the surrounding community by greatly reducing smoke pollution. Care was also taken to create a working environment where employees could work in the mine with peace of mind, as seen in the "Mine as One Big Family" creed by which workers were treated like kin. In this and other ways, an ethos was fostered that was ahead of its time.

This spirit of taking on challenges together with stakeholders is part of our original DNA, making us aware that we ourselves must be leaders for change. As an organization grows larger, there is a tendency to turn more conservative, with the spirit of enterprise beginning to fade. Now, as we establish the Long-Term Vision, I would like the entire Group to redouble this spirit of enterprise, moving forward in a united effort.

A Long History of Value Creation

Recognizing the Group mission as providing stable supplies of nonferrous metal resources and materials to society, since our founding in 1905 we have worked on creating new value, even while responding to various changes in the business environment. We are determined to continue our challenge, contributing to the development of a sustainable economy and society through innovation in the areas of resources and materials.

The expansion of our business and provided value

1914
Construction of the Hitachi Giant Stack
The rapid growth of the Hitachi Mine's business led to a severe smoke pollution problem in the surrounding area. To deal with the pollution, the Company built what was then the world's tallest stack at 155.7 meters. It began operation in March of the following year.

1978
New recycling furnace built
A new recycling furnace making use of smelting techniques was built at the Hitachi Smelter & Refinery, marking the start of the recycling and environmental services business. The Company pursued recovery of valuable metals from plating sludge and other industrial waste as a business.

2010
Birth of the JX Group
The JX Group (JX Holdings) was born as one of the world's leading integrated energy, resources, and materials business groups, conducting business in each of the areas of petroleum refining and sales, oil field development, and metals.

2017
JXTG Holdings born
JXTG Holdings was established with the merger of JX Holdings and Tonen General Sekiyu K.K.

1905
Established

1929
Nippon Mining established

1992
Nikko Metals becomes independent
The metals and metal fabrication businesses of Nippon Mining became independent.

2002
Nippon Mining Holdings established
Established by the merger of Japan Energy and Nikko Metals

2016
Japanese name of JX Nippon Mining & Metals changed

1905
Development into a custom smelter
Resources development business and smelting and refining business were begun by founder Fusanosuke Kuhara at the Hitachi Mine in Ibaraki Prefecture. The Hitachi Mine was a pioneer in development as a full-fledged "custom smelter" that processed not only ores from its own Hitachi Mine, but also ores purchased from other companies. This allowed it to achieve a production capability not restricted by the capacity of its own mine and to provide a stable supply of copper.



Company founder
Fusanosuke Kuhara

1916
Start of operation at the Saganoseki Smelter & Refinery
In order to further expand the mining, smelting and refining segments fundamental to the Company's diversified business, the Saganoseki Smelter & Refinery was built in Oita Prefecture as one of the largest such plants in Japan. It remains even to this day an important center of the JX Nippon Mining & Metals Group, as a leading-edge smelter boasting the world's top levels of technology and production capacity.



Saganoseki Smelter & Refinery at the time it was built

1964
Kurami Works launched
With the startup of the Kurami Works (Kanagawa Prefecture), the Company made a strong entry into the metal fabrication business. Introducing the latest rolling mills, it produced phosphor bronze and other rolled copper products. By answering the needs of complex markets for flexible manufacturing of diverse products in small lots and production-to-order, while meeting demands for advanced product technology, the Company established a solid position in the metal fabrication field.



Newly completed Kurami Works

1985
Isohara Works launched
The Company got into the electronic materials business in time for the rise of the electronics industry in the 1980s, making sputtering targets for semiconductors and transparent conductive films for liquid crystal displays, as well as materials for compound semiconductors. By establishing the Isohara Works (Ibaraki Prefecture) as a new main manufacturing center, the Company expanded into development and manufacturing of copper foil and various electronics materials.



Isohara Works when newly established

2014
Caserones Copper Mine began production
The official opening of the Caserones Copper Mine was celebrated, as a 100% Japan-funded resources development project in Chile, and the shipment of copper concentrate was begun.



Caserones Copper Mine

2018
H.C. Starck Tantalum and Niobium GmbH shares acquired
The outstanding shares of H.C. Starck Tantalum and Niobium GmbH, a German manufacturer of metal powders, were acquired with an eye to expanding business areas, in anticipation of dramatic demand growth for electronic components and devices.



H.C. Starck Co., Ltd. (Thailand)

2019
Net sales 1,041.8 bil. yen
(fiscal year ended March 2019)
*Consolidated
Employees 9,487
(As of March 31, 2019)
*Consolidated

The Roots of CSR in the JX Nippon Mining & Metals Group

The history of the Group traces back to the time when founder Fusanosuke Kuhara opened the Hitachi Mine, in 1905. Throughout the process of working to resolve the smoke pollution problem at the mine, the Company maintained its stance of aiming to grow in tandem with the local community, while at the same time fostering an ethos of respect for employees.

This approach, which was ahead of its time, lives on today in the Group's DNA.

Achieving harmonious coexistence with the local community through the smoke pollution problem

At the time, there was no established technology for effectively recovering sulfur dioxide generated from the smelting process. When the plant went into operation, the smoke it emitted caused widespread damage to the surrounding forests and to agricultural crops. Although it was an era in which Japan had not yet established legal requirements for compensation for damage caused by smoke pollution, Yataro Kado, the first head of general affairs, took the lead in making sure local residents were compensated.

Along with the compensation, the Company sought to minimize smoke pollution. With the technology of that era, however, diffusing and diluting the exhaust smoke proved difficult, as efforts fell short time after time. Kuhara then proposed building what at the time was the world's tallest stack to disperse the smoke over a wide area. Around 37,000 workers and a massive financial investment were devoted to the construction. After it was completed in 1914 at a height of 155.7 meters, the giant stack succeeded in dramatically reducing smoke pollution. Kuhara further undertook full-scale tree-planting programs to reforest the devastated mountainsides. Smoke-resistant Oshima cherry and other saplings were planted over a total area of around 1,200 hectares.

The Words of Founder Fusanosuke Kuhara

"Pollution problems are ever present. They are like an eternal cross that the human race must bear. As science advances, pollution becomes more diverse.

"How many people have devoted strenuous efforts and pains to stop this problem from growing? . . .

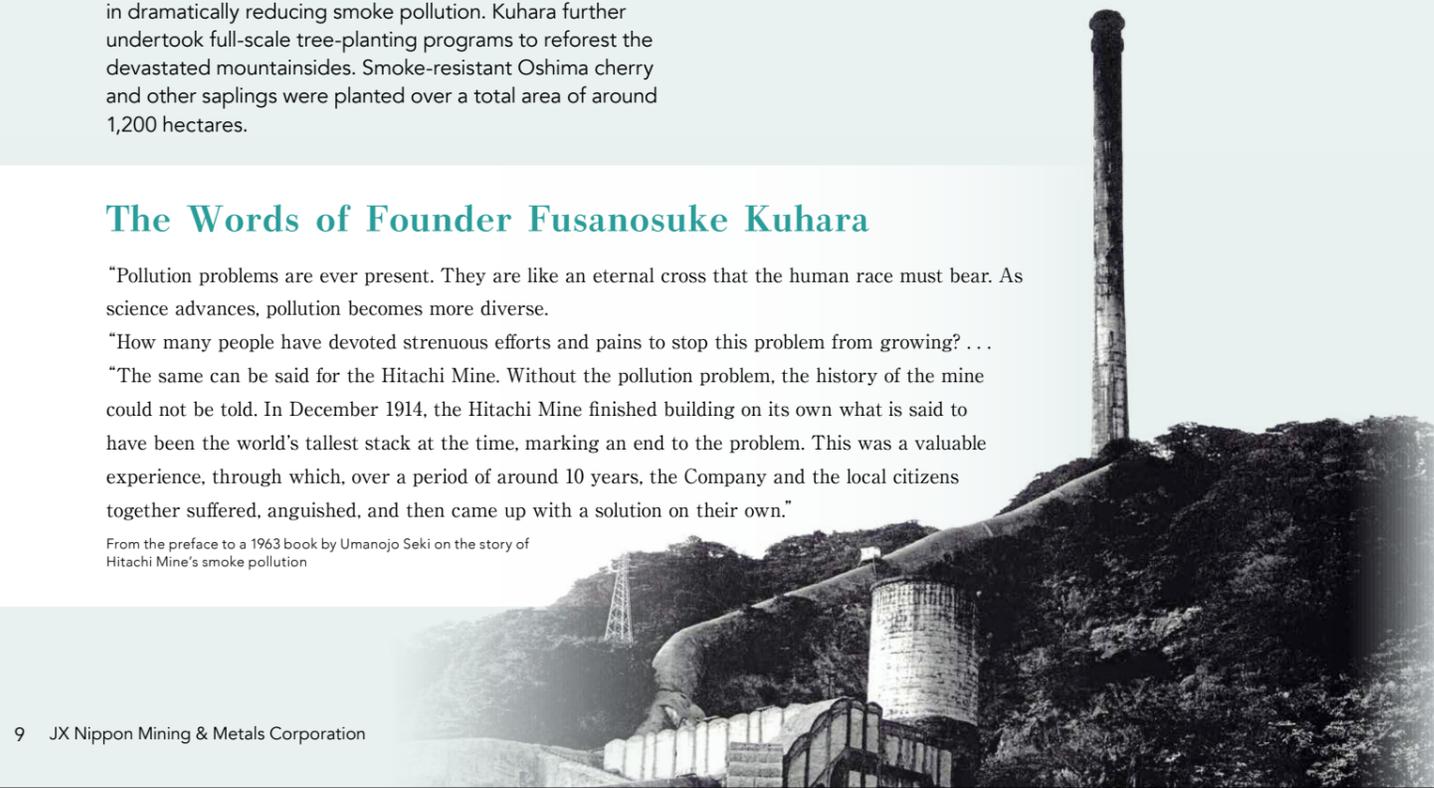
"The same can be said for the Hitachi Mine. Without the pollution problem, the history of the mine could not be told. In December 1914, the Hitachi Mine finished building on its own what is said to have been the world's tallest stack at the time, marking an end to the problem. This was a valuable experience, through which, over a period of around 10 years, the Company and the local citizens together suffered, anguished, and then came up with a solution on their own."

From the preface to a 1963 book by Umanojo Seki on the story of Hitachi Mine's smoke pollution

Creating a workplace where employees can work with peace of mind

Based on his conviction that employees are a company's assets, Kuhara also took measures to create a workplace where they could work with peace of mind. He accordingly built an entire community, providing not only housing where workers could live with their families, but also schools, hospitals, a railroad, and amusement facilities.

That philosophy was carried on by Kado, who believed in encouraging simplicity and fortitude, as well as simple hard work, while also thinking about the happiness of all employees. His aim was to maintain harmony among workers both in the workplace and in employee housing. In this environment that combined work and home, the Company fostered a climate of respect for employees, while a sense of togetherness took root also among the employees themselves. The philosophy of "the Mine as One Big Family" lives on in the Group even today. Guided by these principles, we maintain an open, supportive workplace environment in which employees feel free to exchange opinions regardless of position, age, or gender.



Shigeru Oi

Executive chairman
JX Nippon Mining & Metals Corporation

Katsuya Matsumura

Director and Screenwriter for
A Town and a Tall Chimney

Special interview to commemorate the premiere of the film, *A Town and a Tall Chimney*

The film *A Town and a Tall Chimney*, based on the real story surrounding the giant stack that is a symbol of Hitachi City, premiered on June 22, 2019. The novel of the same title on which the film was based was written by Jiro Nitta. It tells the story of a community and company aiming for coexistence and mutual prosperity, while together confronting a smoke pollution problem. To commemorate the film's premiere, we conducted an interview to address the appeal of the film and the roots of our Group CSR.

How did you get started on this film project?

Matsumura: Around seven years ago, I directed the film *Tenshin* about the career of Tenshin Okakura, a pioneer in developing modern Japanese art, which was set in Ibaraki Prefecture. When I visited Hitachinaka City for a showing of the film, I was introduced to Jiro Nitta's novel, *A Town and a Tall Chimney*, by someone who had worked at the Hitachi plant. Jiro Nitta is known as a writer of nature-themed novels, among them *Death March on Mount Hakkoda* and *The Summit: A Chronicle of Stones*. I was not aware until then that he also wrote about environmental issues. I was amazed that such a story had actually taken place. So I decided to make a film based on *A Town and a Tall Chimney*, as the culmination of three works on Ibaraki.

Oi: The first time I heard about the making of a film version was when I visited Ibaraki Prefecture to pay New Year visits to business associates. That was a time when, as president, I was seeking to gain management insights by learning

from the thoughts of our founder, as well as the history of accomplishments by our early pioneers and the tribulations they overcame. I recall being happy to learn about the film version at that very time.

What were your main considerations when making the film?

Matsumura: The original being a masterpiece, I tried hard not to undermine its appeal. At the same time, I wanted to depict the conflict between people and how a tragic situation was overcome, which is why there are more such scenes in the film than in the original work. It's a story modeled after an existing company, and I am grateful to you all in the JX Nippon Mining & Metals Group for respecting our wishes.

Oi: I had a chance to visit the filming location. It was a time when Tatsuya Nakadaï (in the role of Hyoma Sekine) was being filmed, and I was watching from a distance, thinking



The spirit of acting “for the sake of people we love.” The desire to work toward a successful outcome. I want to pass this on as the Group DNA to coming generations.

it would not be proper to get too close. Then Director Matsumura told me it was OK, allowing me to talk with the cast. I was especially grateful when Mr. Nakadai told me how tremendously moved he was by the story, and that he considered it an honor as an actor to be part of the film.

What scenes were especially compelling for the two of you?

Matsumura: My favorite scene is the one where youths from the village, with Saburo Sekine as representative, gather and engage in intense discussions about the problem. Provoked by the village mayor, played by Naomasa Musaka, the views of the villagers are divided and they trade criticisms back and forth. I believe people who see this scene will be powerfully drawn into the story, wondering what these young people will end up doing. From young actors to veterans, the performers joined forces with the assistant directors and put everything they had into this part of the film, going far beyond my direction to create a highly memorable scene.

Oi: The scene with villagers arguing was truly forceful. The opening of the work was also wonderful. The way it starts out has the tension of a mystery film, pulling us in as we wonder, “What’s going to happen?” This was really well done by the director.

Matsumura: Thank you.

Oi: What I liked best of all was the last scene, where the narration is playing against the backdrop of today’s Hitachi

City. It snapped me to attention, reminding me how, as a business manager, it is necessary to have ideals, that I myself was expected to do so, and that I would also need to convey the ideals of our founder Fusanosuke Kuhara (Kichinosuke Kihara in the film).

Matsumura: In the closing scenes of this work, the remarkable revival of the smoke-ravished mountainsides and town is symbolized by the beautiful cherry blossoms. Here I think a film has an advantage over the printed word in depicting such an image.

Oi: Speaking of the advantages of the film medium, another scene that has to be mentioned is the building of the giant stack.

Matsumura: We did that scene on the site of an abolished school in a town a little north of Hitachi City, erecting three stories of scaffolding and combining it with computer graphics. When I saw the scene where the scaffolding collapses, I thought, “That was really well done” as if I were viewing someone else’s movie. [laughs]

Oi: I believe the film is compelling also as entertainment. The scene showing the love between Saburo Sekine and Chiho Kaya by no means ruins the story, and clearly reflects the era, while having the effect of keeping the story flowing toward the construction of the giant stack.

What are your thoughts about the film in relation to the CSR of the JX Nippon Mining & Metals Group?

Oi: We know today that a company cannot achieve



The giant stack today. In 1993, it collapsed, leaving only the bottom one-third in place, but it is still loved today as a symbol of Hitachi City.



Saburo Sekine (Asato Ide, left), born in a landowning family, upon seeing the disastrous smoke damage decided to give up his dream of becoming a foreign diplomat and fight the pollution.



Film, *A Town and a Tall Chimney*, now playing in theaters. Distributed by Elephant House ©2019 K-move

Responding to the persistent persuasion by Jumpei Kaya (Dai Watanabe, left rear), who as head of general affairs at the Hitachi Mine served as negotiator with the local residents, Kichinosuke Kihara (Koji Kikkawa, right) made the decision to build a giant stack.

The giant stack built by Kuhara, 155.7 meters tall, is the pride of Hitachi City and also the starting point for Japan’s CSR.



sustainable growth without being run in a way that is good for society and the environment, but I have renewed pride in knowing the Company was doing this already more than a century ago. For example, even if the Company continued to pay monetary compensation for the smoke pollution, if the local environment was destroyed and people moved away, the business could not have been maintained. The sustainable growth of a corporation depends on joining hands with the local residents and together working out a vision for growth, without being obsessed with short-term profit.

Matsumura: Kuhara’s mindset was not that it was simply enough for the Company itself to make money. His sense of values insisted on the happiness of the local community, which I feel was unusual for an entrepreneur of that era. That he sincerely faced up to the issues of the community, battled smoke pollution together with the local residents, and sought growth based on a vision, is all the more reason why the Company got to where it is today. That’s why the giant stack is the pride of Hitachi City and is, I believe, the starting point for CSR within Japan as a whole.

Oi: As is also expressed in the film, another important element is the spirit of acting “for the sake of people we love.” The feeling of wanting to do your best for your family is one that keeps expanding, to “for your colleagues” and “for the community.” And part of being motivated by the setting of targets is the desire

to work toward a successful outcome. I feel that this is what defines the DNA passed down since the founder of our Group, and I have a strong desire to pass this on to coming generations.

Matsumura: In fact, that is the theme I wanted to depict most in this work. Difficulties arise in any era, but through this film I came to feel strongly that if you don’t give up, miracles can happen. I also felt that the miracle that occurred from overcoming difficulties still remains 100 years later. This was the feeling I put in one of Saburo Sekine’s lines, who says to Kuhara, “I will never forget you, not in 100 years.”

Oi: This work is one I would very much like new employees in our Company to see. I would like them to learn from this film the spirit of our Group, that our business activities do not end simply with social responsibility, but ultimately are aimed at realizing a sustainable society, that is, working to contribute to the SDGs. As executive chairman, I want to help the youth responsible for the next generation to work hard toward our goals, and in that sense also I am grateful that you have provided us with this good incentive.

Matsumura: I understand that, as a global corporation, the JX Nippon Mining & Metals Group has people working in many parts of the world, inside and outside Japan. I hope this film will be shown in many locations and reach as many people as possible.

Matsumura & Oi: Thank you very much.



A Town and a Tall Chimney
June 22, 2019
Nationwide premiere

Director and Screenwriter: Katsuya Matsumura
Screenwriter: Yoshinori Watanabe
Original Work: Jiro Nitta
Cast: Asato Ide, Dai Watanabe, Riria Kojima, Koji Kikkawa, Tatsuya Nakadai, and others
Planning Cooperation: Bungeishunju Ltd.

Story: The year was 1910. Saburo Sekine (Asato Ide), born and raised in a landowning family of Irishiken, Kuji, Ibaraki Prefecture, learned that smoke pollution was being generated by the Hitachi Mine located in the neighboring village. His grandfather Hyoma (Tatsuya Nakadai), an influential member of the village, saw it as a serious problem and went to the mining company for talks, but was simply told to put up with it as the village would be compensated for the damage. Hyoma, worried about Saburo who had a college entrance exam coming up, confided that it was he who had approved the mining rights 30 years ago as village mayor. Five days later, he was dead. Saburo, determined to carry on with his grandfather’s wishes, abandoned both his plan to go to college and his dream of becoming a foreign diplomat, deciding to confront the smoke pollution issue.

Philosophical Framework of the JX Nippon Mining & Metals Group

The JX Nippon Mining & Metals Group, as a member of the JXTG Group, shares the core values advocated in the JXTG Group Philosophy and practices these in our daily business operations, thereby contributing to the sustainable growth of society.

JXTG Group Philosophy

Mission

Harnessing the Earth's power for the common good and for the day-to-day life of each individual, we will contribute to the development of our communities and help to ensure a vibrant future through creation and innovation in energy, resources, and materials.

Our Five Core Values

As a member of the community

High ethical standards

Based on our core principles of integrity and fairness, we conduct all of our business activities in accordance with our high ethical standards.

Health, safety, and environment

We give the highest priority to health, safety and environmental initiatives, which are vital to the well-being of all living things.

Supporting day-to-day life

Focus on customers

We strive to meet the expectations and evolving needs of our valued customers and of society as a whole through the stable provision of products and services while creating new value as only we can.

For a vibrant future

Taking on challenges

Taking changes in stride, we rise to the challenge of creating new value while seeking innovative solutions for today and tomorrow.

Moving forward

Looking to the future, we continue to grow, both as individuals and as a company, through the personal and professional development of each and every employee.

JX Nippon Mining & Metals Code of Conduct

Ensuring a stable supply of nonferrous resources and materials is our social mission. We are engaged in a wide range of operations from exploration, mining, smelting & refining to metal fabrication and electronic materials production. Based on "JXTG Group Philosophy" and complying with Code of Conduct stipulated below, we will continue to pursue technical rationality and efficiency and make improvements in quality & product properties and other matters in all aspects of our operations from development, production and marketing. At the same time, we will continue to promote recycling of resources and materials to achieve zero emission. This is our way of achieving continuous innovation in the productivity of resources and materials.

In the conduct of our business, we are committed to maintaining and enhancing a harmonious relationship with a wide range of stakeholders, including our customers and the communities in which we operate. We are committed to contributing to the sustainable development of society on a global scale.

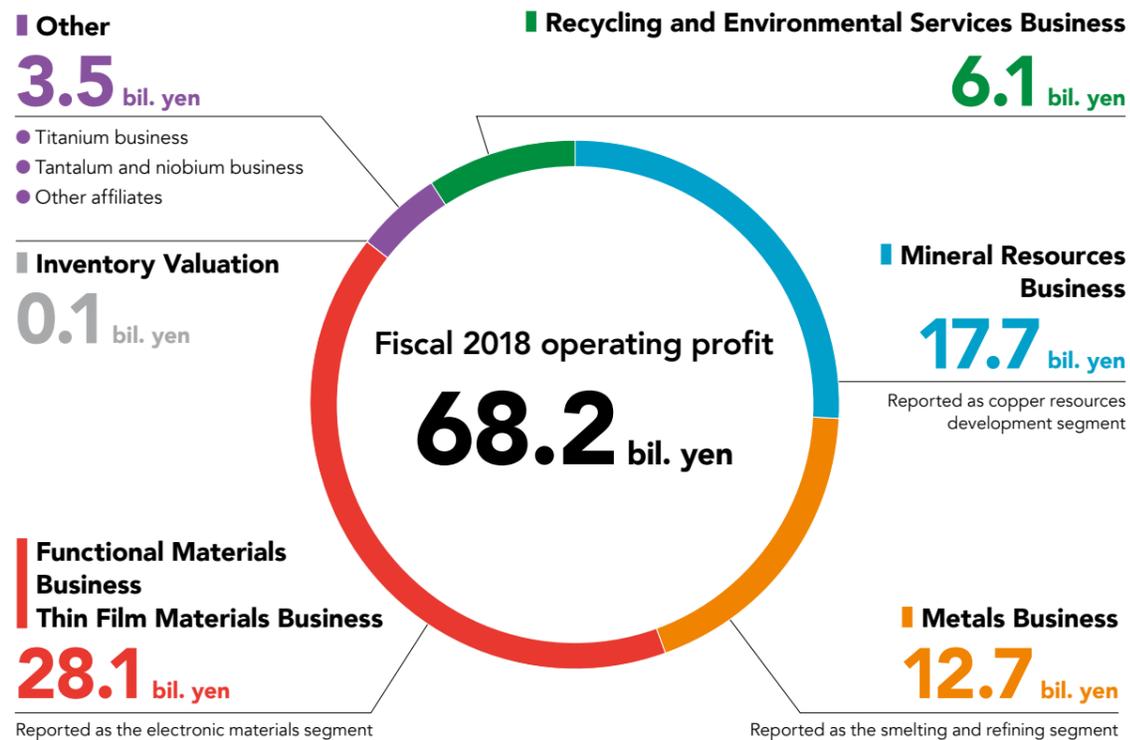
- 1 **Our social mission**
Based on continuous technological development and full awareness of our responsibilities in designing products, we will develop and produce a variety of products efficiently while minimizing waste. At the same time, we will promote recycling and reduce the impact of our operations 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.

Business Portfolio

We see the social mission of our Group as providing stable supplies of nonferrous metal resources and materials to society and also as promoting zero-emission recycling. To fulfill this mission, we regard CSR activities as “nothing more or less than our business activities,” pursuing innovation in the productivity of resources and materials in each of our business areas.

Profit Structure

* The Group's business operations are divided into the following segments: mineral resources, metals, recycling and environmental services, functional materials, thin film materials, and other.



Notes: 1.The Company discloses financial information through its holding company JXTG Holdings, Inc. 2.JXTG Holdings, Inc. has applied International Financial Reporting Standards (IFRS) from fiscal 2017.

The Competitive Superiority of Our Businesses (Fiscal 2018)

Pan Pacific Copper Co., Ltd. Refined copper production capacity

Approx. **650,000** tons

Metals business is conducted chiefly by Pan Pacific Copper Co., Ltd., a joint venture with Mitsui Mining & Smelting Co., Ltd. Pan Pacific Copper has the largest production capacity in Japan.



Treated rolled copper foil

Global market share **80%** Approx.

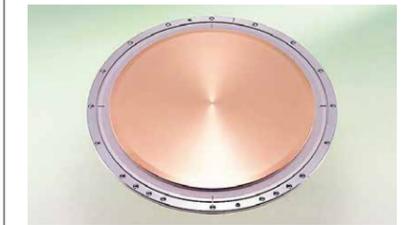
Our treated rolled copper foil products, thanks to outstanding production and quality management systems along with the advantage of our integrated production capabilities, boast superior properties including high flexibility, thermal resistance, strength, and conductivity.



Sputtering targets for semiconductors

Global market share **60%** Approx.

Our sputtering targets for semiconductors, products for which high purity is a key requirement, are provided by means of highly stable processes extending from mass production products to specially developed products.



Equity entitled copper mine production

Approx. **200,000** tons

The mineral resources business is actively involved in promising mine development projects from the planning stage, contributing greatly to the stable supply of copper resources to Japan.



Volume of gold recovered from recycling

Approx. **6** tons per year

Fundamental to our business is zero emissions, the concept of not generating any secondary wastes. We are helping to create a global recycling-oriented society aimed at not leaving future generations with an environmental burden.



High-purity tantalum powder for electronic materials

Top global market share

H.C. Starck Tantalum and Niobium GmbH contributes to the advancement of the internet of things (IoT) and artificial intelligence (AI) in society through provision of such products as high-purity tantalum powder, high-purity tantalum and niobium oxides, and additives for superalloys.



Titanium sponge production capacity

Approx. **25,000** tons per year

Toho Titanium Co., Ltd. manufactures titanium sponge by a process that adds its own original technology to the Kroll process, for reducing titanium tetrachloride using metal magnesium.



Business Overview

Mineral Resources Business

Mine development starts with exploration activities looking for mineral deposit potential. Mined ores having a copper grade of around 1% are ground, followed by flotation to select the useable contents, resulting in copper concentrate with a grade of around 30%.

Metals Business

We produce refined copper (with a purity of 99.99% or higher) from copper concentrate (with around 30% copper purity) by smelting and electrorefining processes. As by-products of these processes, precious metals, sulfuric acid, and other metal products are also manufactured.

Recycling and Environmental Services Business

By recovering nonferrous metals from end-of-life appliances, electronic devices, and metal scrap, and also by detoxifying industrial waste, we are contributing to environmental conservation and to the realization of a recycling-oriented society.

Functional Materials Business

We supply products essential to the leading-edge electronics industry, producing copper foil, copper alloy products, special steel products, and other precision rolled products, as well as conducting precious metal plating and stamping.

Thin Film Materials Business

We supply various types of sputtering targets, along with products for use in highly functional electronics devices, the latest IT gadgets, medical instruments, and electric vehicles.

Tantalum and Niobium Business

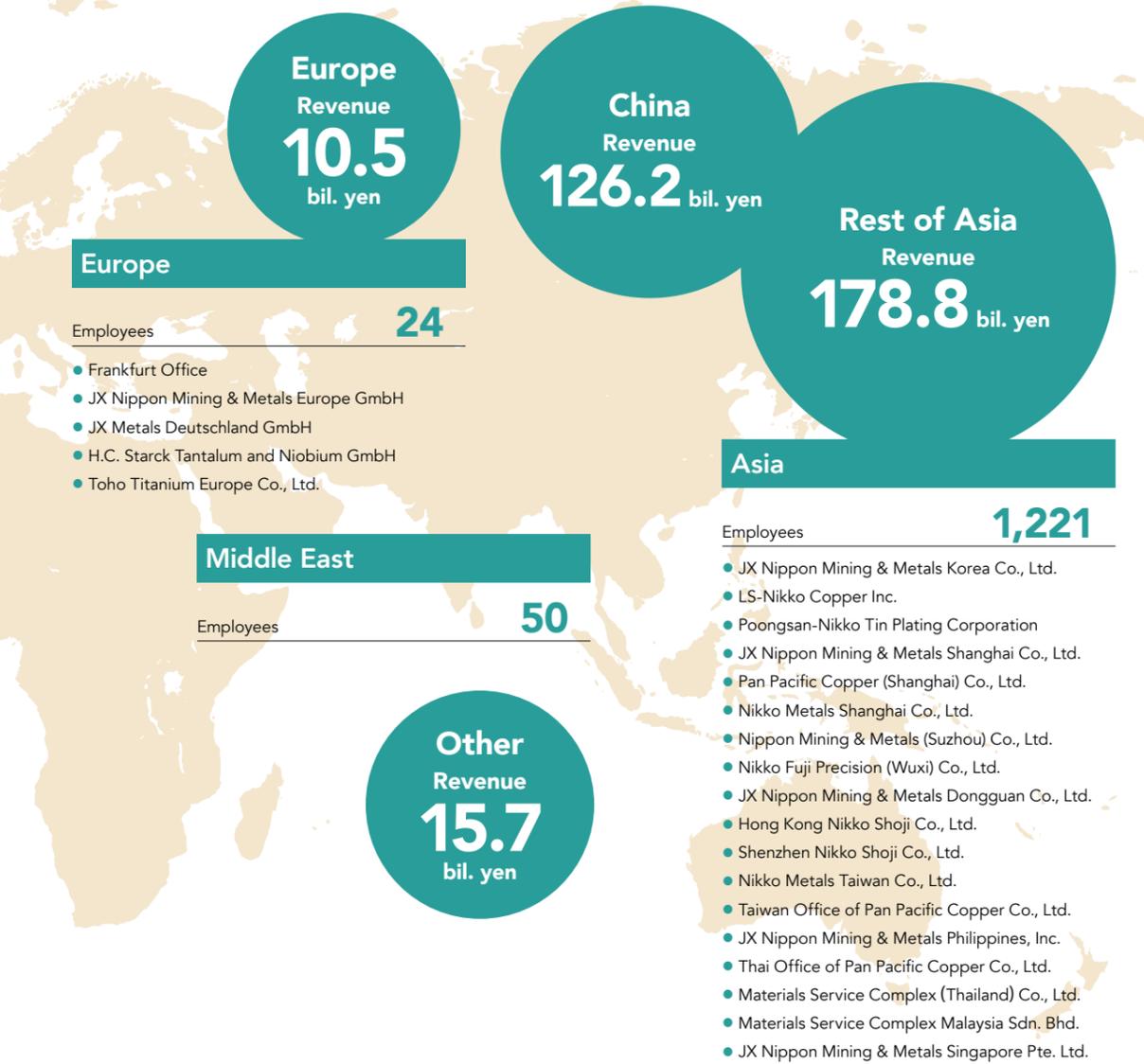
H.C. Starck Tantalum and Niobium GmbH contributes to the advancement of society through the supply of high-quality tantalum and niobium products used in many kinds of electronic equipment.

Titanium Business

In the Toho Titanium Group, a variety of titanium materials are manufactured from titanium ore and supplied for use in aircraft, general industry, and electronic materials. In addition, the Group is engaged in the catalysts and chemicals business based on the titanium smelting technology and the raw materials obtained from that process.

Global Network

JX Nippon Mining & Metals has many production sites and Group companies in Japan and worldwide. Drawing on this network, we are meeting needs that grow more advanced and diverse year by year, and providing new value to customers and society.



Corporate Data

Company Name	JX Nippon Mining & Metals Corporation
Paid-in Capital	75.0 billion yen (wholly owned by JXTG Holdings, Inc.)
Representative	Seiichi Murayama, President and Chief Executive Officer
Revenue	1,041.8 billion yen (fiscal 2018, consolidated)
Head Office	1-2, Otemachi 1-chome, Chiyoda-ku, Tokyo 100-8164, Japan
Business Lines	<ul style="list-style-type: none"> Mineral Resources Business Metals Business Recycling and Environmental Services Business Functional Materials Business Thin Film Materials Business Tantalum and Niobium Business Titanium Business

Employees (Nonconsolidated)	2,985 (as of March 31, 2019)
Employees (Consolidated)	9,487 (as of March 31, 2019)
Domestic Operating Sites:	<ul style="list-style-type: none"> Hitachi Works (Ibaraki Prefecture) Isohara Works (Ibaraki Prefecture) Technology Development Center (Ibaraki Prefecture) Kurami Works (Kanagawa Prefecture) Tsuruga Plant (Fukui Prefecture)
Overseas Operating Sites*	Chile Office, Frankfurt Office

*1 The JX Nippon Mining & Metals Group conducts business in Chile, Germany, China, South Korea, the United States, and six other countries as well as Japan.

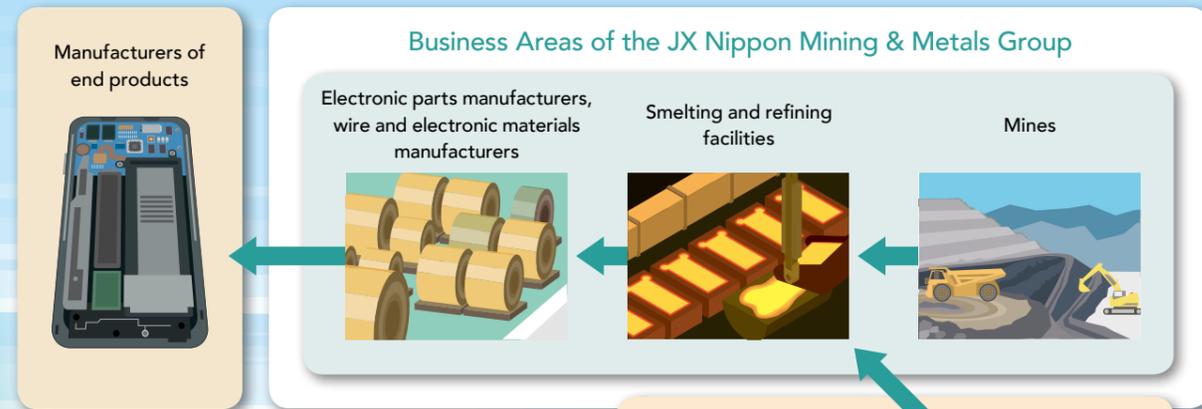


Region	Employees
Japan	7,049

- JX Nippon Tomakomai Chemical Co., Ltd.
- Esashi Works of JX Metals Precision Technology Co., Ltd.
- Ichinoseki Foil Manufacturing Co., Ltd.
- Shirakawa Plant of JX Nippon Takasho Co., Ltd.
- Isohara Works
- JX Nippon Foundry Co., Ltd.
- Hitachi Works
- Hitachi Refinery of Pan Pacific Copper Co., Ltd.
- JX Nippon Environmental Services Co., Ltd.
- Kamine Clean Service Co., Ltd.
- Hitachi Plant of Toho Titanium Co., Ltd.
- Tatebayashi Works of JX Metals Precision Technology Co., Ltd.
- Nasu Works and Metal Mold Production & Development Center of JX Metals Precision Technology Co., Ltd.
- Kurami Works
- Kurami Office of JX Nippon Coil Center Co., Ltd.
- Chigasaki Plant of Toho Titanium Co., Ltd.
- JX Nippon Mikkaichi Recycle Co., Ltd.
- Kurobe Plant of Toho Titanium Co., Ltd.
- Kakegawa Works of JX Metals Precision Technology Co., Ltd.
- Tsuruga Plant
- JX Nippon Tsuruga Recycle Co., Ltd.
- Takatsuki Plant of JX Metals Trading Co., Ltd.
- Hibi Smelter of Pan Pacific Copper Co., Ltd.
- Tamano Smelter of Hibi Kyodo Smelting Co., Ltd.
- Hibi Smelting Logistics Co., Ltd.
- Yahata Plant of Toho Titanium Co., Ltd.
- Wakamatsu Plant of Toho Titanium Co., Ltd.
- Saganoseki Smelter & Refinery of Pan Pacific Copper Co., Ltd.
- Saganoseki Works of Japan Copper Casting Co., Ltd.
- Nissho Kou-un Co., Ltd.
- Kasuga Mines Co., Ltd.

Group Products All Around Us

Nonferrous metals are materials indispensable to contemporary life. Among them, copper with its excellent electrical conductivity and ease of processing is used in a wide variety of fields. Also found in many applications from industrial to everyday goods are rare metals such as light, strong, and corrosion-resistant titanium.



Bullet trains

Copper with its high thermal resistance and durability against wear and abrasion is used in the trolley wires that supply electric power via the pantograph.

Electric Vehicles

Copper foil with its outstanding conductivity is used in compact, lightweight, and fast-charging lithium-ion batteries.

PCs

Excellent heat dissipation is why copper is used in CPU coolers to convey the generated heat effectively to the coolant.

Smartphones

Our treated rolled copper foil is used inside increasingly slim smartphones.

Aircraft

Titanium alloy is used in aircraft fuselages, which demand light weight, high strength, and high corrosion resistance.

Medical cables

Copper is chosen also for medical equipment with its complex wiring, finer than human hair.

Electric wire

Copper with its high conductivity and flexibility plays a key role in the stable supply of electricity.

Automobiles

Copper is used in wire harnesses for connecting in-vehicle electric wiring.

The Long-Term Vision of the JX Nippon Mining & Metals Group

JX Nippon Mining & Metals Group Long-Term Vision 2040

Moving from a mass production type to a technology-based firm
 Becoming high profitability firm as well as contributing to the realization of sustainable society

- Categorizing our businesses as a "Focus Business" or a "Base Business"
- Positioning minor metal business as one of core domains

Base Business

Aim: To make company's management stable and to support Focus Business through providing beneficial resources (Capital, HR, Technology)
Method: Carrying out structural reforms
 -Improving efficiency
 -Timely review of the asset portfolio
Business field: Mining
 -Smelting & Refining
 -Recycling related to Smelting & Refining business

Organizational base

Focus Business

Aim: To greatly expand the scale of profits
Method: Technological differentiation
 -Constantly aligns products with variety of cutting-edge product lineups
Business field: Advanced materials
 -Technology-based recycling business

Core of growth strategy

Copper/
Minor
metal

Notable characteristics of social trends

Depletion of resources due to middle-income class expansion



Along with economic growth, limited resources are subject to competition for acquisition.

Shrinking domestic market / Sustainable growth becomes a big challenge



The environmental issues becoming critical for sustainable growth also in emerging countries.

Expanding the demand for advanced materials



Digital data has been widely used in various industries such as healthcare, energy, IT and mobility, in which advanced materials are indispensable.

Future prospect based on social trends

Changes in social trends create not only risks but also great business opportunities in up, middle and down streams.

Upstream (Resources development)

- High profitability due to tight demand
- Wide fluctuations in metal prices
- Decrease in high quality ore, tighter environmental regulations etc. → Increasing the risk and cost of resources development

Midstream (Smelting & Refining, Recycling)

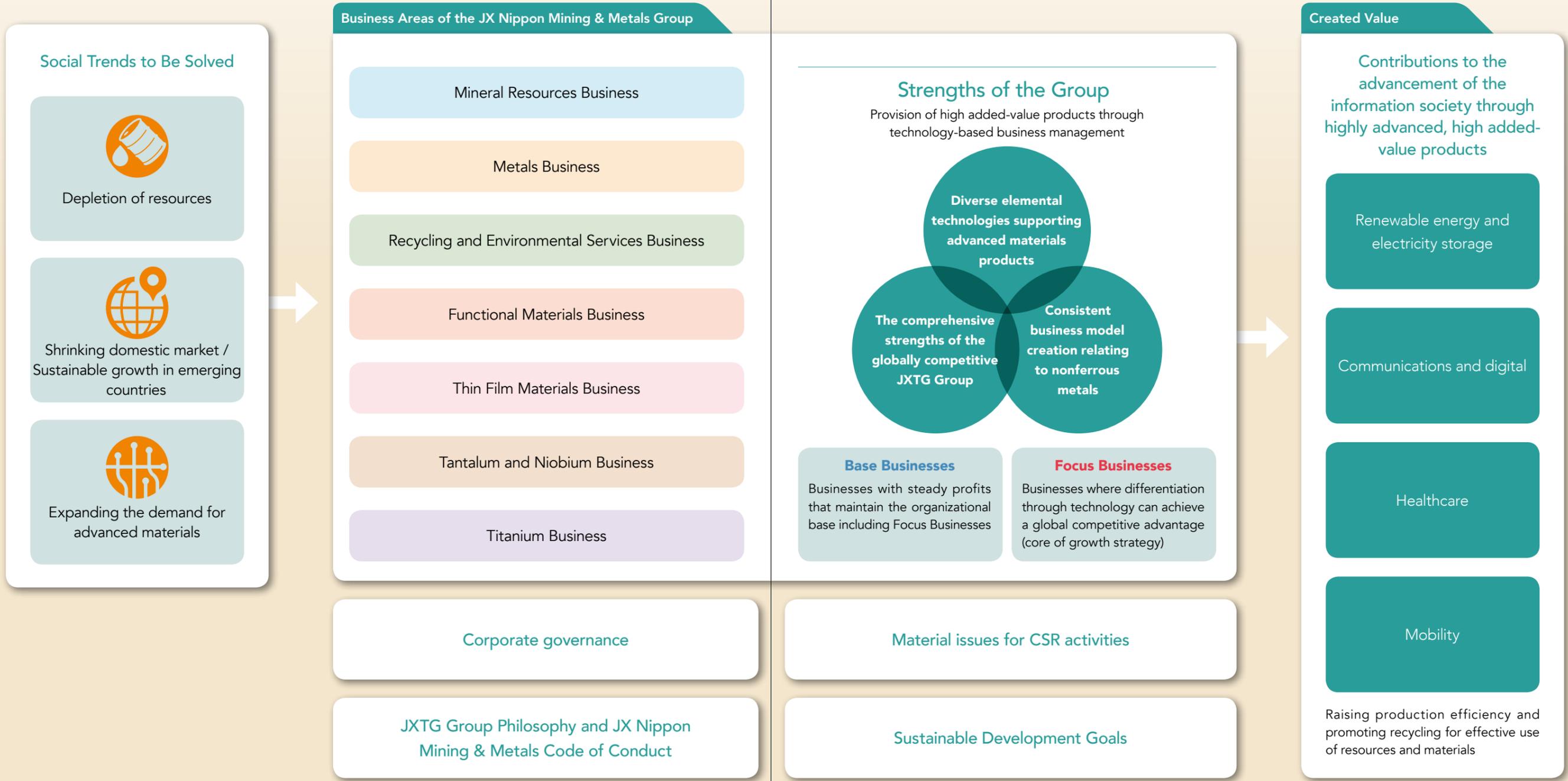
- Stable revenue structure basing on consignment charges for smelting
- More opportunities for environment-conscious recycling business in emerging countries
- Shortage of resources and intense competition with Asian companies

Downstream (Functional Materials, Thin Film Materials, etc.)

- High profitability by Global Niche Top position in new market through technological differentiation
- Short popularity period, economic downturn, alternative materials, prolonged R&D period, etc. →The risk of market loss becomes high



Value Creation Model of the JX Nippon Mining & Metals Group



Material Issues for CSR Activities and the SDGs

The JX Nippon Mining & Metals Group has identified 10 Material Issues for CSR Activities in view of our changing business environment and the expectations and demands of society, including the SDGs. Recognizing these Material Issues as central to our growth strategy, we are contributing through our businesses to realization of a sustainable society.

Material Issues for CSR Activities	Related SDGs	Details
Using Nonferrous Metal Resources Effectively	8 DECENT WORK AND ECONOMIC GROWTH, 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE, 11 SUSTAINABLE CITIES AND COMMUNITIES, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION	P39
Establishing a Recycling-Oriented Society	6 CLEAN WATER AND SANITATION, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 15 LIFE ON LAND	P45
Establishing a Low-Carbon Society	7 AFFORDABLE AND CLEAN ENERGY, 13 CLIMATE ACTION	P49
Ensuring Occupational Health and Safety	3 GOOD HEALTH AND WELL-BEING, 8 DECENT WORK AND ECONOMIC GROWTH	P57
Assuring Product Quality	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	P61
Developing Human Resources	4 QUALITY EDUCATION	P65
Providing a Rewarding Work Experience	5 GENDER EQUALITY, 8 DECENT WORK AND ECONOMIC GROWTH, 10 REDUCED INEQUALITIES	P69
Promoting Community Involvement and Development	11 SUSTAINABLE CITIES AND COMMUNITIES, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION	P77
Respecting Human Rights	5 GENDER EQUALITY, 8 DECENT WORK AND ECONOMIC GROWTH, 10 REDUCED INEQUALITIES	P79
Insisting on Full Compliance	10 REDUCED INEQUALITIES, 16 PEACE, JUSTICE AND STRONG INSTITUTIONS	P83

Material Issues for CSR Activities: The Identify Process

(1) Determining social issues to be considered

After a comprehensive study of international guidelines (GRI Standards, etc.), as well as global and domestic initiatives (the SDGs, Charter of Corporate Behavior, etc.), and trends among other companies in the industry, we identified 34 social issues to be considered.

(2) Prioritizing from external standpoint

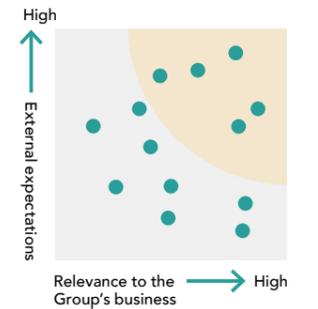
The 34 social issues are analyzed from the external standpoint of stakeholder expectations according to assessment weightings by an ESG survey institute and other factors (vertical axis in figure).

(3) Prioritizing from the Group's standpoint

The relevance of each issue to the Group's business (materiality) is determined based on exchanges of views in CSR promotion managers' meetings and officer training sessions, and employee surveys (horizontal axis in figure).

(4) Identifying material issues

Material Issues are identified based on the results of stages (2) and (3) of the process. Deliberations are carried out in the CSR Committee that is an advisory organization to the president, and the choice of issues is approved by the Executive Meeting members including the president.

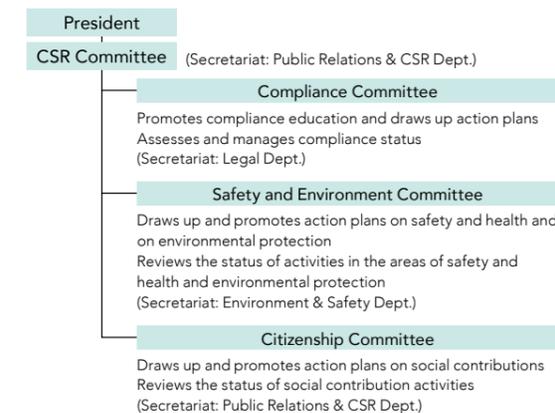


CSR Promotion System

CSR Promotion Organization

The Group has a CSR Committee, an advisory body to the president that formulates basic policies and action plans relating to CSR activities. It also assesses progress in implementing the plans and the Group's performance. The committee is chaired by the president and consists of the members of the Executive Meeting. The committee meets twice a year in principle. In addition to formulating action plans for CSR activities, it reviews progress in implementing the actions and provides feedback. (Meetings held in fiscal 2018: May 9, November 5) Under the CSR Committee are a Compliance Committee, Safety and Environment Committee, and Citizenship Committee. These committees devise plans and review the status of activities in their respective areas of responsibility.

CSR Promotion System



CSR Promotion Managers

CSR promotion managers are appointed at each of the Group's operating sites and companies. They are responsible for ensuring that basic policies, promotion systems, and action plans for CSR activities are implemented faithfully in line with the actual conditions at each site and company. They formulate their own individual CSR plans and report on progress at CSR promotion manager meetings held twice a year. These meetings also function as opportunities to exchange information among participants.

Initiatives for Increasing CSR Awareness

The Group is actively engaged in instilling awareness of CSR, such as by providing face-to-face CSR training targeting Group officers and employees and conducting CSR surveys of employees.

Activities Conducted in Fiscal 2018

Activity	Timing	Description
Training Session for CSR Promotion Managers	June 6, 2018	Led by an outside instructor, the event deepened understanding of the true meaning of CSR and the latest trends.
CSR Survey	October to December 2018	The survey obtained views on the Sustainability Report, and queried employees to determine the extent of awareness of the Code of Conduct and CSR activities.

Progress in Meeting the Medium-Term Management Plan (Fiscal 2017 to 2019)

The JXTG Group has drawn up a Medium-Term Management Plan for fiscal 2017 to 2019, and Group members are now engaged in achieving its goals. In drawing up this plan, the following basic aims were incorporated.

Basic Aims

- In order to contribute to the development of society and economy and the creation of a sustainable and vigorous future, the Group endeavors to enhance its core businesses, promote innovation, and operate business globally.
- At the same time, the Group will foster human resources with high ethical standards and willingness to take on new challenges, who are essential in promoting the above, to become one of the most prominent and internationally competitive comprehensive energy, resources, and materials company groups in Asia.

Fundamental Policy of the JX Nippon Mining & Metals Group for the Medium-Term Management Plan

With the goal of becoming a global resources and materials company centering on copper, the underlying foundation of the Group will be strengthened and made more stable.

Based on this fundamental policy, three indicators have been set.

① Establish and strengthen the profit base by enhancing the profitability of the resources development segment and promoting growth of technology-based businesses

② Improve the financial base by practicing strict financial discipline

③ Aggressively implement strategic investment in growth areas for the sake of the future

In the current business climate, the JX Nippon Mining & Metals Group is moving beyond difficult times as resource prices are slowly recovering and moderate growth is continuing in emerging countries. Society is experiencing rapid changes with the emergence of IoT and AI. During the three years of the Medium-Term Management Plan, the Group is called on to establish the kind of profit and financial base that can adapt readily to changes in the business climate.

The first means to this end will be to ensure that the profitability of core businesses is strengthened. While paying attention to investment efficiency, the Group will strengthen competitiveness from upstream to downstream businesses and obtain stable revenue sources. The second means will be to develop and strengthen businesses that will be the mainstays of the future, thereby increasing the presence of the JX Nippon Mining & Metals Group and contributing to realization of a sustainable society.

Planned operating profits (excluding inventory valuation) and key factors

	FY2017		FY2018		FY2019	
	Planned	Results	Planned	Results	Planned	Forecasts
Upstream (mineral resources business) (billions of yen)	9.0	12.7	15.0	17.7	30.0	30.0
Midstream and downstream (metals business, functional materials business, thin film materials business, recycling and environmental services business, and titanium business) (billions of yen)	35.0	53.7	50.0	50.4	60.0	53.0
Total (billions of yen)	44.0	66.4	65.0	68.1	90.0	83.0
Key factors						
Exchange rate (JPY/USD)	110	111	110	111	110	110
LME copper price (US cent/pound)	250	292	260	288	270	295

Notes:
 1.The planned figures for fiscal 2017 to 2019 are as announced in May 2017. The Company has applied IFRS from fiscal 2017.
 2.Results for fiscal 2017 are excluding the impairment loss of ¥128.6 billion recognized for the Caserones Copper Mine.

Business Results in Fiscal 2018 (April 1, 2018 to March 31, 2019)

During fiscal 2018, the global economy continued to see moderate growth, buoyed by the strength of the US economy, despite negative factors, notably the slowing of Chinese growth impacted by US-China trade friction, and a downturn in Europe. The Japanese economy recovered gradually, backed by increased private-sector capital investment and a rebound in consumer spending as the employment and income environment improved.

The copper price on the London Metal Exchange (LME) trended at around 300 to 330 US cents per pound from the start of the fiscal year through June 2018, reflecting factors such as strong Chinese import and export trends. As uncertainties rose about the Chinese economy, however, with the imposition of retaliatory tariffs on China by the US, in August and thereafter the price dropped below 270 cents on occasion. Subsequently, in response to rising hopes for an easing of US-China trade friction and

for Chinese measures to prop up its economy, as well as the shift in US monetary policy toward easing, the copper price rose, ending the fiscal year at 294 cents. As a result, the average price of copper during the fiscal year was 288 cents, a year-on-year decline by just under 5 cents.

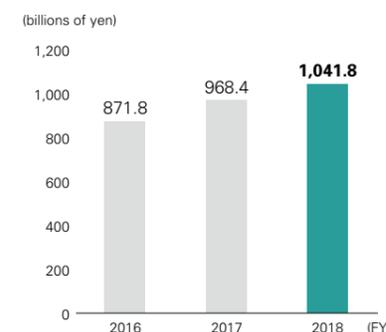
The yen-US dollar exchange rate averaged ¥111 for the fiscal year, virtually unchanged from the previous fiscal year.

In this business climate, the consolidated financial results of the JX Nippon Mining & Metals Group saw a 7.6% year-on-year rise in revenue to ¥1,041.8 billion. The Group recorded an operating profit of ¥68.2 billion as the resources development segment became profitable and profits rose in the recycling and environmental services business, among other factors.

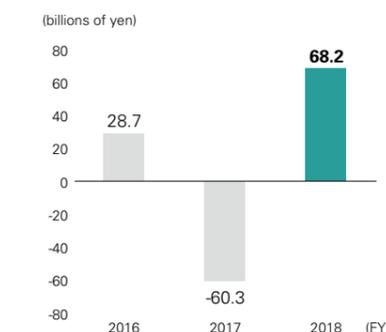
Notes:
 1.The Company discloses financial information through its holding company JXTG Holdings, Inc.
 2.JXTG Holdings has applied IFRS from fiscal 2017.

Financial Performance (Consolidated, IFRS)

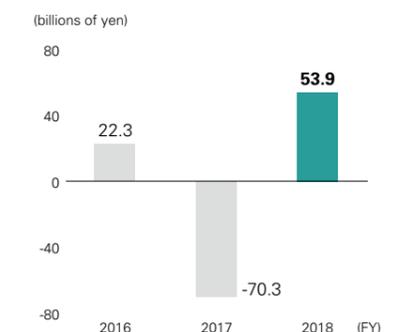
Revenue



Operating profit

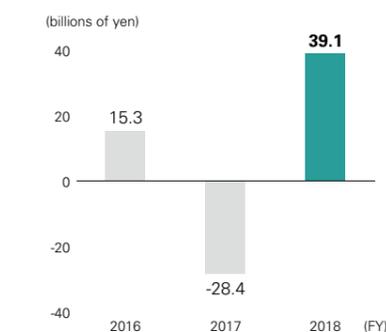


Profit before tax

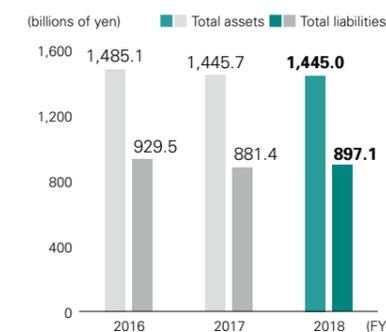


Note: Results for fiscal 2017 include an impairment loss of ¥128.6 billion recognized for the Caserones Copper Mine.

Profit for the year attributable to owners of the parent



Total assets and total liabilities

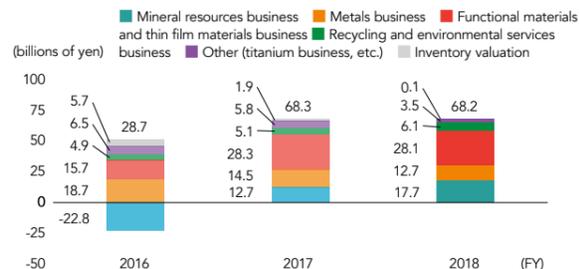


Segment Information

The Group's business consists of the following segments: mineral resources business, metals business, functional materials business and thin film materials business,*¹ recycling and environmental services business, and other.

*¹ Reported as the electronic materials segment.

Operating profit (loss) trends per segment



Note: Results for fiscal 2017 are excluding the impairment loss of ¥128.6 billion recognized for the Caserones Copper Mine.

Year-on-year change in operating profit (loss) for fiscal 2018

	FY2017	FY2018	YoY change	Main factors in year-on-year change
Mineral resources business	12.7	17.7	+5.0	Stepped-up efforts at the Caserones Copper Mine to stabilize operations, raise productivity, and control costs achieved greatly improved operation performance and significant cost reduction during the fiscal year. As a result, despite the weakening of copper prices, profits increased even excluding the effects of the impairment loss in the previous fiscal year.
Metals business	14.5	12.7	▲1.8	Even as ore purchasing conditions worsened with the tighter metal ores market conditions, measures were taken to increase profits such as improving the sales premium, and reducing costs and stabilizing operations at each of the smelting and refining facilities.
Functional materials business and thin film materials business	28.3	28.1	▲0.2	While growth of the smartphone market appears to be slowing currently, sales volumes of main products were strong against the backdrop of growing demand in IT-related fields.
Recycling and environmental services business	5.1	6.1	+1.0	Regarding the collection of recycled materials, both volume collected and margin increased thanks to a recovery in scrap market conditions. The volume of waste and other materials collected in the environmental services business was largely unchanged from the previous fiscal year.
Other (titanium business, etc.)	5.8	3.5	▲2.3	Along with sales growth of titanium metal, used mainly in aircraft, sales of catalysts, electronic materials, and chemicals were strong overall.

Note: Results for fiscal 2017 are excluding the impairment loss of ¥128.6 billion recognized for the Caserones Copper Mine.

Business Climate Indicators

Trends in key factors affecting Group performance are as indicated below.

Segments affected	Indicators	Units	FY2017	FY2018
All segments	Exchange rate	(JPY/USD)	111	111
	LME copper price	(US cent/pound)	292	288
Mineral resources business	Equity entitled copper mine production	(thousand tons/year)	194	200
Metals business	Sales volume of refined copper by PPC	(thousand tons/year)	579	638
Functional materials business	Sales volume of precision rolled products	(thousand tons/month)	3.9	3.6
Recycling and environmental services business	Recovered volume of gold	(tons/year)	5.3	6.4

Revenue by Region

	(billions of yen)	
	FY2017	FY2018
Japan	675.0	671.6
Rest of world	293.4	370.2
China	108.4	126.2
Rest of Asia	132.5	178.8
North America	27.8	39.0
Europe	13.8	10.5
Other	10.9	15.7
Total	968.4	1,041.8

Introduction of H.C. Starck Tantalum and Niobium GmbH

On July 1, 2018, JX Nippon Mining & Metals acquired the outstanding shares of German firm H.C. Starck Tantalum and Niobium GmbH ("HCS TaNb") through a Group company. Here we present an overview of HCS TaNb and explain the aims of the acquisition.

Overview of HCS TaNb

HCS TaNb has a history of more than sixty years in the development, manufacture, and sale of tantalum and niobium products. With manufacturing centers in Germany (Goslar and Laufenburg), Thailand (Map Ta Phut), and Japan (Mito) and sales offices in Germany (Goslar), the United States (Needham, Massachusetts), and Japan (Tokyo), the company has a global manufacturing and sales network. The product lineup features high-purity tantalum powders mainly for capacitors and sputtering targets, high-purity tantalum and niobium oxides used in surface acoustic wave (SAW) devices and optical lenses, as well as alloy additives, chlorides, compounds, and metal powders for additive manufacturing ("AMtrinsic®").

Aims of the Share Acquisition

A priority for our Group is growth of downstream businesses, essential to the advance of the IoT/AI society. We are working to expand these business areas while keeping an eye on M&A and alliances. As part of this strategy, we believe the acquisition of HCS TaNb shares can help us in the areas of (1) strengthening our existing businesses (obtaining stable supplies of materials), (2) expanding our business fields (obtaining new businesses), (3) enhancing our network in Europe (raising our presence in the European market), and (4) achieving synergies (between our Group and HCS TaNb).



Manufacturing center in Goslar

Main products/Applications

	Main products		Applications	
	High-purity tantalum powder	High-purity tantalum oxides High-purity niobium oxides	Capacitors	Sputtering targets
			Electronic parts for storing and releasing electric charge.	Materials used for forming thin films in the manufacture of semiconductors.
				SAW devices
				Electronic parts for selecting necessary frequencies.

VOICE



Masakazu Kanzaki
Chief Executive Officer (CEO)
H.C. Starck Tantalum and
Niobium GmbH

Ensuring that HCS TaNb Lives Up to Expectations

Goslar, where HCS TaNb has its base, is located in Lower Saxony. It once thrived as a town in the foothills of a mountain containing mines. The entire town, known for its gorgeous views, has been listed as a World Heritage site. Life here differs from Japan in many ways, such as restaurants and shopping centers not being open on weekends, but at last I have become acclimated to the area. Besides having a corporate history different from that of JX Nippon Mining & Metals, within HCS TaNb itself there are different ways of thinking among the sites in Germany, Thailand, Japan, and the United States, which sometimes make us confused. Drawing on each other's good points, however, we are aiming to maximize profits and create a new corporate culture, ensuring safety as we do so, in order to live up to what is expected of us as a manufacturer.

Mineral Resources Business

Key Strategies

- Achieve a continuously high operating rate at the Caserones Copper Mine
- Reinforce competitiveness by achieving thoroughgoing cost reductions at the Caserones Copper Mine

Business Overview

At the Caserones Copper Mine, which the Group has taken the lead in developing since acquiring a share of the mine in 2006, copper concentrate production began in May 2014. We have also invested in some of the world's largest copper mines, including Los Pelambres and Escondida. Our equity entitled copper mine production totaled around 200,000 tons in fiscal 2018.

Review of Fiscal 2018

In March 2018, SCM Minera Lumina Copper Chile (MLCC), operator of the Caserones Copper Mine, renewed its management structure, assigning Japanese personnel to key positions. Then in May 2018, the Caserones Division was established to provide agile, centralized administration of the Caserones Copper Mine. More deeply involved in the operation of the mine than before, the Company implemented initiatives such as improvement of operations, visualization of the cost structure, and strengthening of management. These initiatives led to significant improvement in operational performance and reduction of costs, resulting in a shift to profitability on an operating basis.

Outlook for Fiscal 2019

In April 2019, the Caserones Division and Resources Development Department were merged. With this new organizational structure, we are aiming for prompt achievement of final profitability through more efficient and integrated management of our mineral resources business, and continuous effort to improve operational performance and costs at the Caserones Copper Mine. Furthermore, we are aiming to expand profits at existing mines and acquire shares of promising new mines by taking advantage of our technology. To that end, we will work toward early commercial application of original technologies, including the JX-Iodine Process, a copper leaching method now undergoing testing of wider applicability. Meanwhile, work to increase the equipment available has been going on since November 2018 at the Los Pelambres Mine (Chile) and is expected to be completed in 2021.

TOPICS

Operator Training by Japanese Engineers

Operator training by Japanese engineers is one of the activities contributing to improvement of operational performance at the Caserones Copper Mine in fiscal 2018. The production processes at the mine had been beset by various technical issues. With the aim of resolving them, multiple Japanese engineers were sent to the site starting in March 2018. The Japanese and Chilean staff worked together on various improvements, including making sure patrols were being carried out properly, providing on-the-job training for operators, and making practical use of feedback from regular meetings with staff in charge of each of the operations. As a result of these efforts, along with equipment improvements, the copper recovery rate—a main indicator of operational performance—was greatly increased.



Operator training session

Metals Business

Key Strategies

- Maintain safe and stable operation of facilities and strengthen cost-competitiveness

Business Overview

We have world-class production capacity for refined copper, supported by our smelting and refining alliances. Our process enables us to produce high-quality refined copper and other metal products efficiently, and we supply stably to Asian markets where high demand is anticipated, chiefly in Japan and China.

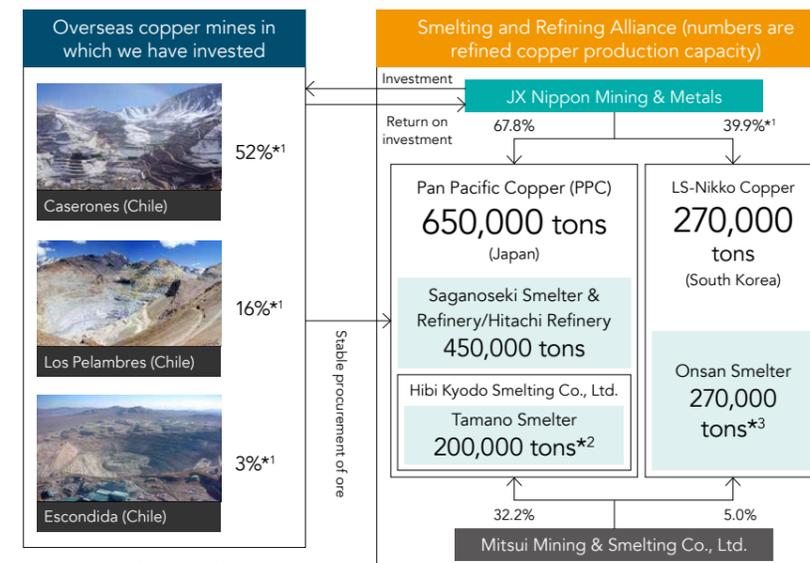
Review of Fiscal 2018

While global prices of copper and its by-product sulfuric acid have been trending higher, conditions for purchasing raw materials have worsened with tightened market conditions for copper concentrates. In such a situation, we took measures to increase earnings, such as improving the sales premium, reducing costs, and stabilizing operations at each production site. With respect to our operations at the production sites, the Saganoseki Smelter & Refinery of Pan Pacific Copper Co., Ltd. and the Onsan Smelter of LS-Nikko Copper Inc. (South Korea) are running smoothly. At the Tamano Smelter of Hibi Kyodo Smelting Co., Ltd., the periodic repairs conducted from November 2018 onward were completed on schedule.

Outlook for Fiscal 2019

Regarding raw materials procurement and product sales, we will seek to procure high-margin raw materials through collaboration with the recycling business, and to increase product margins for both refined copper and by-products. As for production, the periodic repairs at the Saganoseki Smelter & Refinery to be conducted in fiscal 2019 will be aimed at increasing copper concentrate processing capacity. Through such measures, we are striving to raise production efficiency and profitability, and to build up the business structure to become one of the world's most cost-competitive suppliers.

Outline of Mineral Resources Business and Metals Business



*1 Indirect ownership portion of JX Nippon Mining & Metals (as of March 31, 2019)

*2 PPC's offtake of the total production capacity of 290,000 tons

*3 The amount corresponding to JX Nippon Mining & Metals' equity share of the total production capacity of 680,000 tons



Saganoseki Smelter & Refinery/Hitachi Refinery



Tamano Smelter



Onsan Smelter

Recycling and Environmental Services Business

Key Strategies

- Promote differentiation from competitors
- Enhance the global resource collection network

Business Overview

The Group efficiently recovers copper, precious metals, rare metals, and other resources from recycled materials, harnessing processes that utilize smelting and refining technologies. We also provide zero-emissions treatment of industrial waste materials to render them harmless without producing any secondary waste. We established the Hitachi Metal-recycling Complex (HMC) Department of the Hitachi Works, engaging in the recovery of a wide variety of valuable metals. At the same time, we have been taking steps to strengthen our nationwide network with recyclers and hydrometallurgical refiners for collection and processing of recycled materials.

Review of Fiscal 2018

While the volume and margin of collected recycled materials increased thanks to a recovery in scrap market conditions, the grade of precious metals collected continues on a downward trend as manufacturers seek to reduce the quantities of such metals used in products. Outside Japan, we continue to carry out active collection efforts mainly in North America, Europe, and Taiwan, with JX Nippon Mining & Metals USA, Inc. and Nikko Metals Taiwan Co., Ltd. as bases. Meanwhile, we continue to conduct commercial feasibility trials on rare metal recycling from spent lithium-ion batteries.

At the five companies of the Recycling and Environmental Services Business Group that perform services such as preprocessing of recycled materials and industrial waste treatment, the volume of collected materials was mostly unchanged from previous years. As for treatment of equipment containing low concentrations of PCBs, stable operations continued at JX Nippon Tomakomai Chemical Co., Ltd., which also worked to increase the collection volume from inside and outside Hokkaido.

Outlook for Fiscal 2019

Besides working to expand the volume of recycled materials from overseas through alliances with overseas recyclers, we will seek to carry on stable treatment of recyclable materials by introducing physical sorting equipment and reducing costs, strengthening our business base. To recover rare metals from spent lithium-ion batteries, we are currently constructing a facility that will verify the basic technology for extraction of nickel sulfate and cobalt sulfate from these batteries, targeting a quality that will enable the extracted metals to be used again as lithium-ion battery raw materials. The facility is scheduled to go into operation in fall of 2019.

Further, we are working to expand the treatment of equipment containing low concentrations of PCBs, as well as the treatment of asbestos waste, to establish a global, environmentally viable resource recycling business designed for zero emissions.

TOPICS

Achieving Highly Efficient Recycling through Use of IoT and AI Technologies

So-called e-scrap, the electronic waste recovered from end-of-life PCs, smartphones, office equipment, and other devices, is a key recycled material. Lately, however, the grade of metal content has been declining as manufacturers reduce their use of valuable metals in these products, and the ratio of unwanted materials such as plastic fragments is rising. In fiscal 2018, a physical sorting process was introduced at the HMC Department, combining picking robots with metal sensors making use of IoT and AI technologies. This has enabled recycling to be performed more efficiently, by removing in advance the scrap in hard-to-process shapes and unwanted materials from the e-scrap received as recycled materials.



Physical sorting equipment

Functional Materials Business

Key Strategies

- Expand applications of the mainstay treated rolled copper foil and precision rolled products, and improve profitability
- Strengthen production capacity to expand business

Business Overview

Employing advanced metal fabrication technology built up over the years, the Company has become a global supplier of treated rolled copper foil, our mainstream product used in flexible printed circuit boards, and of precision rolled alloy products including phosphor bronze, Corson alloy, and titanium copper used in connectors and other parts. We also conduct processes such as precious metal plating and stamping on a global basis.

Review of Fiscal 2018

To meet growing needs for thinner, more compact smartphones and other IT devices in general, we moved to strengthen our foils and other products, building in quality both for superior properties such as high flexibility and thermal resistance, and for high strength and conductivity. While production increases slowed temporarily as the market for smartphones plateaued in fiscal 2018, the electronic parts using our products enjoyed more extensive use in other IT devices. Our mainstay treated rolled copper foil, while declining in terms of weight, increased on a length basis. Meanwhile, demand is growing for titanium copper, used in connectors and other parts, as a substitute for other materials due to its high strength and nonmagnetic property. In the growing cloud services market, fields related to servers and data centers continue to grow, resulting in strong sales of advanced foil products.

Outlook for Fiscal 2019

Production cutbacks are expected in fiscal 2019, impacted by slower demand growth for smartphone-related products. In the medium to long term, however, demand is likely to expand especially for products such as treated rolled copper foil, Corson alloy, and phosphor bronze, as the IoT/AI society advances and companies invest in fifth-generation communications (5G). We are therefore expanding manufacturing facilities at the Kurami Works and Hitachi Works, among other sites where treated rolled copper foils and high-performance copper alloys are produced. By the time all the equipment is in operation in the first half of fiscal 2020, production capacity is expected to be around 30 percent higher than the fiscal 2017 level (based on area).

Moreover, we partnered with The Japan Steel Works, Ltd. to establish Muroran Copper Alloy Co., Ltd. as a joint venture that will undertake melting and casting of copper alloys, mainly titanium copper. Preparations are now under way to start operations in the first half of 2021.

TOPICS

Establishment of a Venture Company for Copper Alloy Melting and Casting

Muroran Copper Alloy Co., Ltd. was established in August 2019 jointly with The Japan Steel Works, Ltd., which boasts some of the most advanced melting, casting, and forging technologies in the world. The new company will undertake melting and casting of copper alloys. Supply of high-quality copper alloy ingots from the venture firm will enable expansion of production capacity and more stable provision of titanium copper alloys and other advanced functional materials, which should cement our position as a leading global manufacturer in this field. These materials are expected to see demand growth in a wide range of areas including smartphones, tablet PCs, automobiles, and medical instruments. Preparations are currently under way to start operations in the first half of 2021.



Titanium copper

Thin Film Materials Business

Key Strategies

- Maintain stable supply of target materials
- Promote IT use for greater efficiency in manufacturing processes

Business Overview

Employing world-class nonferrous metal manufacturing technologies, we provide a wide variety of sputtering targets, compound semiconductor materials, high-purity metals, surface treatment, and many other products and services. Applicable to end products such as highly functional electronics devices, the latest IT gadgets, medical instruments, and electric vehicles, we are supplying these materials and services globally.

Review of Fiscal 2018

Semiconductor devices today face increasing demands for lower power consumption and faster speed. Meanwhile, after recording strong year-on-year growth in fiscal 2017, the market entered a correction phase from the second half of fiscal 2018, especially in the memory segment. In spite of this temporary slowdown, our Group expects strong demand growth in the medium to long term as the IoT/AI society advances and customers invest in fifth-generation communications (5G). To meet this demand through the continued stable supply of higher-quality products, we are developing technologies for high-performance materials used in leading-edge applications at the Isohara Works, one of our key operating sites. We are also investing in production increases for these products, building up a readiness for future sustained growth.

Outlook for Fiscal 2019

Even though the semiconductor market has entered a temporary correction phase due to recent global circumstances, it is still necessary to prepare for recovery of the market in 2020 and beyond, by continuing to raise our technology and quality levels for sputtering targets and other electronic materials. We are also endeavoring to speed up product development and improvement, by introducing the equipment needed for development and mass production of leading-edge materials, while seeking to resolve bottleneck processes. In the case of sputtering targets for semiconductors, manufacturing equipment (for high-purity metal refining and melting, etc.) is being increased in phases starting from fiscal 2018, so that production capacity in fiscal 2020 is expected to rise by around 30 percent over fiscal 2017 levels.

Applications of Principle Electronic Materials Products

Product	Primary applications	End-use applications				
		PCs	Mobile phones, smartphones	Digital appliances, AV	Communications infrastructure and data centers	Automobiles
 Sputtering targets for semiconductors	CPUs, memory chips, etc.	●	●	●	●	○
 ITO targets for flat panel displays	Transparent conductive films	●	●	●		○
 Sputtering targets for magnetic applications	Hard disks, etc.	●		○	●	
 InP compound semiconductors	Optical communication devices, ultra-fast ICs			○	●	○

Tantalum and Niobium Business

Key Strategies

- Maintain and improve profitability in existing fields
- Diversify the profit base by developing new markets

Business Overview

H.C. Starck Tantalum and Niobium GmbH (Germany; "HCS TaNb"), our Group company, is one of the world's leading manufacturers of tantalum and niobium materials. HCS TaNb contributes to the advancement of the IoT/AI society through the stable supply of such products as metal powders used in capacitors and semiconductor materials, high-purity oxides for SAW devices and optical lenses, chlorides and compounds, and superalloy additives.

Review of Fiscal 2018

At the same time as the share acquisition on July 1, 2018, the Tantalum and Niobium Division, which is in charge of HCS TaNb, was established. As a first step toward promoting mutual understanding and cooperating across companies with different cultures, languages, and histories, the top management of both companies visited the five operating sites of the HCS TaNb Group in Germany, Thailand, Japan, and the US, holding Town Hall Meetings. Following on from this, the companies moved to implement the Post-Merger Integration (PMI) plan that had been prepared in advance. Along with consolidating a base for realizing synergies through integration of functions and organizations in the business as a whole, HCS TaNb set about establishing a proper governance structure by reworking the reporting system, company rules, and other aspects.

Outlook for Fiscal 2019

Despite the growing market uncertainties due to US-China trade friction and other factors, expanded demand is seen in the area of electronic parts that use tantalum and niobium materials, with the spread of new technologies such as fifth-generation communications (5G) and advanced driver-assistance systems (ADAS).

Under these situations, the Company will pursue synergies with HCS TaNb to provide the support for maintaining and strengthening the competitiveness of its existing businesses, while at the same time aggressively pushing ahead with marketing and new product development targeting new business creation.

TOPICS

Ceremony Held with HCS TaNb Customers and Other Invited Guests

On October 1, 2018, approximately three months after the share acquisition, a ceremony was held to celebrate HCS TaNb having joined our Group. The venue was the Kaiserpfalz (Imperial Palace) of Goslar, Lower Saxony, Germany, where the company has its main site. In attendance were approximately 160 guests, among them the Ambassador Extraordinary and Plenipotentiary of Japan to the Federal Republic of Germany, the State Secretary of Niedersachsen's Ministry of Economic Affairs, Labor, Transport and Digitalisation, and HCS TaNb customers.



Ceremony in progress

Titanium Business

Key Strategies

- Bring the Saudi Arabia project to early commercial operation
- Strengthen and expand melting business and high-purity metals business
- Advance differentiation strategies in the catalysts and chemicals business

Business Overview

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 manufacture of titanium metals, as well as catalysts and electronic materials, using materials and technologies related to titanium production, such as catalysts for manufacturing polypropylene, and materials for electrodes and dielectrics in multilayer ceramic capacitors.

Review of Fiscal 2018

Thanks to increased demand for use in aircraft, a main end use of its products, as well as for use in plate heat exchangers and for other general industry applications, the titanium business benefited from expanded sales volumes, mainly of titanium sponge.

In the catalysts and chemicals business overall performance was solid, despite a slowdown in certain electronic parts and materials.

Outlook for Fiscal 2019

Continued efforts will be made to further reduce costs in the Titanium Business, including greater use of IT and IoT for improved efficiency and productivity. The titanium sponge joint manufacturing venture in Saudi Arabia began operation in September. The focus now will be on the early start of commercial-scale production and achieving stable operation.

Even though the catalysts and chemicals business faces concerns about slowing demand due to US-China trade friction and other factors, the outlook is for increased earnings. Product improvements and new product development to meet customer needs will continue for catalysts. Sales expansion measures for chemical products will focus on high-end ultra-fine nickel.

TOPICS

On the Way to Commercial-level Production Following Successful Reduction and Separation Testing –Titanium Sponge Manufacturing Venture in the Kingdom of Saudi Arabia

At Yanbu Industrial City in the Kingdom of Saudi Arabia, a new titanium sponge plant was completed in May 2017. The plant, which was modeled after the Wakamatsu Plant of Toho Titanium with annual production capacity of 15,600 tons, had been constructed by the new venture company. In August 2018, the first reduction and separation tests using actual production facilities were completed successfully, and operation began in September 2019.

At the new plant, it is planned to produce titanium sponge using a steady supply of the raw material titanium tetrachloride (TiCl₄) from an adjoining titanium oxide plant. Taking advantage of leading-edge technology transferred by Toho Titanium, and the low cost of electricity in Saudi Arabia, the plant is expected to offer world-class cost-competitiveness.



Name: Advanced Metal Industries Cluster and Toho Titanium Metal Company Limited
 Head office: Yanbu, Kingdom of Saudi Arabia
 Operations: Manufacture and sale of titanium sponge
 Capital: 450 million Saudi riyal (equivalent to 120 million US dollars)
 Established: February 29, 2016
 Fiscal year-end: December 31
 Equity shares: Toho Titanium 35%, Advanced Metal Industries Cluster Company Limited 65%

Reports on Each Material Issue for CSR Activities

In order to use its business activities to help solve problems faced by society, the Group conducts these activities with attention to the standpoints represented by the 10 Material Issues selected during the identification process.

For Protecting the Environment

- Using Nonferrous Metal Resources Effectively P39
- Establishing a Recycling-Oriented Society P45
- Establishing a Low-Carbon Society P49
- <Environmental Data> P51

Note on numerical data in this section: Due to rounding, numbers presented here may not add up precisely to the totals provided.

For the Peace of Mind of Society

- Ensuring Occupational Health and Safety P57
- Assuring Product Quality P61
- Developing Human Resources P65
- Providing a Rewarding Work Experience P69
- Promoting Community Involvement and Development ... P77
- Respecting Human Rights P79

For Earning Trust as a Corporation

- Insisting on Full Compliance P83
- <Corporate Governance> P85
- <Risk Management> P87



Using Nonferrous Metal Resources Effectively

Fundamental Policy

Nonferrous metals such as copper are resources essential to the abundant life enjoyed by modern society, yet their reserves are finite. The JX Nippon Mining & Metals Group continues to pursue technical rationality and efficiency and to make improvements in product quality and properties, while promoting recycling aimed at zero emissions. In such ways, we are working to ensure that nonferrous metal resources are used effectively and provide greater convenience. We have also formed a Technology Council as an advisory body to the president, which discusses future possibilities for technology overall from the standpoint of business administration.

Special Feature

Initiatives Based on a Collaboration Agreement with Tohoku University

In September 2018, JX Nippon Mining & Metals concluded an organizational collaboration and cooperation agreement with Tohoku University. By strengthening ties with Tohoku University, which aims to foster new open innovation under its policy of Practice-Oriented Research and Education, the goal is to contribute to the development of society as a whole through R&D and human resources development.

Developing Materials in Support of Society 5.0

While it has often been said that steel is the national industry, copper has also been recognized as fundamental to human culture. Used in electrical wires and communication lines, copper is indeed a material indispensable to modern living. The transfer of electricity is essential to the information communications underlying this culture. In smartphones and personal computers, for example, copper and other fine wiring materials play an increasingly important role.

As electronic devices have become smaller and integrated circuits undergo ever more miniaturization, however, the transfer of electricity becomes more difficult. Advanced functional materials are essential for achieving the dramatic increase in information processing capacity our era demands. For the modern society aiming for Society 5.0,*¹ given the crucial importance of R&D leading to solutions, our Group has high expectations for open innovation through industry-academia collaboration.

*1 Society 5.0: A supersmart society made possible by the latest technologies including IoT and AI, which will be amalgamated into every industry, as well as public life, to create innovations. The aim is to solve the problems faced by society in ways suitable to the needs of each individual. Society 5.0 represents the fifth stage of human society's evolution, following upon the hunting society, farming society, industrial society, and information society.



Signing ceremony for collaboration agreement

Promoting Innovation by Establishing a Center for Industry-Academia-Government Collaboration

Revolutionary breakthroughs are hard to achieve by the strength of one company alone. They require the concerted efforts of a broad range of players throughout the world, including academia and start-ups.

In June 2018, the Company invested in Material Concept, Inc., a Tohoku University spin-off, and began supporting an R&D and manufacturing project by that firm to commercialize copper paste. Then in fiscal 2019, a joint research course was established for undertaking development of next-generation interconnect materials technology.

To accelerate this initiative, the Company is planning to donate a new research building with the aim of establishing a "knowledge center" in this field together with Tohoku University. It hopes to complete construction of this research building by the summer of 2020.



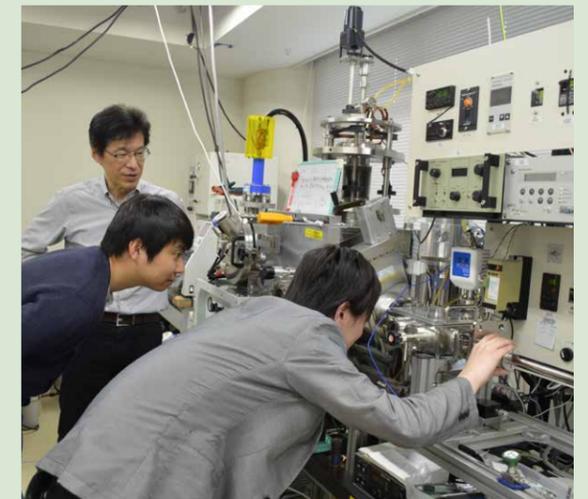
Artist's rendition of completed research building

Note: The illustration shows the building as currently envisaged. It is subject to change as planning proceeds.

Returning Outstanding Research Results to Society to Achieve the SDGs

There are limits to how much one company alone can contribute to the SDGs and other global issues facing society. It is therefore important for the Company to work together with other companies and academic institutions around the world, including start-ups, through this organizational collaboration and cooperation agreement. It is equally crucial to return the research results thus obtained to society, leading not only to development and stable supply of materials but also to human resources development.

The Group will continue pursuing open innovation with outside organizations, contributing to realization of a sustainable society in a wide range of areas, from nonferrous metal resources development to recycling.



Promoting exchanges with Tohoku University researchers

VOICE



Yoshinori Yajima
Executive Vice President for
Industry-University Collaboration
Tohoku University

Let's Use Our Partnership to Create Innovation for Transforming Society

Ever since its founding in 1907, Tohoku University has followed the three tenets of Research First, Open Doors, and Practice-Oriented Research and Education. Its research endeavors to date have produced countless important results, including perpendicular magnetic recording and flash memory, supporting the "data century." We at Tohoku University believe that industry is the school of learning: in other words, learning is forged in society, giving birth to results that transform society, in the process of which learning itself is deepened. Through our latest partnership with your company, Tohoku University is committed to working together with you to create innovation that will support and transform society.

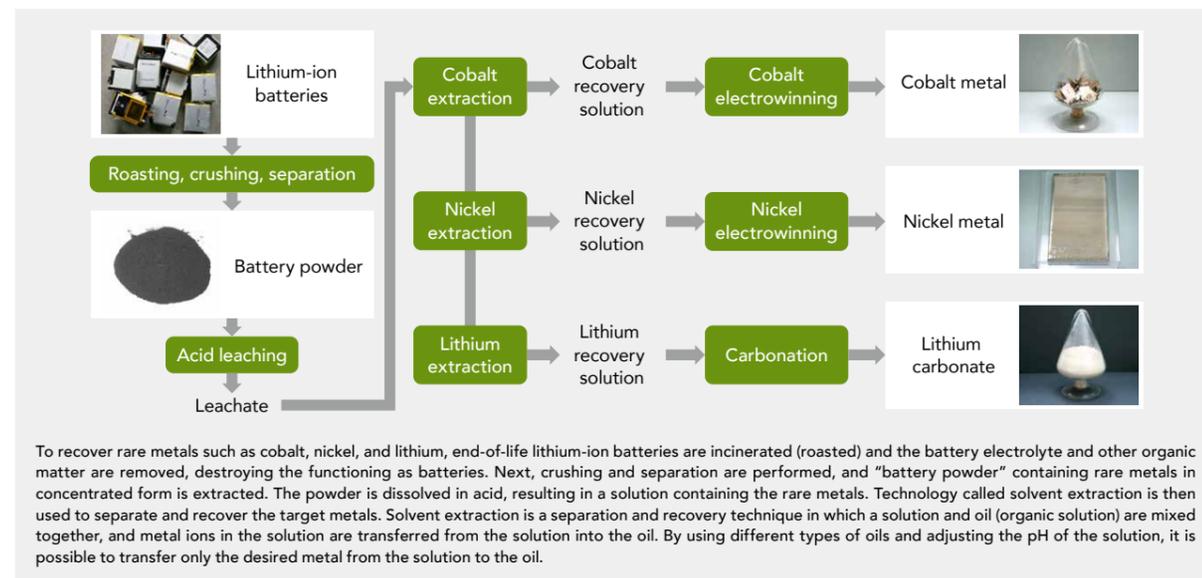
Development of Recycling Technologies

Lithium-ion batteries, used in smartphones, automobiles, and many other kinds of devices, have become indispensable to our daily lives. Lithium-ion batteries are made using nickel, cobalt, manganese, lithium, and other metals, often called "rare metals" because of their relative scarcity on Earth. These metals are also technologically difficult to separate as single metals, and costly to recover.

JX Nippon Mining & Metals was ahead of other companies in launching a commercial feasibility trial of

lithium-ion battery recycling technology in 2010 at our Tsuruga Plant. Today we have achieved operation using recycled materials only, mostly end-of-life lithium-ion batteries. Some 600 tons of end-of-life lithium-ion batteries, collected from smartphones and personal computers, are processed annually, recovering at least 100 tons of cobalt. In addition, we have succeeded in recovering lithium, for which recovery was believed particularly difficult, in the form of lithium carbonate.

Process of Lithium-Ion Battery Recycling



Looking Ahead

In response to heightening environmental awareness worldwide in recent years, the shift from vehicles powered by internal combustion engines to electric cars and other eco-friendly vehicles is accelerating. The batteries used in these vehicles are lithium-ion batteries. As a result, demand for the rare metals that are their raw materials is expanding. One problem with rare metals is the uneven geographic distribution of their deposits. For resource-poor Japan, obtaining these rare metals and recycling them in society is a major issue.

To this end, the Company has been steadily progressing toward realization of closed-loop recycling. As a key step in achieving this goal, we have largely established the basic technology for extraction of nickel sulfate and cobalt sulfate of a quality that will enable the raw materials extracted from lithium-ion batteries to be used again as lithium-ion battery materials. To conduct tests of their stable mass production, verification equipment is currently being built in Hitachi City, Ibaraki Prefecture, and is expected to go into operation in fall 2019. Today we are conducting joint

studies with businesses in and outside Japan related to eco-friendly vehicles, and moving ahead with preparations for an era in which large volumes of end-of-life batteries are discarded, so that we can contribute toward a sustainable society using our advanced recycling technologies.

JX Nippon Mining & Metals will contribute to resource conservation and to the realization of a recycling-oriented society by carrying out Group-wide development across divisions, aimed at further advancing our technology for lithium-ion battery recycling.



Tsuruga Plant



Sulfate for batteries, recovered at Hitachi Works

Initiatives of the Endowed Research Unit for Nonferrous Metal Resource Recovery Engineering (JX Metals Endowed Unit)

In recent years, the number of researchers and engineers in Japan working in fields related to smelting, refining, and recycling nonferrous metals has been continually decreasing. In response to this situation, JX Nippon Mining & 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). The purpose of this organization is to develop new environmentally friendly recycling technologies for base metals and rare metals while also developing the human resources responsible for the work in this field.

During the five-year period of Phase 1 activities, starting in January 2012, symposiums, workshops, and other opportunities for learning about nonferrous metals were held nine times, attended by a total of 1,600 persons from industry, government, and academia. Phase 2, starting in January 2017, continues the Phase 1 initiatives while also emphasizing public relations to highlight the importance and future potential of the nonferrous metals field to the general public. Central to this appeal are young people of high school age and below, as we seek to secure human resources who will lead the next generation.

Members



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



Takashi Nakamura, Project Professor
Professor Emeritus, Tohoku University; and Director, Fukuoka Research Commercialization Center for Recycling Systems
Principal research theme
Development of metal recycling systems



Chiharu Tokoro, Project Professor
Professor, Faculty of Science and Engineering, Waseda University
Principal research theme
Development of advanced resource separation and concentration technology

Supporting Members

Masafumi Maeda, Emeritus Professor
President, Kyoto University of Advanced Science

Shuji Owada, Visiting Professor
Professor, Faculty of Science and Engineering, Waseda University
Principal research theme
Intelligent separation of artificial (waste material) resources

Katsunori Yamaguchi, Visiting Professor
Professor, Faculty of Science and Engineering, Waseda University; and Emeritus Professor, Iwate University
Principal research theme
Technology for recovery of rare metals in nonferrous metal smelting and refining processes

Atsushi Shibayama, Visiting Professor
Professor, Graduate School of International Resource Sciences, Akita University
Principal research theme
Development of advanced mineral processing technology and recycling processes

Examples of Activities in Fiscal 2018

Activities for Developing the Next Generation of Human Resources

Experience of nonferrous metals research for middle schoolers (June 2018)

Second-year students from Tokyo's Musashino Daisan Junior High School spent three days experiencing research work at the Okabe Lab in the Institute of Industrial Science, the University of Tokyo, with the cooperation of Professor Nakamura and Associate Professor Yagi. Besides learning about the importance of nonferrous metals, the students toured the facilities and engaged actively by exchanging questions and ideas about conducting experiments.



Experiment using rare metals

Activities for Developing the Next Generation of Human Resources

Exhibit at Waseda University Faculty of Science and Engineering "UniLab" (August 2018)

At this event, an experimental science classroom for elementary and middle school children, a joint exhibit was made by the laboratory of Professor Tokoro and the JX Metals Endowed Unit, and an experiment was conducted involving nickel plating of wire mesh made of copper. The participating students folded wire mesh into whatever shapes they wanted, like origami. Then, in the plating process, they chose materials for the electrodes themselves, in an enjoyable experiment offering a chance to think about the conductivity of substances.



Students engaged in plating experiment

Activities for Developing the Next Generation of Human Resources

Participation in the University of Tokyo's Komaba Research Campus Open House 2018 (June 2018)

At the two-day Open House, the Company and the JX Metals Endowed Unit, collaborating with the Office for the Next Generation (ONG) in the Institute of Industrial Science of the University of Tokyo, presented an experiential booth and science classroom. In the booth, practical experiments for elementary, middle, and high school students were conducted to provide an easy-to-understand explanation of the properties of copper, such as its high thermal conductivity and effectiveness for electromagnetic-wave shielding. In the science classroom, experiments for middle school students taught about hydro-metallurgical refining of copper, and students directly observed the solvent extraction and electrowinning (SX-EW) process actually used in refining.



Students enjoyed a thermal conduction experiment in the booth

Symposium

E-scrap Symposium 2018 (November 2018)

At this symposium, organized by the JX Metals Endowed Unit, nine lecturers from industry, academia, and government were invited to give presentations. With more than 200 persons attending, lively discussions took place not only about technology for recycling of electronic scrap, or e-scrap, but also on such issues as social systems, government policy measures, laws, business, and international standards, as well as their future outlook.



Symposium venue

Activities for Developing the Next Generation of Human Resources

Distribution of video learning material, *Future Materials: Titanium and Rare Metals* (January 2019)

Professor Okabe cooperated with and appears in video learning materials for high school students, produced by the ONG. The visual presentation, introducing copper and titanium smelting and refining as well as rare metals, was prepared based on the ONG-sponsored special lecture at Saitama Prefectural Urawa Girls' Upper Secondary School in September 2018. It can be viewed by the public on the internet.



Professor Okabe introduces titanium ore

Symposium

Special joint symposium "Frontier of Extraction and Recycling Technology for Precious Metals" (January 2019)

This symposium was held jointly by the JX Metals Endowed Unit, the Integrated Research Center for Sustainable Energy and Materials, and the Rare Metals Workshop. It was the sixth time it had been held. Around 270 attendees gathered, from industry, government, and academia, for a total of eight presentations on such topics as the present state of and outlook for precious metal refining and recycling. Following the presentations, poster sessions took place, also offering a chance for people from the precious metal and nonferrous metal industries to build their network with others from industry, government, and academia.



Poster sessions

Awarded Prizes for Science and Technology (Public Understanding Promotion Category) by the Minister of Education, Culture, Sports, Science and Technology

Japan's Ministry of Education, Culture, Sports, Science and Technology each year presents the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology. As part of this program, Prizes for Science and Technology are awarded to organizations and individuals making significant contributions in development, research, promotion of public understanding, and other areas. In April 2019, awards in the Public Understanding Promotion Category for fiscal 2019 were given to Professor Toru H. Okabe, Professor Takashi Nakamura, Professor Chiharu Tokoro, and former Professor Masafumi Maeda of the JX Metals Endowed Unit, as well as Shigeru Oi, former President (now Executive Chairman) of JX Nippon Mining & Metals.

These awards are in recognition of their efforts to educate the next generation that will continue the work in the nonferrous metal resources field, including public awareness activities of various kinds, aimed especially at students up to high school level, as well as their parents, to convey the importance of this field and its future potential.

To enable effective use of nonferrous metal resources well into the future, those resources will need to be recycled repeatedly while protecting the environment. It is also necessary to further advance smelting and refining technology, which is indispensable to recycling, and to

build new environmentally friendly systems. To this end, the appeal of the nonferrous metal resources field must be promoted to the general public, and occasions must be provided for information exchanges.

The JX Metals Endowed Unit will continue to engage in promoting understanding of nonferrous metal resources, for the purpose of educating future young human resources and specialists.

Note: Masafumi Maeda, who served as Project Professor from Phase 1, stepped down as of March 31, 2018, having reached retirement age.



Awards ceremony

Establishing a Recycling-Oriented Society

Fundamental Policy

The JX Nippon Mining & Metals Group seeks to reduce the environmental burden of its business pursuits as much as possible. Our Basic Environmental Policy calls for conserving resources, promoting recycling, and reducing waste materials. We therefore take steps to use recycled resources as raw materials, utilize by-products, and reduce the volume of final disposal by recycling waste materials.

Targets for Establishing a Recycling-Oriented Society



See pages 51–52 for details.

By fiscal 2030, ratio of non-value-bearing waste volume of less than 0.5%

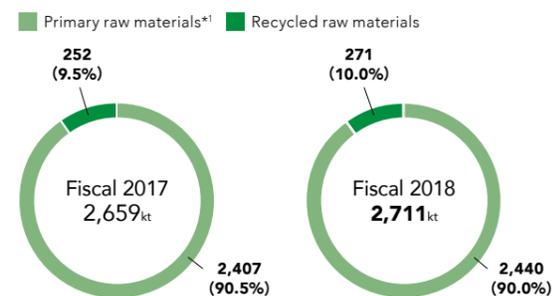
Ratio of non-value-bearing waste volume of less than 0.7%

Performance
 Fiscal 2016/0.5% (Target achieved)
 Fiscal 2017/0.4% (Target achieved)
 Fiscal 2018/0.4% (Target achieved)

Usage of Recycled Resources as Raw Materials

The ores and other natural resources extracted from nature are finite and must be preserved for future generations. The Group is expanding usage of recycled resources as raw materials.

Material Input

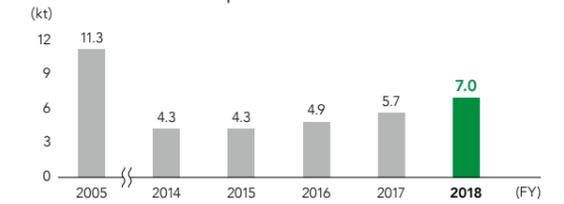


*1 The Group's equity share of the copper concentrate produced at the Caserones Copper Mine is included.

Reuse and Reduction of Waste Materials

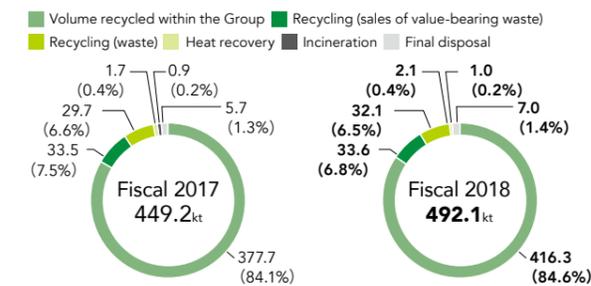
Of the total volume of waste and sellable materials the Group generated in fiscal 2018, approximately 85% was reused internally. Of the final total volume of waste materials discharged, the volume of final disposal, excluding the volume recycled externally or otherwise used, was 7.0 thousand tons, an increase of 1.3 thousand tons from the previous fiscal year. The main cause of this increase was the rise in volume of final disposal at the Caserones Copper Mine.

Volume of Final Disposal of Waste

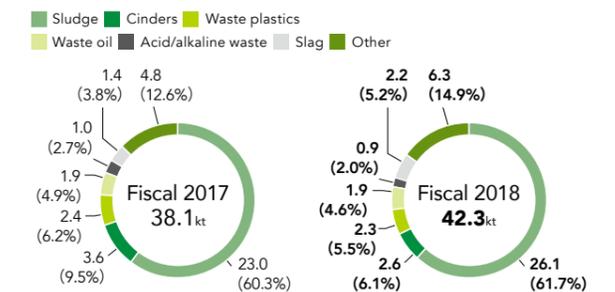


*1 These figures do not include the approximately 8.6 thousand tons disposed of in offshore landfills by Toho Titanium.
 *2 These figures do not include the approximately 27.7 million tons of slag from the Caserones Copper Mine.

Total Volume of Waste and Sellable Materials Generated



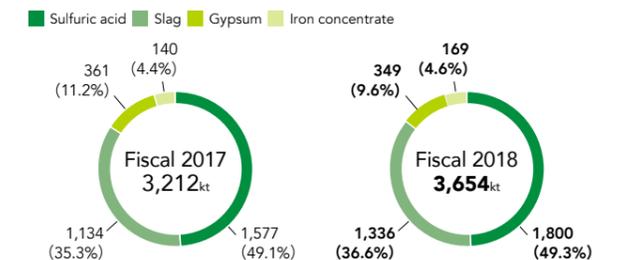
Total Discharge Volume by Type of Waste Materials



Use of By-Products

In fiscal 2018, the Group produced 3,654 thousand tons of byproducts. Slag is utilized as a sandblasting material, a cement material, a caisson filler, or as an aggregate for wave-dissipating blocks. Iron concentrate and gypsum are used in cement.

By-Product Production

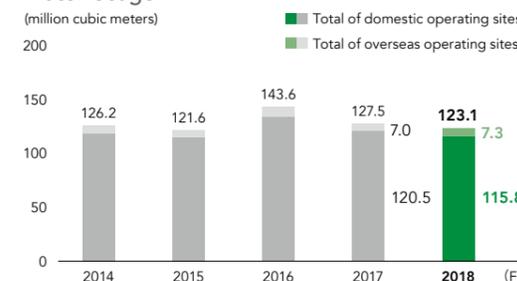


Effective Use of Water Resources

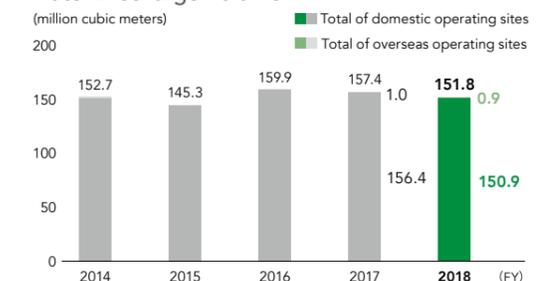
Of the Group's water usage in fiscal 2018, seawater accounted for approximately 77% of the total. Of the volume of water discharged, approximately 90% was

discharged into the sea. Water usage at domestic operating sites in fiscal 2018 decreased 4% year on year. Overseas, increased 4% year on year.

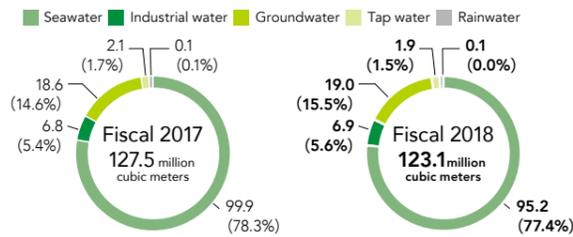
Water Usage*1



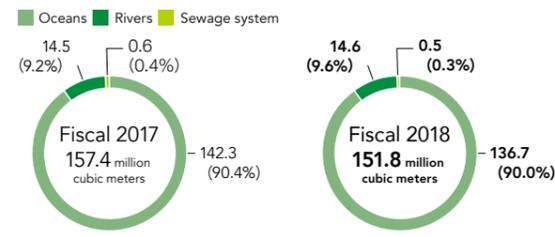
Water Discharge Volume*2



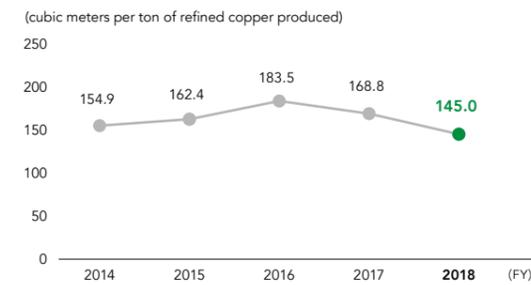
total usage*1



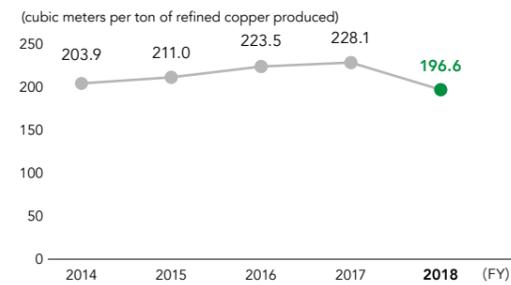
total discharge volume*2



Water Usage Intensity at Smelters and Refineries



Water Discharge Intensity at Smelters and Refineries



*1 Seawater usage at the Saganoseki Smelter & Refinery of Pan Pacific Copper is calculated based on pumping capacity. Groundwater usage at JX Nippon Mikkaichi Recycle up to fiscal 2016 was calculated by multiplying water discharge volume by a fixed rate. Freshwater usage at the Saganoseki Smelter & Refinery of Pan Pacific Copper and water usage at the other operating sites are based on flowmeter readings or on invoices from the water company.

*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, Saganoseki Smelter & Refinery of Pan Pacific Copper, JX Nippon Tomakomai Chemical, and JX Nippon Mikkaichi Recycle); an amount obtained by multiplying groundwater usage by a fixed rate (Kurami Works, Headquarters & Chigasaki Plant of Toho Titanium); an amount otherwise calculated (Yahata Plant of Toho Titanium); or an amount based on flowmeter readings (the other operating sites). The volume of water discharged into the sewage system is based on flowmeter readings or on invoices from the sewage company for the other operating sites.

Initiatives for Biodiversity Conservation

Activities in Japan

In endeavoring to maintain and improve biodiversity, the Group has been carrying out reforestation activities, especially at the sites of closed mines, with the cooperation of local communities.

Sites of Activities in Japan



Activities Outside Japan

At the Caserones Copper Mine, 48,200 seedlings of 15 native flora species are being planted in an area spanning 1.43 square kilometers to protect biodiversity. The areas being planted are those around Ramadilla on the mine site and the off-site areas around Maitencillo and Amolanas. The work is expected to be completed in 2020. In addition to reforestation, the development of plants native to the area is being monitored, and research is being conducted on the impact of climate and other factors on the propagation and distribution of plants specific to high altitudes that are native to the area around the Caserones Copper Mine.



Plants native to the area around the Caserones Copper Mine

Management of Closed Mines

From its founding in 1905, the JX Nippon Mining & Metals Group was engaged in mining operations across Japan. By ensuring a steady supply of nonferrous metals and other resources, we contributed to Japan's economic growth. Today, however, nearly all the mining operations have been stopped due to the depletion of mineral resources. Of the 39 closed mines managed by the Company, acid mine drainage (AMD) treatment is an ongoing obligation at 12 mines, pursuant to the Mine Safety Act. Currently, the Group is working to maintain and restore the natural environment in and around these closed mines, under the management of JX Nippon Mining Ecomanagement.

The work mainly consists of AMD treatment to detoxify the highly acidic mine drainage generated from the mines and tailings dams, which contain heavy metals, and to maintain and preserve the tailings dams and galleries of the mining sites. Treatment facilities have operate 365 days a year, as AMD is generated continuously after a mine is closed.

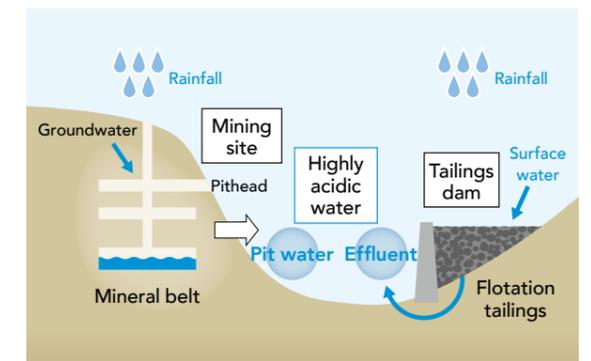
Closed mines where AMD treatment is carried out



How AMD Occurs

AMD from closed mines consists of pit water rising up from inside the mine and effluent discharged from tailings dams or other mine facilities. It occurs as a result of rainwater and other water coming into contact with materials such as ores remaining after the mine is closed, the nearby altered rock, and flotation tailings that have accumulated in the dams. These ores and altered rock contain iron, zinc, manganese, and other metals in the form of sulfide minerals, as a result of bonding with sulfur. These sulfide minerals are oxidized in the presence of oxygen and dissolve in water in the form of metal ions, hydrogen ions, or sulfuric acid ions, causing the drainage water to become highly acidic.

How AMD Occurs



Gallery inspection at Hanawa Mine



Motoyama AMD treatment facility at Toyoha Mine



Establishing a Low-Carbon Society

Fundamental Policy

Since the Paris Agreement was adopted at the COP21 United Nations Conference on Climate Change, there have been increasing demands on corporations to become actively involved in reducing emissions of greenhouse gases through such means as setting long-term reduction targets. The JX Nippon Mining & Metals Group seeks to reduce the environmental burden of its business pursuits as much as possible. Our Basic Environmental Policy goes beyond compliance with environmental regulations, calling for development of energy-saving technology to help prevent global warming. We make clear our management of environmental targets in our Medium-Term Action Plan and elsewhere, endeavoring to reduce our environmental burden each fiscal year.

Targets for Establishing a Low-Carbon Society



See pages 51–52 for details.

By fiscal 2030, reduction in CO₂ emissions by 18% from fiscal 1990 levels

Cumulative allowable CO₂ emissions in Japan of less than 4.07 million tons in total for four years

Performance

Fiscal 2016/853 thousand tons (Target achieved)
 Fiscal 2017/858 thousand tons (Target achieved)
 Fiscal 2018/900 thousand tons (Target achieved)

Energy Conservation Initiatives

Reduction in Energy Consumption for Manufacturing Activities

In fiscal 2018, the Group's overall energy consumption in terms of its calorific value was 30,022 terajoules, a year-on-year increase by 1,072 terajoules resulting mainly from a higher operating rate at the Caserones Copper Mine.*¹ Around 49% of energy consumption at operating sites in Japan is accounted for by energy consumed at smelters and refineries, where energy consumption intensity in fiscal 2018 was 13.3. The Group will continue to take active measures for reducing energy use and improving efficiency.

Energy Consumption

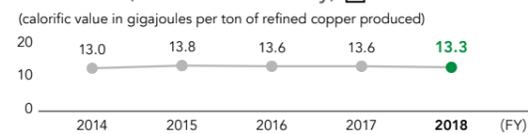


As an example of such measures, at the Saganoseki Smelter & Refinery of Pan Pacific Copper Co., Ltd., fuel use and electricity consumption were reduced by 32 terajoules in terms of calorific value. This was accomplished by increasing the amount of thermal recycling of waste heat from the converter used in the sulfuric acid manufacturing process, and reducing pressure losses by catalyst sieving.

*1 Energy consumption is calculated using coefficients in accordance with the Act on Rationalizing Energy Use, for both domestic and overseas operating sites.

Breakdown of energy consumption (terajoules)
 Fiscal 2018: Electricity (indirect): Domestic 14,720 Overseas 8,996
 Electricity (indirect) includes thermal energy (steam, hot water, cold water) supplied by third parties.
 Fuel (direct): Domestic 3,992 Overseas 2,314
 Note: A terajoule is one trillion joules, a unit of energy.

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



Breakdown by Fuel Type

	Domestic	Overseas
Kerosene (kl)	2,053	—
Light oil (kl)	2,728	52,717
Class A heavy oil (kl)	10,053	1,079
Class B and C heavy oil (kl)	40,979	5,532
Reclaimed oil (kl)	1,506	—

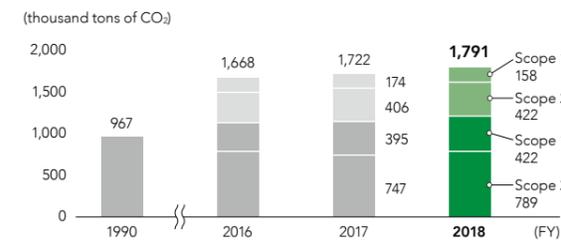
	Domestic	Overseas
LPG/butane (t)	5,587	5
LNG (t)	4,474	—
Coke (t)	5,968	—
Petroleum coke (t)	8,339	—
City gas (1,000 m ³)	15,249	1,204

CO₂ Emissions from Manufacturing Activities*²

In fiscal 2018, the Group's total CO₂ emissions from manufacturing activities in Japan and overseas were 1,791 thousand tons of CO₂. There was a slight rise in emissions over fiscal 2017, resulting mainly from a higher operating rate at the Caserones Copper Mine. Through the

CO₂ Emissions from Manufacturing Activities

■ Total of domestic operating sites ■ Total of overseas operating sites

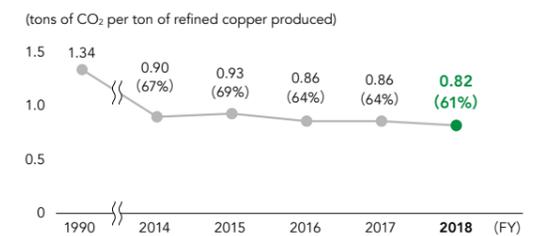


Note: Scope 1 emissions are those from energy consumption (fuel), emissions other than from energy consumption (waste oil, waste plastic, sludge, waste wood), and emissions from reducing agent, converted to equivalent CO₂. Scope 2 emissions are those from electricity consumption converted to equivalent CO₂. Emissions from electricity include those from thermal energy (steam, hot water, cold water) supplied by third parties.

consolidation of facilities, improved production efficiency, and other measures at domestic smelters and refineries, the Group reduced CO₂ emission intensity to 0.82 in fiscal 2018, down approximately 40% from 1.34 in fiscal 1990.

*2 Emissions are calculated using emission coefficients in accordance with the Act on Promotion of Global Warming Countermeasures. Actual coefficients that individual power companies made public and statistical data released by the International Energy Agency are used to calculate amounts of emissions from electricity consumption at domestic and overseas operating sites, respectively.

CO₂ Emission Intensity at Smelters and Refineries



Note: Percentages are in relation to 1990 levels. The emissions covered include Scope 1 and Scope 2.

Energy Consumption and CO₂ Emissions in the Logistics Stage

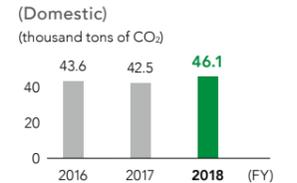
In fiscal 2018, energy consumption in the logistics stage of applicable Group companies in Japan*³ was 655 terajoules, and CO₂ emissions in that stage were 46.1 thousand tons of CO₂.

*3 Specified consigners as defined in the Act on Rationalizing Energy Use. This applies to the following three Group companies: JX Nippon Mining & Metals, Kasuga Mines, and Pan Pacific Copper.

Energy Consumption (Domestic)



CO₂ Emissions (Domestic)



Making Use of Renewable Energy

The Group conducts hydroelectric power generation operations at the Kakinowa Power Plant and sells the power generated to specified-scale electricity utilities. Photovoltaic power generation facilities are in operation at the Kakegawa Works of JX Metals Precision Technology and Hibi Smelter of Pan Pacific Copper. At Shimoda Hot Springs, a binary power generation system making use of heat from hot springs went into operation in March 2018.

Renewable Power Generation in Fiscal 2018

	Total generated electricity	Generated electricity sold
Hydroelectric power (Kakinowa Power Plant)	28,755	28,699
Photovoltaic power (Kakegawa Works)	667	655
Binary power generation (Shimoda Hot Springs)	591	498

Environmental Data

Well aware of how its business activities can impact the environment, the Group endeavors to mitigate environmental risk at all stages of those activities. To that end, it decided on a Basic Environmental Policy that calls for contribution to environmental protection on a global scale through development of technologies that improve resource and material productivity.

Approach to Environmental Protection

Basis Environmental Policy of the JX Nippon Mining & Metals Group

As a comprehensive manufacturer of nonferrous metal resources and materials, the JX Nippon Mining & Metals Group is carrying out the following initiatives in accordance with the basic policy of contributing to environmental conservation on a global scale through innovation in the productivity of resources and materials.

- Promotion of technology development that will improve productivity of resources and materials**
We will work to utilize resources effectively by developing technologies that will enable higher yield and extraction percentage, quality improvement, shorter process steps, recycling and energy saving, as well as by developing environment-friendly materials and products.
- Active engagement in environmental conservation**
Going beyond compliance with environmental regulations, we will strive to further reduce the impact of our operations on the environment. To this end, we will work to develop technologies for environmental conservation and work actively and continuously for environmental conservation.
- Elimination of waste in operations**
We will work to eliminate waste and save resources and energy at every stage of our operations.
- Enhancement of employees' awareness of environmental conservation**
We will work to raise each employee's awareness of environmental conservation through provision of environmental management education.
- Disclosure of information**
We will disclose the state of our environmental conservation-related operations in an active and fair manner in order to further enhance communication with stakeholders.

JX Nippon Mining & Metals Group Action Plan for Environmental Protection

We have drawn up an Action Plan for Environmental Protection as outlined below, to implement the Basic Environmental Policy.

Approach to environmental protection

- Environmental protection organization**
The general manager of the Company's Environment & Safety Department is in charge of coordinating and promoting environmental protection efforts in the Group. Recognizing that on-site personnel should be responsible for ensuring environmental protection, the top managers at each operating site serve as supervisory environmental managers. At the same time, we are aiming to enhance the effectiveness of the Environment Measures Committee and to advance mutual understanding between labor and management regarding environmental protection.
- Environmental management systems**
Through Groupwide commitment, from top management to frontline employees, and through appropriate implementation of ISO 14001-compliant environmental management systems, we are continuously strengthening environmental conservation measures and working to reduce environmental risks.
- Environmental auditing**
Supervisory environmental managers at each operating site review the results of internal audits to verify their site's environmental management and compliance with environmental regulations. Additionally, the

Environment & Safety Department's environment and safety audit team conducts periodic environmental audits of each operating site, detects and identifies problems as well as areas requiring remediation from an environmental management perspective, and continuously strives to improve accident prevention and environmental conservation measures.

Measures to be taken

- We are committed to undertaking the following measures to minimize the environmental impact of the Group's business activities.
 - Help prevent global warming
 - Promote resource efficiency and recycling
 - Reduce waste materials
 - Manage chemical substances
 - Maintain biodiversity
 - Provide recycling services
 - Develop environmentally friendly technologies and products, and introduce new technologies
 - Promote green purchasing
 - Conduct training, public relations initiatives, and social activities to communicate our Action Plan for Environmental Protection and raise awareness of our environmental protection measures

Environmental conservation at our overseas businesses

- Environmentally friendly operations in our overseas business activities**
To ensure an effective approach to environmental conservation at overseas operating sites, we promote a thorough understanding of the need to be aware of our environmental impact and to observe environmental regulations.
- Environmentally friendly importing and exporting**
In addition to adhering to the Basel Convention, we take steps to ensure that our exporting and importing partners do not harm the environment.

Emergency response measures

- Emergency response manuals and drills**
Reporting procedures are in place at the Groupwide level, along with those at the business-group and operating-site levels. Emergency response manuals are reviewed and updated to minimize the environmental impact of accidents, and regular emergency drills are carried out.
- Response to environmental accidents**
Should an environmental accident occur in business activities or due to a product defect, we will take steps to minimize the environmental impact of such an accident by acting in accordance with emergency response manuals and procedures.

Environmental Targets

Along with the management in the 4th Medium-Term Action Plan (fiscal 2016 to 2019), we are carrying out actions to meet the long-term targets for 2030.

Long-term targets	(1) Help prevent global warming By fiscal 2030, reduction in CO ₂ emissions by 18% from fiscal 1990 levels (a target set after the Japanese government's new targets were incorporated in the Paris Agreement at COP21 in 2015)	(2) Reduce waste materials By fiscal 2030, ratio of non-value-bearing waste volume of less than 0.5%
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Results for the 4th Medium-Term Action Plan (fiscal 2016 to 2019)

Target area	Environmental targets	Performance in fiscal 2016	Performance in fiscal 2017	Performance in fiscal 2018	Summary
Energy and CO ₂	Cumulative allowable CO ₂ emissions in Japan of less than 4.07 million tons for the four years from fiscal 2016 to fiscal 2019*1	853 thousand tons (Target achieved)	858 thousand tons (Target achieved)	900 thousand tons (Target achieved)	Due to energy-saving measures and other efforts, domestic CO ₂ emissions in fiscal 2018 were 900 thousand tons, 116 thousand tons less than the single-year target of 1,016 thousand tons, achieving the target.
Waste	Ratio of non-value-bearing waste volume*2 of less than 0.7%	0.5% (Target achieved)	0.4% (Target achieved)	0.4% (Target achieved)	Due to thoroughgoing separation of waste materials and continuation of reuse and recycling efforts, the ratio of non-value-bearing waste volume in fiscal 2018 was 0.4%, achieving the target.
Environmental management	Compliance with revisions to ISO 14001 (Environmental Management Systems), and scheduled implementation of compliance inspections and environmental auditing	Comprehensive compliance inspections performed at 9 operating sites, along with environmental and safety audits at 11 sites (Target achieved)	Compliance with revisions to ISO 14001 (Environmental Management Systems) completed by 10 operating sites, comprehensive compliance inspections performed at 12 operating sites, and environmental and safety audits at 12 sites (Target achieved)	Compliance with revisions to ISO 14001 (Environmental Management Systems) completed by 6 operating sites, comprehensive compliance inspections performed at 17 operating sites, and environmental and safety audits at 11 sites (Target achieved)	Of the 16 operating sites*3 that have acquired ISO 14001 certification, transition to the 2015 version was completed on schedule by the remaining 6 sites in fiscal 2018. In addition, fiscal 2018 comprehensive compliance inspections and environmental and safety audits were implemented as planned.

As part of the 4th Medium-Term Action Plan, data on energy, CO₂, and waste is collected for the operating sites listed below, where the total annual amount of energy consumption is equivalent to 1,500 kiloliters of crude oil or more.

Domestic	Hitachi Works (HMC Dept., Copper Foil Dept.); Isohara Works; Kurami Works; Pan Pacific Copper Co., Ltd. (Saganoseki Smelter & Refinery, Hitachi Refinery); Hibi Kyodo Smelting Co., Ltd. (Tamano Smelter); Japan Copper Casting Co., Ltd.; JX Nippon Environmental Services Co., Ltd.; JX Nippon Tomakomai Chemical Co., Ltd.; JX Nippon Mikkaichi Recycle Co., Ltd.; JX Nippon Tsuruga Recycle Co., Ltd.; JX Metals Precision Technology Co., Ltd. (Esashi Works, Tatebayashi Works, Kakegawa Works); and Toho Titanium Co., Ltd. (Headquarters & Chigasaki Plant, Yahata Plant, Wakamatsu Plant, Kurobe Plant)
Overseas	JX Nippon Mining & Metals Philippines, Inc.; Nippon Mining & Metals (Suzhou) Co., Ltd.

*1 We are working to reduce annual allowable emissions from the above-listed domestic operating sites in stages year by year, starting with the 13.1% reduction from the fiscal 1990 level in fiscal 2015 that was targeted in the 3rd Medium-Term Action Plan, and aiming for an 18% reduction from the fiscal 1990 level by fiscal 2030. Emission reduction targets were accordingly set for a four-year period. Emissions from fuel usage are calculated using the coefficients stipulated by the Act on Promotion of Global Warming Countermeasures. Emissions from electricity usage are calculated using the coefficient of 0.417 tons of CO₂ per megawatt-hour (the actual figure for fiscal 1990 as given in the Environmental Action Plan of the Federation of Electric Power Companies of Japan) to reflect the efforts made by individual operating sites.

*2 Ratio of non-value-bearing waste volume = (Volume incinerated + Volume of final disposal) / Total volume of waste and sellable materials generated

*3 The operating sites covered are the 16 domestic sites listed on page 53.

Environmental Management Systems

The JX Nippon Mining & Metals Group has established environmental management systems in line with ISO 14001 standards for ensuring achievement of the Action Plan for Environmental Protection, which was drawn up reflecting the Basic Environmental Policy. A multi-level 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, is working together to promote environmental conservation and avoid environmental risk.

Operating Sites That Have Obtained ISO 14001 Certification

Domestic	Overseas
Hitachi Works (including Hitachi Refinery of Pan Pacific Copper Co., Ltd. and JX Nippon Environmental Services Co., Ltd.); Copper Foil Dept. of Hitachi Works (including Ichinoseki Foil Manufacturing Co., Ltd.); Isohara Works; Kurami Works (including the Kurami Office of JX Nippon Coil Center Co., Ltd.); Saganoseki Smelter & Refinery of Pan Pacific Copper Co., Ltd. (including Japan Copper Casting Co., Ltd., and Nissho Kou-un Co., Ltd.); Hibi Smelter of Pan Pacific Copper Co., Ltd. (including Hibi Kyodo Smelting Co., Ltd. and Hibi Smelting Logistics Co., Ltd.); JX Nippon Tomakomai Chemical Co., Ltd.; JX Nippon Tsuruga Recycle Co., Ltd.; JX Nippon Mikkaichi Recycle Co., Ltd.; Headquarters & Chigasaki Plant of Toho Titanium Co., Ltd. (including its Kurobe Plant and Wakamatsu Plant); JX Metals Precision Technology Co., Ltd. (Esashi Works, Tatebayashi Works, Nasu Works, and Kakegawa Works); JX Metals Trading Co., Ltd.; and Shirakawa Plant of JX Nippon Takasho Co., Ltd.	JX Nippon Mining & Metals Philippines, Inc.; JX Nippon Mining & Metals USA, Inc.; Materials Service Complex Malaysia Sdn. Bhd.; JX Nippon Mining & Metals Korea Co., Ltd.; Nikko Fuji Precision (Wuxi) Co., Ltd.; Longtan Works of Nikko Metals Taiwan Co., Ltd.; Nippon Mining & Metals (Suzhou) Co., Ltd.; and JX Nippon Mining & Metals (Dongguan) Co., Ltd.

Compliance with Environmental Laws and Regulations

Through the effective operation of environmental management systems at operating sites and affiliated companies, the Group is ensuring compliance with environmental laws and regulations. The Environment & Safety Department in the Head Office monitors and supervises the state of compliance and reports to the CSR Committee through the Safety and Environment Committee.

In fiscal 2018, there were no adverse dispositions from regulatory authorities (license revocation, orders to cease operations, orders to cease use of facilities, orders for improvement, fines, etc.) for violations of environmental laws and regulations.

Environmental 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 Departments of the Head Office and of Pan Pacific Copper Co., Ltd. Audits were conducted at 11 sites in fiscal 2018.

Environmental Education

Periodic education, training, and drills are conducted for each employee level at the Head Office and each operating site, to instill awareness regarding the Basic Environmental Policy, the Action Plan for Environmental Protection, and related laws and regulations.

Transition to ISO 14001:2015

Of the 16 domestic operating sites that have acquired ISO 14001 certification, transition to the 2015 version was completed by six sites in fiscal 2018, so that all 16 sites have now made the transition.

Environmental Accidents

There were no environmental accidents during fiscal 2018. We will continue to take measures to prevent such accidents in the future.

Role of the Safety and Environment Committee

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

In Sustainability Report 2018 it was stated that "In fiscal 2017 as in previous years, there were no adverse dispositions from regulatory authorities (license revocation, orders to cease operations, orders to cease use of facilities, orders for improvement, fines, etc.) for violations of environmental laws and regulations." In fact, however, a fine was imposed on Chinese subsidiary Nikko Fuji Precision (Wuxi) Co., Ltd. for violation of the law on waste management. We sincerely regret this omission.

Our Business Activities and the Environment

The JX Nippon Mining & Metals Group monitors and analyzes the impacts of its business activities on the

environment and endeavors to reduce these impacts. An overview of our efforts in this area is given here.

Mass Balance Table for the Group (Fiscal 2018)

INPUT		
		
Raw materials (1,000 tons)	Energy (terajoules)	Water resources (million cubic meters)
Primary raw materials	Fuel	Freshwater
Domestic operating sites 2,432	Domestic operating sites 3,992	Domestic operating sites 20.6
Overseas operating sites 8	Overseas operating sites 2,314	Overseas operating sites 7.3
Total 2,440	Total 6,306	Total 27.9
Recycled raw materials	Electricity*1	Seawater
Domestic operating sites 270	Domestic operating sites 14,720	Domestic operating sites 95.2
Overseas operating sites 2	Overseas operating sites 8,996	Overseas operating sites —
Total 271	Total 23,716	Total 95.2
	*1 Includes thermal energy (steam, hot water, cold water) supplied by third parties	

JX Nippon Mining & Metals Group

OUTPUT			
			
Principal products	Emissions		
Copper concentrate*2 90 thousand tons	CO₂ (1,000 tons)	SO_x (1,000 tons)	NO_x (1,000 tons)
Refined copper 707 thousand tons	Total of domestic operating sites	Domestic operating sites 4.4	Domestic operating sites 0.7
Gold 37 tons	Scope 1 422	Overseas operating sites 0.1	Overseas operating sites 0.1
Silver 333 tons	Scope 2 789	Total 4.5	Total 0.8
Platinum 640 kilograms	Total of overseas operating sites		
Palladium 3,260 kilograms	Scope 1 158		
Other metals (selenium, tellurium) 295 tons	Scope 2 422		
Electro-deposited and treated rolled copper foil 9 thousand tons	Total 1,791	Final disposal of waste materials (1,000 tons)	Wastewater (million cubic meters)
Copper alloy, special steel strips, etc. 34 thousand tons		Domestic operating sites 1.5	Domestic operating sites 150.9
Titanium sponge 21 thousand tons	Chemical substances (release and transfer)(1,000 tons)	Overseas operating sites 5.5	Overseas operating sites 0.9
Sulfuric acid (by-product) 1,800 thousand tons	Total of domestic operating sites (domestic only) 0.44	Total 7.0	Total 151.8
	*2 Not including the Group's equity share		

Environmental Risk Management

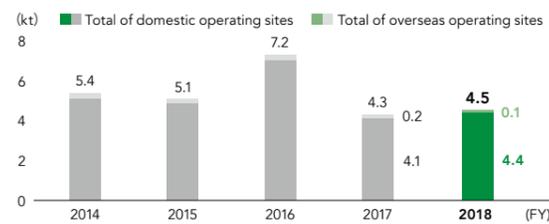
Air and water systems are key influencers of human health and living environments. In carrying out its business operations, the JX Nippon Mining & Metals Group gives top priority to protecting the environment relating to these two systems. In addition to abiding by all relevant

laws, regulations, ordinances, and agreements, we have set and monitor our own voluntary standards to reduce environmental impact. At the same time, we implement the plan-do-check-act cycle to reduce environmental risks.

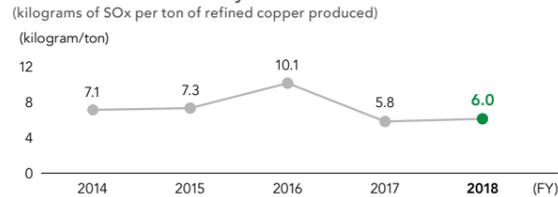
Preventing Air Pollution

The Group monitors waste gas emissions at all operating sites in compliance with laws, regulations, ordinances, agreements, and voluntary standards.

SOx Emissions*1



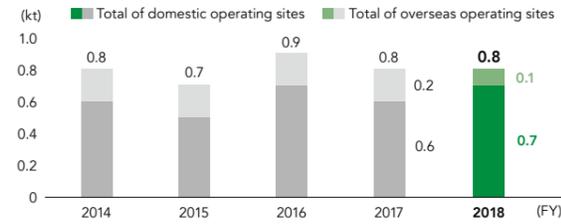
SOx Emission Intensity at Smelters and Refineries



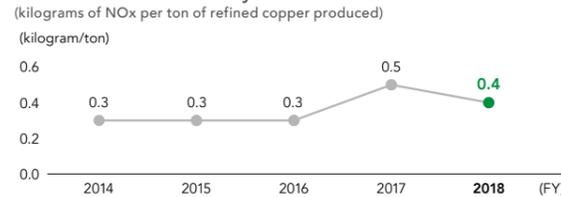
*1 Totals are for operating sites subject to emissions regulations.

In fiscal 2018, Group emissions of sulfur oxides (SOx) increased from fiscal 2017, while nitrogen oxide (NOx) emissions were nearly the same levels as in fiscal 2017.

NOx Emissions*1



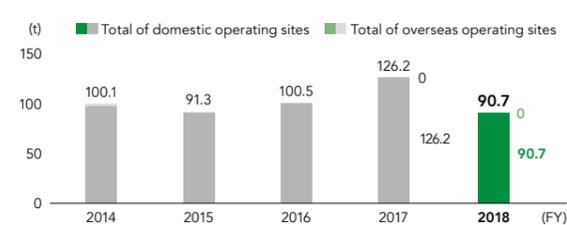
NOx Emission Intensity at Smelters and Refineries



Preventing Water Pollution

The Group monitors water discharge at all operating sites in compliance with laws, regulations, ordinances, agreements, and voluntary standards. The COD*2 and BOD*3 levels are shown below.

COD

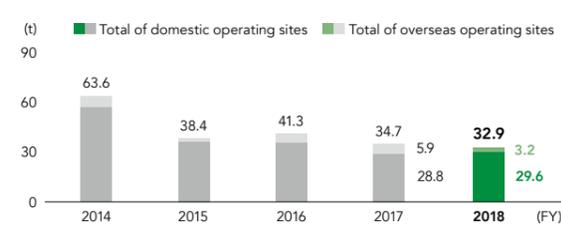


* Totals are for operating sites subject to legal requirements (sites that discharge water into the ocean or lakes).

*2 Chemical oxygen demand: An index of water quality indicating the amount of oxygen needed to oxidize substances in water. This is a representative indicator for measuring contamination by organic substances in oceans and lakes.

*3 Biochemical oxygen demand: An index indicating the amount of oxygen needed for organic matter in water to be broken down by microorganisms. This is a representative indicator for measuring contamination by organic substances in rivers and streams.

BOD



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

Chemical Management

At operating sites with significant release and transfer of chemicals, the Group strictly adheres to the Act on Confirmation, Etc., of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (PRTR Act).

Also, as part of our environmental management activities, we are working to reduce our environmental impact by setting targets for decreasing the release and transfer volumes of applicable chemical substances.

Regarding the Group's total release and transfer volumes

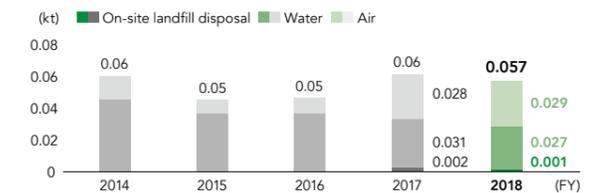
of chemical substances to be reported in compliance with the PRTR Act, the volume released into the air in fiscal 2018 increased by 1.5 tons from the previous fiscal year. Transfer

volume decreased by approximately 24 tons. This was due mainly to a decrease in transfer volume of toluene by Toho Titanium.

Volumes of Release and Transfer of PRTR Substances



Breakdown of Release Volumes of PRTR Substances



Volumes of Release and Transfer of Major PRTR Substances in Fiscal 2018

No.	Cabinet order no.	Chemical substances	Release volume			Transfer volume	
			Air	Water	On-site landfill disposal	Sewage system	Waste
1	1	Zinc compounds (water soluble)	0.3	5.6	0.0	0.0	0.0
2	31	Antimony and its compounds	0.1	1.1	0.0	0.0	43.9
3	75	Cadmium and its compounds	0.2	0.3	0.0	0.0	39.0
4	132	Cobalt and its compounds	0.0	0.3	0.0	0.0	10.5
5	272	Copper salts (water soluble)	0.5	5.2	0.4	0.0	0.3
6	300	Toluene	19.9	0.0	0.0	1.0	230.5
7	305	Lead compounds	1.2	0.2	0.0	0.0	8.5
8	332	Arsenic and its inorganic compounds	0.5	1.2	0.2	0.0	24.2
9	354	Dibutyl phthalate	0.0	0.0	0.0	0.1	6.3
10	405	Boron compounds	0.0	7.6	0.0	0.0	3.5
11	412	Manganese and its compounds	0.0	1.0	0.0	0.0	8.7
(grams of toxic equivalents)							
12	243	Dioxins	0.1	0.0	0.0	0.0	1.4

* The values given are totals for companies with operating sites subject to reporting requirements under the PRTR Act (JX Metals Trading, Kasuga Mines, and the domestic companies defined on page 1 as companies subject to reporting with regard to the Boundary of the Report [Environment]).

* Of the 55 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.

Detoxification of PCB-Containing Equipment

The Group carried out disposal of equipment containing high levels of polychlorinated biphenyls (PCBs), using the services of Japan Environmental Storage and Safety Corporation. This work was completed in 2018. We have also been conducting a systematic program for detoxifying equipment containing low levels of PCBs by entrusting a private-sector facility.

Compliance with the REACH Regulation

The European Union's Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH Regulation) came into effect in 2007. It requires producers and importers to manage the risk of chemicals that may have an impact on human health and the environment. The Group respects the intent of the REACH Regulation, and has completed preliminary registration of products that are subject to the regulation.

Promotion of CSR Purchasing and Green Purchasing

The Group has drawn up the Green Purchasing Policy, aimed at reducing the environmental burden and other impact on society in procuring materials and equipment. Based on this policy, we have also drawn up Green

Purchasing Guidelines setting out specific requirements for choosing suppliers. From fiscal 2019, we began conducting CSR Purchasing Questionnaire surveys to further these initiatives and their objectives.

Green Purchasing Policy

We pursue green purchasing initiatives to contribute to the formation of a recycling-oriented society, prevention of global warming, and promotion of a "reduce, reuse, and recycle" approach. This policy applies to all materials and equipment to be purchased. When items have similar functions, prices, and delivery dates, we evaluate their potential to reduce environmental impact based on mandatory and voluntary conditions, and purchase the item with superior environmental performance.

▶ See page 81 for more about CSR Purchasing.



Ensuring Occupational Health and Safety

Fundamental Policy

From its inception, the Group has always considered the maintenance of occupational health and safety to be an essential condition for the continuation of its business, and it has endeavored to provide an environment where employees can work with peace of mind. The Group drew up the Basic Policy on Health and Safety aimed at the elimination of accidents and illnesses, and strives to foster a culture of safety.

Special Feature

Safety Measures at JX Nippon Coil Center

JX Nippon Coil Center Co., Ltd., a member of the Functional Materials Division, is responsible for the slitting of copper alloy products and other precision rolled products. The company is taking highly advanced measures to improve work safety including the introduction of engineering safety features in equipment.

Engineering Safety Features for Equipment and Advanced Safety Measures Related to Forklifts

Thin sheets, mainly of copper alloys, produced at the Kurami Works and wound into coils, go to JX Nippon Coil Center for cutting (slitting) to the customer's designated width, followed by packaging, and shipping. The equipment for these processes has many rotors, which pose a risk of entanglement, among other hazards. Along with order handling and transport operations, there are also logistics operations on the site, raising the risk of collisions with forklifts.

The plant has instituted engineering safety features to protect against such risks. Among the measures are safety fences that clearly show what is inside them, safety systems that stop equipment upon detecting the presence of people nearby, and safety covers to prevent entanglement accidents.

Various advanced safety measures have been introduced for forklifts, which are used frequently and have a high potential for serious accidents. For example, drive recorders are used to assess operation, sensors are attached to people and heavy machinery to detect people

approaching and prevent contact (Hiyari Hunter and Herima System), and side loaders have been introduced for safer transport operation.



Side loader

Conducting Risk Assessments for Identifying Sources of Risks

In addition to the equipment safety measures, risk assessments are conducted to identify sources of risks, with the help of an outside consulting service.

To prevent occupational accidents, it is crucial that each of the workers understands the sources of risks by thinking about what kinds of risks lie in their own equipment and work, and where. For this purpose, the company is drawing up risk maps that clearly indicate the places where risks are lurking, and everyone participates in voluntary maintenance of equipment. Moreover, "senior management patrols" led by the president provide guidance.



"Senior management patrol" led by the president

Improving Communication with Workers and Fostering Safety Awareness

Lack of communication is a factor in more than a few cases of incidents or accidents on the work floor. That is why JX Nippon Coil Center is striving to deepen communication to enable collection of information and honest opinions from on-site supervisors and workers.

When workers assemble at the start of the day, for example, efforts are made to raise safety awareness throughout the organization. These include worker dialog, in which everybody confirms their work details, and participation in pre-shift stretching programs by everyone in the organization.

Besides these, presentation sessions on safety activities take place four times a year; and to raise worker motivation, the presentations are evaluated and awards are given.



Morning assembly

VOICE



Toshinori Nishimura
President & CEO
JX Nippon Coil Center Co., Ltd.

Improved Safety Has Led to Higher Quality and Productivity

With help from a consulting service, we have instituted safety initiatives in our company, such as worker dialog at morning assemblies and risk assessments with everyone involved, to get workers to think and participate. Thanks to these and other such efforts, I feel the risk sensitivity of each individual has improved and their ability to foresee danger has become well established.

In addition, putting in place engineering safety features has raised the desire for on-going improvement, leading not only to greater safety but to higher quality and productivity as well. By continuing with such activities, I hope to achieve efficient production of products with stable quality in a safer workplace.

Basic Policy on Health and Safety

JX Nippon Mining & Metals Basic Policy on Health and Safety

We place the highest priority on ensuring the health and safety of all people working at the JX Nippon Mining & Metals Group and thereby strive to create a safe and secure workplace.

1. We will continuously improve health and safety management levels through the establishment and efficient operation of the health and safety management system.
2. We will work to identify, eliminate, and reduce hazards and harmful factors in all areas of business operations and to ensure no accidents occur.
3. We will work to maintain and improve employees' mental and physical health by ensuring good communication and a comfortable working environment.
4. We will actively provide information and education in order to develop human resources that can act spontaneously and have strong safety competencies.
5. We will not only comply with health and safety laws and regulations but also establish and observe necessary voluntary standards.

Management Policy on Health and Safety

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.

Management Policy on Health and Safety for 2018

<p>Goals</p> <ol style="list-style-type: none"> 1. Accidents with lost work days or worse: zero 2. Explosions and fires: zero 3. Occupational diseases: zero 4. Rate of lost work days due to ordinary illnesses: a reduction by 10% or more from the average in the past three years <p>Key Policy Measures</p> <ul style="list-style-type: none"> • Creating a culture of safety (preventing serious accidents, deepening 	<p>communication, enhancing safety education, and strengthening safety management at subcontractors)</p> <ul style="list-style-type: none"> • Maintaining and improving mental and physical health <p>Key Safety Activities</p> <p>Identifying all possible hazards, and preventing serious accidents by creating and utilizing well expected accident scenarios matched to the realities of the workplace</p>
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Organization for Occupational Health and Safety Management

Meetings Related to Health and Safety Issue

Labor-Management health and safety visitation is conducted once a year, and Group safety staff meetings are held twice a year to discuss health and safety management status and measures and to exchange related information. Workshops are also held twice a year, and safety lectures presentation by outside experts are organized once a year, for those involved in safety-related work. Examples of safety activities in and outside the Group are presented and introduced in these occasions so that they are shared and deployed across the entire Group.

Environment and Safety Audits

Environment and safety audits are conducted periodically by a team under direct supervision of the president to examine operating sites directly run by the Company (including Group companies inside the sites) and major domestic Group companies. Issues discovered in the audits are reported to the president. The team also notifies the operating site of the issues, requesting improvements and following up by monitoring progress. Audits were conducted at 8 sites (including Group companies) in fiscal 2018. No major matters were identified.

Measures for Legal Compliance

To ensure full compliance with the latest revisions to laws and regulations concerning health, safety, and the environment, regular compliance inspections are performed by the Environment & Safety Department and by an outside organization, and a legal compliance monitoring system has been introduced to obtain the latest information on legal revisions on a weekly basis.

When information on important legal revisions is obtained under this system, instructional handbooks and manuals are created and issued, facilitating a prompt response by each operating site. In addition, we have compiled instructional handbooks outlining laws, guidelines, notices, and other rules related to particular items in order to enhance understanding of legal requirements by those involved.

Operating Sites That Have Obtained OHSAS 18001

Fiscal year certification was acquired	Operating sites
FY2006	Hibi Smelter, Pan Pacific Copper Co., Ltd. (including Hibi Kyodo Smelting Co., Ltd., Tamano Smelter)
FY2008	Hitachi Works (including Technology Development Center, Hitachi Refinery of Pan Pacific Copper Co., Ltd., JX Nippon Environmental Services Co., Ltd., Hitachi Office of JX Nippon Foundry Co., Ltd.), Kurami Works (including JX Nippon Coil Center Co., Ltd., Kurami Office of JX Metals Trading Co., Ltd.), Saganoseki Smelter & Refinery of Pan Pacific Copper Co., Ltd. (including Japan Copper Casting Co., Ltd., Nissho Kou-un Co., Ltd., PPC Plant Saganoseki Co., Ltd.)
FY2009	Isohara Works (including Isohara Administration Office of JX Nippon Foundry Co., Ltd.), JX Nippon Tomakomai Chemical Co., Ltd., JX Nippon Mikkaichi Recycle Co., Ltd., JX Nippon Tsuruga Recycle Co., Ltd.
FY2010	Tatebayashi Works of JX Metals Precision Technology Co., Ltd.
FY2011	Esashi Works of Metals Precision Technology Co., Ltd.
FY2013	Nasu Works and Kakegawa Works of JX Metals Precision Technology Co., Ltd.
FY2014	Longtan Works of Nikko Metals Taiwan Co., Ltd., JX Nippon Mining & Metals Philippines, Inc.
FY2018 and after	Start of preparations for changeover to ISO (to be completed by March 2021)

JXTG Group Safety Education Center

To eliminate occupational accidents, enhancing the sensitivity for detecting hazard, and safety awareness of individual employees is essential. Sensitivity for detecting hazard includes the ability to properly recognize hazard as dangerous. Sharpening this ability leads employees to keep away from dangers. Around half of actual occupational accidents are recurrences of similar accidents in the past. Therefore, the Center provides trainees with simulated experiences of occupational accidents that have occurred in the past so that they can come to recognize the dangers

and improve their sensitivity for detecting those hazards. Moreover, a new education curriculum has been introduced making use of virtual reality (VR) technology, enabling more realistic experiences of hazardous situations. Through these and other initiatives, ongoing efforts are being made to prevent occupational accidents.



VR training equipment

Safety Performance in 2018

The total number of occupational accidents at domestic operating sites increased year-on-year in 2018, having trended downward up to 2017. The Group is determined to raise the level of risk assessment, as noted under its priority issues, and make a united effort toward eliminating major risks and creating safe working environments.

*1 Data on safety performance is compiled on a calendar-year basis (Jan. to Dec.).
 *2 The figures through 2017 were totals for the Company, Group companies, and subcontractors; but from 2018, they are for the Company and Group companies (but excluding Toho Titanium). The amounts for 2017 and 2016 have therefore been adjusted retroactively.
 *3 Both the frequency rate of occupational accidents (the number of casualties caused by occupational accidents per million hours of total actual work) and the accident severity rate (the number of work days lost per thousand hours of total actual work) are rates for the Company's employees.
 *4 There were no physical injuries due to fire or explosion.
 *5 The figures include the performance of Group companies and subcontractors.

Occupational Accidents, etc.*1

Category	2016	2017	2018
Fatal accidents (persons)*2	1	0	0
Accidents with lost working days (persons)*2	10	3	10
Accidents without lost working days (persons)*2	6	8	7
Total (persons)	17	11	17
Frequency rate of industrial accidents*3	0.26	0.25	0.46
Accident severity rate*3	0.00	0.01	0.00
Explosions and fires (occurrences)*2	2*4	0	3*4
(For reference) Safety performance at domestic operating sites			
Accidents with lost working days (persons) *5	8	13	16
Accidents without lost working days (persons) *5	9	3	2
Total (persons) *5	17	16	18

(For reference) In 2018, the frequency rate of occupational accidents and the accident severity rate of all businesses in Japan were 1.83 and 0.09, respectively. (Source: Ministry of Health, Labor and Welfare, "Survey on Industrial Accidents")



Assuring Product Quality

Fundamental Policy

Use of AI and IoT is advancing throughout society, causing demands from the customers to whom we supply products to become ever more sophisticated, diverse, and stringent. As it becomes more important than ever to assure product quality and safety, the JX Nippon Mining & Metals Group is working to further enhance its quality management framework.

Special Feature

Initiatives by the Quality Control Department

Introduction of Systems for Automating Product Quality Inspections

The Quality Control Department is introducing systems for automating product quality inspections in order to improve reliability and efficiency, and prevent human error, in quality inspection work for the wide range of products in the Group. This project involves introducing the latest automation-ready inspection equipment, making operational changes to existing inspection equipment, and modifying core information systems so that measurement data from the equipment can be fed automatically to the core information systems. The Company hopes to put the systems into operation during fiscal 2020, including at overseas operating sites.

Some sites have already completed introduction of such systems, and are reporting improved work efficiency as a result. The efforts will continue to be carried out with a view to planned introduction throughout the entire Group.



Latest automation-ready inspection equipment

Development of Human Resources in the Area of Quality

The Group provides quality control education for all employees. Along with raising the level of quality control, the objectives include improving the ability of employees to discover and solve quality issues on their own by logically analyzing the true causes, and raising the quality of operations.

The wide-ranging training program has courses tailored to the level of trainees, from introductory to advanced, and course plans based on skill level and number of years in the Company. It has become a well-established part of overall employee education. Through the training, employees learn the basic thinking in each course, quality control (QC) methodology, and how to analyze data by statistical methods, while engaging in group discussions.



"Five Whys Analysis" training, where trainees are assigned roles within the group to work out solutions



Review, Planning, and Information Sharing on Quality Improvement Activities

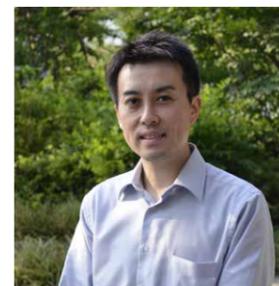
The Group has established a Quality Control Committee, with meetings attended by top management, for reviewing the status of quality improvement activities and drawing up action plans. At recent meetings, the Committee took up such topics as progress achieved in the Groupwide effort to automate inspections, and also discussed advancing from defensive quality control—that is, dealing with issues after they have arisen—to proactive quality control directed at risks and opportunities that may arise in the future.

As venues for sharing information on quality management, quality assurance managers' meetings are held twice each year. At these meetings, the people in charge of quality at each operating site pursue the common goal of raising quality, learning about the action plans decided by the Quality Control Committee and sharing issues faced and excellent practices implemented at each site.



Quality assurance managers' meeting, where the managers come together to share information

VOICE



Naoei Yoshida
Quality Control Department
JX Nippon Mining & Metals Corporation

Aiming for Effective Quality Audits

The Quality Control Department performs quality audits of all operating sites from a standpoint independent of the business. In these audits, we not only assess whether quality control complies with the applicable rules; we also aim to perform effectiveness audits, which identify improvements and good practices, thereby helping to raise the awareness of people involved in on-site quality operations and to energize activities for discovering problems and making improvements.

When operating a quality management system, I believe maintenance and continual improvement of the system through quality audits are especially important activities.

The issue I would like to address toward these ends is raising the level of communication, observation, decision-making, and other skills needed in a quality auditor.

Basic Quality Policy

JX Nippon Mining & Metals Group Basic Quality Policy

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

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

Note: The Group Basic Quality Policy has been formulated in line with the JX Nippon Mining & Metals Code of Conduct.

Quality Management Systems

The Group has developed quality management systems (QMS) that it implements as a means of putting the Basic Quality Policy into practice. The plan-do-check-act (PDCA) cycle is faithfully applied to QMS implementation, as continual improvements are made to achieve better quality. Both domestic and overseas operating sites have obtained ISO 9001 certification, the international standard for quality management systems.

Operating Sites That Have Obtained QMS Third-Party Certification

Domestic	Isohara Works; Kitaibaraki Precision Co., Ltd.; Kurami Works; JX Nippon Coil Center Co., Ltd. (Kurami Office, Kawasaki Office); Hitachi Works (Copper Foil Dept.); Ichinoseki Foil Manufacturing Co., Ltd.; Pan Pacific Copper Co., Ltd. (Hibi Smelter, Saganoseki Smelter & Refinery, Hitachi Refinery); Hibi Kyodo Smelting Co., Ltd. (Tamano Smelter); Japan Copper Casting Co., Ltd. (Saganoseki Works); JX Metals Trading Co., Ltd. (Takatsuki Plant); JX Metals Precision Technology Co., Ltd. (Tatebayashi Works, Esashi Works, Nasu Works, Kakegawa Works); H.C. Starck Ltd. (Mito Plant); and Toho Titanium Co., Ltd. (Headquarters/Chigasaki Plant, Hitachi Plant, Yahata Plant, Wakamatsu Plant, Kurobe Plant)
Overseas	Nippon Mining & Metals (Suzhou) Co., Ltd.; Nikko Fuji Precision (Wuxi) Co., Ltd.; JX Nippon Mining & Metals Dongguan Co., Ltd.; Nikko Metals Taiwan Co., Ltd. (Longtan Works, Kuanyin Works); JX Nippon Mining & Metals Philippines, Inc.; JX Nippon Mining & Metals USA, Inc.; JX Nippon Mining & Metals Korea Co., Ltd.; H.C. Starck Tantalum and Niobium GmbH (Goslar); H.C. Starck Smelting GmbH & Co. KG (Laufenburg); H.C. Starck Co. Ltd. (Thailand); Materials Service Complex Malaysia Sdn. Bhd.; and Materials Service Complex Coil Center (Thailand) Co., Ltd.

Roles of the Quality Control Department

The Quality Control Department is responsible for planning, proposal, promotion, and oversight of measures for enhancing quality management in the entire Group, in order to maintain and raise Groupwide product quality. As part of these duties, it performs quality audits of all operating sites to confirm whether quality management is

being carried out effectively.

In fiscal 2018, there were no cases of liability for damages incurred under the Product Liability Act due to personal or property damage caused by defects in the Group's products.

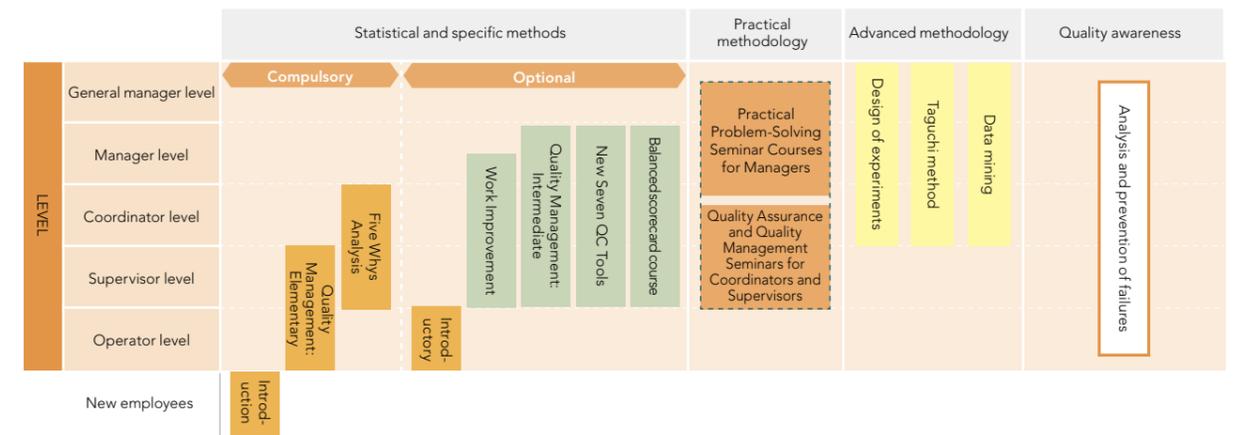
Development of Human Resources in the Area of Quality

The Group carries out human resources development in the area of quality, believing that quality is the responsibility of all employees, not only in departments that contribute directly to profitability, but in back-office departments as well. We therefore have a dedicated department that provides quality control education based on original training manuals throughout the year for all employees, from new hires to senior management.

Features of Quality Control Education

- An education system enabling training courses to be selected according to employees' work roles
- Content specially designed to enable use of the quality control methods in actual workplaces
- The use of actual quality improvement activities for learning the problem-solving mindset and approach

Quality Control Education System



Initiatives to Ensure High Quality and Reliability

Quality Management of Functional Materials and Thin Film Materials Products



Awards Received from Our Customers

Each year, we receive awards from customers in recognition of our stable supply of high-quality products, promotion of business continuity planning, and other efforts. In fiscal 2018, we received the following three awards.

Awards Received from Our Customers in Fiscal 2018

Country	Customer	Award
US	Texas Instruments Inc.	2018 Supplier Excellence Award
	Western Digital Corporation	Best Supplier Award 2018
South Korea	Samsung Electronics Co., Ltd.	Best Contribution Award 2018



Developing Human Resources

Fundamental Policy

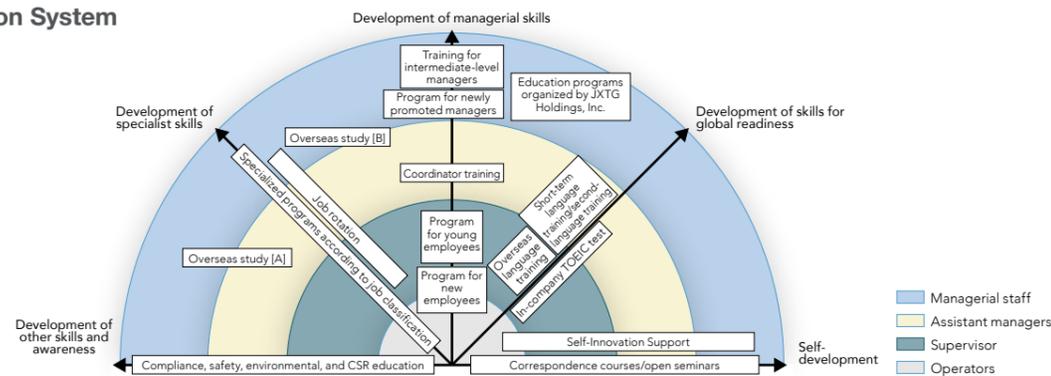
It is essential for the JX Nippon Mining & Metals Group to develop and utilize the employees involved in day-to-day operations if it is to maximize its corporate value. By creating personnel systems that value the diversity of employees working in Japan and abroad, and by enhancing education programs, we are providing a foundation enabling employees to make the most of their abilities.

Strengthening the Education System to Support the Energizing of Individuals and Organizations

In line with our human resources development policy, we provide various educational programs in the five key areas of managerial skills, specialist skills, skills for global readiness, self-development, and other skills and

awareness. Given expectations for continued constant change in the business climate, we are endeavoring to carry on proper human resources development while providing a flexible education system.

Our Education System



Training Programs Implemented in Fiscal 2018

		(hours)		
		Male	Female	Total
Total hours of programs (annual)	Managerial staff	7,345	229	7,573
	General employees	62,109	10,490	72,559
	All staff and employees	69,453	10,719	80,172
Per employee	Managerial staff	13	29	
	General employees	29	38	
	All staff and employees	26	38	

* Survey scope: Employees of the Company and employees being seconded from the Company to JX Nippon Environmental Services and Pan Pacific Copper (Saganoseki Smelter & Refinery, Hitachi Refinery)

Examples of Education Programs Implemented in Fiscal 2018 (Training for Young Graduates)

Program for new employees	<ol style="list-style-type: none"> 1. Understanding the Company's organization, the front lines of business administration, and management issues 2. Acquiring basic skills required of a businessperson 3. Fostering a sense of cooperation and cohesion among peers
First-year follow-up program	<ol style="list-style-type: none"> 1. Confirming one's current situation and expected role 2. Determining issues with one's own way of working and defining challenges to growth 3. Comprehending one's own thinking style, and becoming able to take on challenges with a positive attitude
Third-year program	<ol style="list-style-type: none"> 1. Deepening understanding of the current conditions and issues for business administration 2. Acquiring leadership and coaching skills 3. Acquiring logical thinking and presentation skills 4. Understanding one's role expectations and enhancing motivation
Fourth-year program (Corporate DNA training)	<ol style="list-style-type: none"> 1. Deepening understanding of the Company's social responsibility and initiatives 2. Deepening understanding of the Company's corporate philosophy and encouraging trainees to feel committed as employees of the Company
Fifth-year program	<ol style="list-style-type: none"> 1. Deepening understanding of the current conditions and issues facing the Company 2. Developing a vision for one's own career to shed new light on one's approach to work 3. Learning the problem-solving process and developing the ability to deal with issues in one's own work

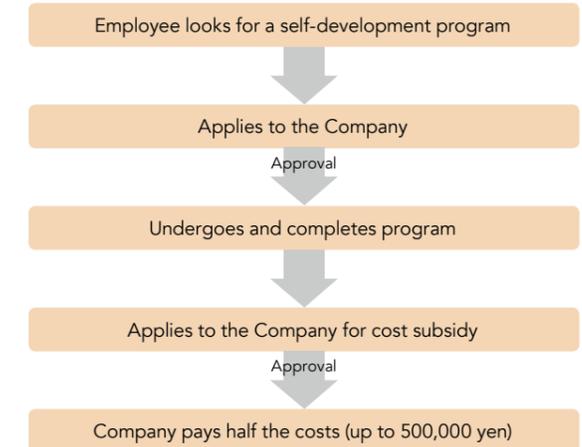
Self-Innovation Support

To address the desire of employees for further self-growth, the Company reviewed its existing self-development programs and established the Self-Innovation Support scheme.

Employees themselves apply for and take part in their chosen external self-development program. Upon completion, the Company subsidizes half the costs, up to a limit of 500,000 yen. Previously, employees chose from programs readied by the Company in advance. Under the new scheme, employees can choose from a broader range of programs.

A feature that sets this scheme apart from previous self-development programs is that it offers broad latitude, so that employees can make effective use of the private time freed up by improving work-life balance—something the Company is also promoting.

Application Process for Self-Innovation Support



Applications for Self-Innovation Support

Applications made		Examples of programs applied for
Fiscal 2017	18	English conversation, online Spanish studies, U.S. certified public accountant, patent attorney, small and medium-sized enterprise management consultant, university leadership program, MBA, etc.
Fiscal 2018	30	

Overseas Study Programs

Each year, the Company sends a few assistant manager-level engineering staff to overseas graduate schools to enhance their expertise. We also send a few assistant manager-level or manager-level engineering staff and administrative staff to overseas graduate schools to obtain an MBA, aiming to strengthen their managerial skills. With the business environment expected to change, we plan on continuing to send employees abroad for such training, in the hope that this will further deepen the engineering expertise or managerial skills of those responsible for management of the Company in the next generation.

Overseas Study Programs

Fiscal year sent	Course	Destination
FY2018	Enhancing Engineering Expertise*1	University of Washington
	Strengthening Managerial Skills (MBA)*2	Carnegie Mellon University
FY2019	Enhancing Engineering Expertise*1	University of Queensland
	Strengthening Managerial Skills (MBA)*2	University of Illinois University of Michigan

*1 Enhancing Engineering Expertise course
Earning a degree (master's or doctorate) at an overseas graduate school (sent for two years in principle)
Eligibility: Assistant managers

*2 Strengthening Managerial Skills (MBA) course
Earning an MBA degree at an overseas graduate school (sent for one year in principle)
Eligibility: Junior managers, assistant managers

VOICE



Shinichi Takenaka
JX Nippon Mining & Metals Corporation
Studied at the University of Washington

My experience in an overseas study program

I took advantage of the opportunity to attend classes at the University of Washington, studying overall business administration. The topics were wide-ranging, including statistics, economics, accounting, finance, marketing, leadership, and business strategy. For some time, I had been wanting to take a systematic approach to acquiring knowledge that would be useful in my work. On many days there were classes from morning to evening, but I still found time after class to discuss topics and projects with my classmates, or study on my own in the library. Having been chosen as class representative, I also engaged in negotiations with the school administrative office on various issues on behalf of the class. Seattle where the school is located has a great climate, people, natural beauty, and safe environment. A round of golf on the weekend offered a nice change of pace. All in all, it was a good place to concentrate on studies. Taking advantage of this study experience, my wish is to help make the Company even stronger.

Initiatives for Developing the Next Generation of Human Resources

The JX Nippon Mining & Metals Group believes it is essential to develop human resources who can ensure the future stable acquisition and supply of indispensable nonferrous metal resources and materials. We are therefore

directing efforts at engaging the young, of high school age and below, who will be responsible for carrying on with this mission.

Main Activities in Fiscal 2018

Summer STEM Challenge 2018

During the summer break, the Isohara Works, the Hitachi Works, the Kurami Works, and Pan Pacific Copper's Saganoseki Smelter & Refinery held plant tours and experimentation sessions for junior high school students. Engineers active in these factories gave enjoyable presentations to the students about the fascination of copper, a metal without which today's society would not exist, and about the appeal of science and technology-related occupations.



These events are part of the STEM Challenge, a Japanese Cabinet Office-backed program to help female junior high and high school students with an interest in science and technology fields envisage what it would be like to work in such fields as they choose their career paths. The Group encourages participation by both male and female students.



Taking a plant tour (Kurami Works)



Electrorefining demonstration (Saganoseki Smelter & Refinery of Pan Pacific Copper)



Paper chromatography experiment (Hitachi Works)

Nikkei Education Challenge

Sponsor: Nikkei Inc.

A marketing representative in sputtering targets for semiconductors taught a class session titled, "What is the target of target material?" mixing in episodes from his own career. The lecture included such topics as work in B2B (business-to-business) companies and the fascination of marketing, presented in a way that participants could readily understand.



Lecture class in progress

Participation in the University of Tokyo's Komaba Research Campus Open House 2018

The University of Tokyo's Komaba Research Campus Open House is held once each year as a regular event introducing the general public to the leading-edge research taking place on the campus, at the Research Center for Advanced Science and Technology and the Institute of Industrial Science. As the Company has established an endowed research unit in collaboration with the Institute of Industrial Science, we took part in the event with a corporate booth exhibit, and demonstrated experiments in thermal conduction and electromagnetic wave shields that clearly showed the properties of copper. In addition, junior high school students tried their hand at a full-fledged experiment for learning about hydro-metallurgical refining of copper.



Company mascot Copy the Kappa makes an appearance at our corporate booth

Sendai/Miyagi Science Day 2018 at Tohoku University

Sponsor: NPO natural science

Sendai/Miyagi Science Day is an annual event held on the Kawauchi Campus of Tohoku University. With the aim of countering the declining interest among young people in science, the event, on the theme of "What, after all, is science?" provides an opportunity for both children and adults to experience scientific processes with their five senses. The Company, having recently concluded an organization-level partnership agreement for collaboration with Tohoku University, exhibited at the event for the first time in 2018. At the booth, large numbers of children learned about copper in quiz format.



Our booth

Copper PR by JX Nippon Mining & Metals Mascot Character "Copy the Kappa"

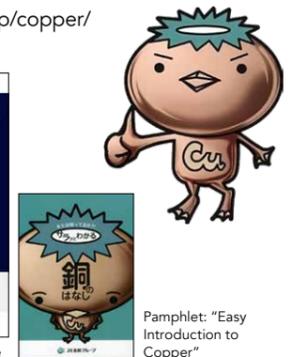
Copper is a material essential to the convenient life we enjoy today. Yet it receives little attention, as it is generally covered or used inside devices and is therefore not directly visible. In an attempt to make copper more familiar to the younger generation, we conduct PR using the mascot character Copy the Kappa via pamphlets and a special website.

The pamphlets are made available at the Nippon Mining Museum and at the Science Museum in Tokyo's Kitanomaru Park, as well as being distributed at various events. The website is designed to help young people learn about copper.

Website for young people: "Learn about Copper with Copy the Kappa"
<https://www.nmm.jx-group.co.jp/copper/>
 (in Japanese only)



Website "Learn about Copper with Copy the Kappa"



Pamphlet: "Easy Introduction to Copper"

Phase 2 Initiatives of the Endowed Unit for Nonferrous Metal Resource Recovery Engineering (JX Metals Endowed Unit)

In Phase 2 of the JX Metals Endowed Unit, which began in January 2017, public relations efforts touting the appeal of the nonferrous metals field are being directed at the general public, especially young people of high school age and below.

▶ See page 42 for details.



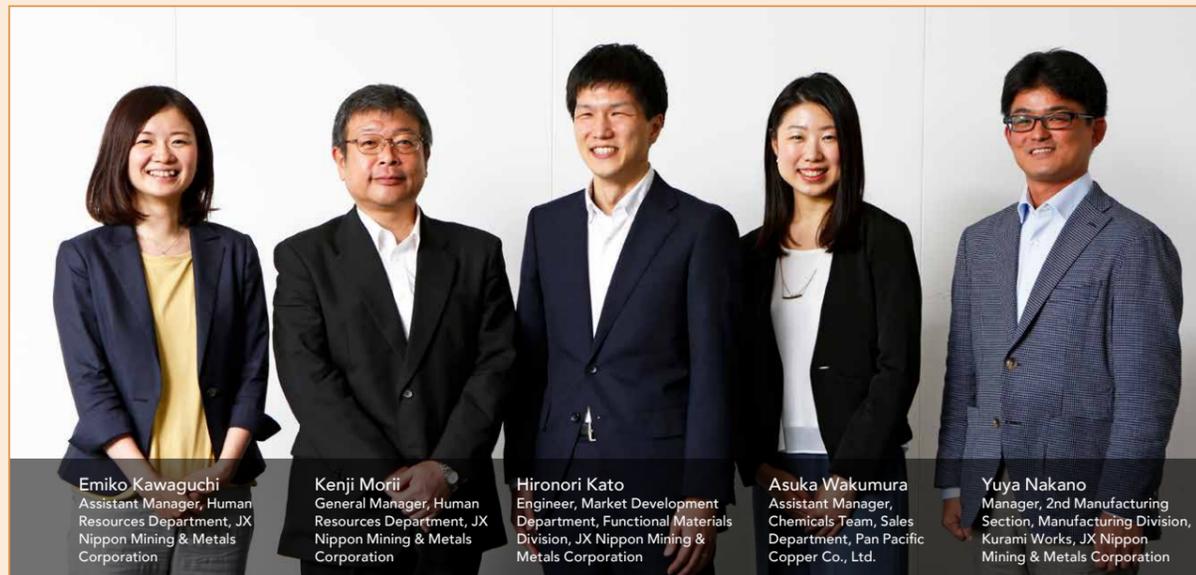
Providing a Rewarding Work Experience

Fundamental Policy

The JX Nippon Mining & Metals Group endeavors to provide a workplace where employees are able to make the most of their abilities—a workplace full of the vitality that comes from maintaining physical and mental health, which we recognize as a strong advantage for ensuring the Company's sustainable growth. Along with implementing appropriate personnel evaluation systems, we seek to improve these systems so as to allow diverse human resources to choose a variety of work styles.

Special Feature

Work Style Reform Initiatives of the JX Nippon Mining & Metals Group



Emiko Kawaguchi
Assistant Manager, Human Resources Department, JX Nippon Mining & Metals Corporation

Kenji Morii
General Manager, Human Resources Department, JX Nippon Mining & Metals Corporation

Hironori Kato
Engineer, Market Development Department, Functional Materials Division, JX Nippon Mining & Metals Corporation

Asuka Wakumura
Assistant Manager, Chemicals Team, Sales Department, Pan Pacific Copper Co., Ltd.

Yuya Nakano
Manager, 2nd Manufacturing Section, Manufacturing Division, Kurami Works, JX Nippon Mining & Metals Corporation

Roundtable Discussion on Work Style Reform: Aiming to Energize Individuals and Organizations

(held July 2019)

Provision of a rewarding work experience requires work style reform from many standpoints, such as enabling work-life balance, raising productivity, and embracing diversity. At this event, people from both the program-design and program-user sides came together to talk about the kind of work style reform the JX Nippon Mining & Metals Group is aiming for.

Please tell us what the JX Nippon Mining & Metals Group is aiming for in work style reform, and give us your own thoughts on work style.

Morii: Work style reform in the Group is based on the Strategy to Energize Individuals and Organizations drawn up in fiscal 2016. To solve the management issues facing each business and grow into the future, it's essential to create a workplace that draws on the strengths of people with various backgrounds and values, and one where they can each have rewarding work experiences.

Nakano: As a recent trend, I sense that the attitude of just doing what needs to be done and then going home is taking root. Still, shorter work hours will not happen unless people are constantly thinking about how to come up with proper answers to the issues confronting them quickly. In that sense, I feel the need for Groupwide education aimed at improving problem-solving skills.

Wakumura: After I took a year off for childcare leave, my thinking on work style changed completely from before the leave. Before going on leave, I would often take on work all by myself, whereas after returning from leave I began to work as part of the organization. I have started to concentrate on achieving results in the limited time available, even if it means passing work on to others occasionally.

Kato: In my job in technical marketing, I sometimes find myself saying, "There must be a better plan than this," or "This would be another way of tying things together," feeling motivated to keep on working until I'm satisfied that things are just right. But as I have a small child at home, in reality I tend to wrap it up once the work gets to a certain point.

Kawaguchi: From the human resources standpoint, naturally we communicate targets such as reducing work time and raising productivity. Yet reducing work time itself is not the objective. I see it as my responsibility to convey clearly that beyond this target is a vision we have for growth of the Company.

What are the main initiatives the Group is implementing from the standpoint of work-life balance?

Morii: Work-life balance is generally thought of as balancing the demands of work and home. In our

Group, however, we consider it especially important to enhance both work and home life. Among the main initiatives, of course, are those aimed at reducing work time and encouraging employees to take their annual paid time off. To reduce work time, we have set a goal of keeping total working time within 2,030 hours a year. In the childcare and family care area, we have introduced programs that are comparable to those of other firms; but I am troubled by issues such as people not being aware of the programs, or feeling guilty about actually using them.

Kato: I took a month off for childcare from May 2017. My supervisor agreed to it when I asked, but also admitted to a lack of knowledge about the program because no one had ever made use of it before. I myself was at first uneasy, as nobody around me had used the program. In the end, though, I was glad I took advantage of it. Having experienced the trials of childcare directly, even after returning to work I was able to commit to working hard so I could go home as early as possible.

Wakumura: When I took childcare leave, I struggled to come to terms with the idea because I was concerned about falling behind my peers due to such a long leave, and about whether I would be able to return to work. Fortunately, I was allowed to resume the same job after my return, but I longed for some support to ease the worries about my post-leave career.

Morii: A certain amount of time is needed for easing back into the work routine after returning to the job, so employees should not feel rushed when they return. We would like people making use of leave programs to consult often with their superior, before taking leave, during the leave, before returning to work, and after returning, so as to maintain motivation and ease concerns. From fiscal 2019 we have revised the way the program is run to ensure proper communication using a consultation sheet.

Kawaguchi: It's important that people have accurate knowledge about the programs. There are many,



for example, who mistakenly believe that family care leave is for employees to take care of family members on their own. In fact, the care is provided mainly by helpers and other third parties; and the leave is intended for employees making the arrangements for such care. To reduce this gap in understanding, the Human Resources Department is preparing handbooks and making them available on the intranet, seeking to make employees aware of the purpose of the programs and how to use them. I would very much like management to take a look at the handbooks as well.

Nakano: If someone working under me says they would like to take childcare leave or family care leave, I would definitely want them to do so as much as necessary. No doubt some employees are afraid their work won't get done while they are away, but others around them can step in for support, and that will even give those others a chance to learn another job.

Working from home, or telecommuting, is an important option for improving the labor productivity of the organization. What is the Group's stance on this?

Morii: Regarding working from home or telecommuting, we have been conducting studies about how best to design such a program. I believe that simply transferring the usual work style to home presents too many challenges, making it important to review the work style, and exercise ingenuity in transforming it to enable working from home. As it stands currently, people are constantly apologizing to those around them for causing trouble when they make use of the work-from-home option. Rather, it should be something that produces new value.

Kawaguchi: Today there are services like Skype, and it is increasingly easy for people to chat as if they were sitting right next to each other. The atmosphere,

though, is still one where it is difficult to choose the work-from-home option. That's the biggest obstacle. I believe the only way is to keep up with efforts to change this atmosphere so that working from home becomes as accepted

as any other work style.

Wakumura: I am currently making use of the work-from-home program. The motivation was that I wanted to somehow find time for childcare. Now that I am actually working this way, I find that I have learned to organize all my work into the work I do when

I come to the office and the work I do from home. I feel this has resulted in highly efficient working. The issue is still communication, though, so I am actively using tools like Skype.

Kawaguchi: It will take a persistent effort, through trial and error, until this way of working finally takes hold. In the era ahead of us, I think it's impossible to choose to eliminate the work-from-home program.

Nakano: It's the lack of precedent that makes things difficult. In terms of the methods to be used, ours is a time when teleconferencing and other tools make it possible to conduct conferences face-to-face. If people feel a need for a certain kind of system, they can ask and improvements can be made, which also means the environment has to be one that is amenable to such improvements.

Kato: When, for example, people in my department go on a business trip to China, the US, Europe, or other places, they often do not see their supervisor or colleagues in the same department for one or two weeks. So they are already somewhat used to communicating mainly by email or telephone at such times. From what is being said here, I realize working from home once a week or so should not be a problem.

Wakumura: My own supervisor encouraged me to make active use of the work-from-home program, which was a good thing; but in the case of male staff in their 30s with a wife who also works, there is a tacit atmosphere that makes them hesitate to work from home. It would be great if we could encourage such employees to use this program and if that would lead to energizing the workplace.

Morii: It would be helpful if people would share more success stories, like how Ms. Wakumura clearly divided the work to be performed at the office and



from home, achieving greater efficiency. I believe it will then be important for not only users of the program but also their superiors to think about the best way of incorporating such ideas into their own workplace. It will be quite difficult to change the current atmosphere without creating a positive workplace culture in which those wishing to work from home are always encouraged to do so.

Nakano: From the standpoint of raising productivity, I think it's important also to raise individual skill levels. The Company has a Self-Innovation Support scheme that provides an environment conducive to self-improvement. I took an outside program on critical thinking. Although similar training is available in the Company, I decided to apply for an outside program because I wanted to deepen my understanding to polish my skills so that I can use these abilities on the job. My desire is to raise my own skill levels and go on from there to effectively raise productivity.

In the area of diversity, what thinking guides the initiatives of the Group?

Morii: We think a key to the growth of the Company is building an environment conducive to active involvement by diverse human resources, and we are therefore putting active effort into this area. For some time, we have been implementing initiatives in such areas as the continued employment of workers aged 60 and older, hiring of persons with disabilities, and women's empowerment. We have also been making steady efforts toward ensuring full acceptance of sexual-minority employees, including revising rules, and holding courses and workshops for persons in general affairs and human resources to enable consulting services.

Kawaguchi: We have to address diversity as a means of making the Company more competitive. This is especially true because we have been doing more mid-career hiring lately, and we can expect the percentage of employees aged 60 and older to increase. In terms of how we develop



the business in the future, I expect it will become increasingly common for people from various countries to be active in the workplace, and we will need to make sure we successfully strengthen our competitiveness through greater diversity.

Nakano: Earlier, I mentioned the outside program I attended making use of the Self-Innovation Support scheme. Along with people from the same industry, there were people wanting to start up businesses overseas, and people from places like Indonesia and Thailand, for example. And, of course, they were of many different ages. This environment made me keenly aware that it's important to accept a wide range of values, not just those in the Company.

Wakumura: We also have an annual training program for the first five years after entry, which serves to deepen camaraderie among those joining the Company at the same time, while being useful for sharing our thinking as a company. However, outside programs are also attractive in that they help our employees to understand diverse values.

Kato: The number of non-Japanese employees seems to have increased in recent years. Working together with them has driven home to me the importance of respect for diversity. They are all good at Japanese and I'm sure they have other strong skills. It would be a shame if they were unable to exercise those abilities to the full due to cultural differences or different ways of thinking. I would also like to think more about understanding their situations.

Morii: It's not easy to change the culture and way of thinking with which someone was born and raised, nor should it be necessary to do so just because they entered a company. At the same time, as is true of any personnel system, I believe it's important to think about the standpoint of the people we work with. We won't get anywhere if we invite people to work with us expecting them to excel, but we insist they do things the Japanese way. We didn't even start hiring mid-career professionals in earnest until a few years ago. Therefore, we still have some way to go in this



Special Column

respect. It really is important that we move forward together in mutual acceptance and respect.

Please give us your final thoughts.

Morii: The Long-Term Vision of the Group toward 2040 calls for us to move to technology-based management. Achieving this will require a flexible organization where diverse people, including highly skilled human resources, can be actively involved.

Our big mission is giving substance to this. If we are to introduce policy measures so that various people with different backgrounds and values will be able to achieve self-realization while feeling motivated to work and satisfied with their lives, it will also be important to hear frank and unreserved views as we have here today. As we go forward, I would like us to take on the challenge of work style reform in the Group, while keeping our ears attuned to the voices of employees.



Initiatives Promoting Diversity

The Group values diversity in both human resources and work style. In compliance with relevant laws and regulations in Japan and overseas, the Group is pursuing initiatives including the continued employment of workers aged 60 and older, hiring of persons with disabilities, and women's empowerment, and is developing programs with sexual-minority employees in mind. Moreover, we have drawn up and are implementing a plan for the five-year period to fiscal 2020 in accordance with Japan's Act on Promotion of Women's Participation and Advancement in the Workplace.

Targets

1. Steadily increase the number of female employees, and ensure that at least 30% of newly hired university graduates are women, to cultivate female managers early on.
2. Improve working environments to create workplaces in which all employees including women can do fulfilling work.

Workplaces Where Women Play Significant Roles

As of March 31, 2019, a total of 1,184 female employees were working in the Group worldwide. Of these, 26.4% occupy managerial positions (supervisor class and above). JX Nippon Mining & Metals employs 282 female employees (including part-time employees), of whom approximately 30% are in managerial roles. There are no gender differences in base pay.



Personnel Systems

Creating Appropriate Personnel Evaluation Systems

The Company has introduced a Competency Evaluation System based on competency models and a Performance Evaluation System centered on management of missions and goals. In Competency Evaluation, employees are interviewed by their supervisors based on competency items, and the resulting assessment of whether they have the necessary competency is used in deciding promotions. In Performance Evaluation, employees meet with their supervisors to discuss the extent to which they attained missions and goals agreed on with the supervisor at the beginning of the fiscal year, and the degree of challenge presented by the goals. Their performance is then evaluated, and the results of these evaluations are reflected in employee bonuses. The

competency model and performance evaluation items for managerial staff are structured so that 50% of the items evaluated relate to personnel management.

Self-Statement System

A Self-Statement System was introduced to help the Company understand the aspirations of individual employees and reflect them in personnel development and elsewhere. Under this system, employees submit this statement on the specified form once a year, looking back on their work and indicating their ambitions, as well as other matters of relevance, such as any reason why they cannot accept job transfers that would involve moving residence and how long that will remain the case.

Childcare and Family Care Systems

As part of energizing individuals and organizations, the Company seeks to ensure that the working environment is one where even employees with commitments such as pregnancy, childbirth, childcare, parenting, or family care can make the most of their abilities. To this end, personnel systems undergo regular review to enable assistance from the two aspects of work style support and financial support.

Starting in fiscal 2018, we have been taking steps to instill a more thorough understanding of these systems, preparing a handbook on the support available for balancing work and childcare or family care. The handbook provides an overview of the systems, shows how to use them, and

describes how managers can give assistance. We also revised the systems so that cumulative annual paid time off can be used, in case of hospital visits for illnesses requiring repeated or ongoing treatment, or for infertility treatment.



Handbook on support systems for balancing work and childcare or family care

Overview of Childcare and Family Care Systems

	Pregnancy/childbirth	Childcare/parenting	Family care
Work style support	Pre- and post-childbirth time off	Time off to care for an ill child	Family care time off
	Special measures for mothers during pregnancy and within one year after childbirth	Childcare leave (length can be shortened, and leave period can be changed more than once)	Family care leave
	Maternity time off	Exemption from overtime work exceeding limit	
		Exemption from late-night work	
		Shorter workday (expanded applicability, enabled use along with flextime)	
		Flextime (revised core time, enabled use along with shorter workday)	
		Exemption from overtime work	
		Childcare time	
		Cumulative annual paid time off (added "childcare" to conditions for use)	
		Telecommuting	
Financial support, etc.	Onetime maternity/childcare benefit, additional onetime maternity/childcare benefit (health insurance)	Childcare/family care subsidies	
	Maternity allowance, additional maternity allowance (health insurance)	Return-to-work grant	Family care leave allowance
	Exemption from paying social insurance premiums (health insurance and employees' pension) during pre- and post-childbirth leave, childcare leave, etc.	Childcare leave benefit (employment insurance)	Family care leave benefit (employment insurance)
		Childcare concierge service	
		Support for babysitter use	
		Return-to-work system	

Support from social insurance and employment insurance Programs revised or newly offered since fiscal 2016
 Note: Telecommuting is also available for reasons other than childcare or family care.

Maintaining Good Labor-Management Relations

Labor unions have been formed at nearly all Group companies in Japan. At each Group company, good relations built on mutual trust are maintained between management and employees. At regular meetings between representatives of management and the labor union, management discloses details of the company's business; while at the Health and Safety Committee meetings, causes of accidents and incidents are analyzed thoroughly. In such ways, labor unions play an important role as partners with management, including by conveying information and gathering views within the organization.

Recognizing health and safety as a particularly important theme to be confirmed between management and labor, 90% of Group companies with labor unions include matters relating to health and safety in their labor agreements.

When changes are made in the company organization or business activities, adequate time is given to preliminary explanations and discussions before conducting the necessary procedures, in accordance with the labor agreement. In fiscal 2018, there were no strikes or lockouts in the Group.

Membership in labor unions (as of March 31, 2019)

	Male	Female	Total	Age 29 or younger	Age 30 to 49	Age 50 or older	Total
No. of union members	5,111	594	5,705	956	3,798	951	5,705
Membership rate	62%	50%	60%	70%	66%	40%	60%

Data Relating to Diversity (JX Nippon Mining & Metals)

Use of childcare leave program in fiscal 2018

	Male	Female	Total
No. of employees using program	3	7	10
No. of employees eligible to use program*1	108	7	115
Usage rate (%)	3%	100%	9%

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

Rate of return from childcare leave (Percentage of employees who took leave and then returned to their jobs)

	Male	Female	Total
No. of employees returning to work in fiscal 2018	2	5	7
No. of employees planning to return	2	6	8
Return rate (%)	100%	83%	88%

Retention rate after return from childcare leave (Percentage of those still employed 12 months after return from leave)

	Male	Female	Total
No. of employees returning to work in fiscal 2017	7	9	16
No. of employees still employed 12 months later	6	9	15
Retention rate (%)	86%	100%	94%

Status of rehiring efforts in fiscal 2018

No. of age-limit retirees	17
No. of reemployed	14
Reemployment rate (%)	82%

Persons with disabilities as a percentage of the workforce in fiscal 2018

Percentage of employees with disabilities (the legal requirement is 2.2%)	2.4%
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Employment Data (JX Nippon Mining & Metals Group)

Survey scope: Companies in which JX Nippon Mining & Metals has 50% or greater voting rights directly or indirectly (excluding H.C. Starck Tantalum and Niobium GmbH)

Counting of seconded employees: Includes employees being seconded to and from the companies subject to this survey

No. of employees (by employment status and employment contract type; as of March 31, 2019)

		Male	Female	Total
Full-time	Open-ended contract	7,492	989	8,481
	Fixed-term contract	723	147	870
	Subtotal	8,215	1,136	9,351
Part-time	Open-ended contract	20	26	46
	Fixed-term contract	68	22	90
	Subtotal	88	48	136
Total		8,303	1,184	9,487

		Japan	North America	South America	Asia	Europe	Middle East	Total
Full-time	Open-ended contract	6,352	13	923	1,123	20	50	8,481
	Fixed-term contract	565	107	98	97	3	0	870
	Subtotal	6,917	120	1,021	1,220	23	50	9,351
Part-time	Open-ended contract	44	0	0	1	1	0	46
	Fixed-term contract	88	0	2	0	0	0	90
	Subtotal	132	0	2	1	1	0	136
Total		7,049	120	1,023	1,221	24	50	9,487

No. of employees (by region; as of March 31, 2019)

	Japan	North America	South America	Asia	Europe	Middle East	Total
Male	6,330	95	943	867	18	50	8,303
Female	719	25	80	354	6	0	1,184
Total	7,049	120	1,023	1,221	24	50	9,487

No. of newly hired employees (April 1, 2018 to March 31, 2019)

	Male	Female	Total	Age 29 or younger	Age 30 to 49	Age 50 or older	Total
New hires	791	157	948	366	479	103	948
Percentage of total number employed as of March 31, 2019	10%	13%	10%	27%	8%	4%	10%

	Japan	North America	South America	Asia	Europe	Middle East	Total
New hires	576	27	145	190	2	11	951
Percentage of total number employed as of March 31, 2019	8%	23%	14%	16%	8%	22%	10%

No. of employees ending employment (April 1, 2018 to March 31, 2019)

	Male	Female	Total	Age 29 or younger	Age 30 to 49	Age 50 or older	Total
New hires	589	121	710	136	378	196	710
Percentage of total number employed as of March 31, 2019	7%	10%	7%	10%	7%	8%	7%

	Japan	North America	South America	Asia	Europe	Middle East	Total
New hires	315	19	171	178	1	26	710
Percentage of total number employed as of March 31, 2019	4%	16%	17%	15%	4%	52%	7%



Promoting Community Involvement and Development

Fundamental Policy

Since the inception of the business at the Hitachi Mine, the JX Nippon Mining & Metals Group has emphasized the spirit of maintaining good relations with local communities in performing its business operations. Keeping alive that spirit today, Group companies actively carry out social contribution activities in accordance with the Code of Conduct, seeking coexistence and coprosperity with society as good corporate citizens. Through corporate citizenship activities rooted in the local community and effective communication with local residents at each of our operating sites in Japan and overseas, we endeavor to forge relationships of trust with the societies in which we conduct our business.

Activity Policies and Activities Undertaken in Fiscal 2018

For fiscal 2018, the Group adopted a corporate citizenship policy of carrying out social contribution activities geared to the nature of the Group's businesses, undertaking social contribution activities and interchanges rooted in the local

community at each of our operating sites in Japan and overseas. These activities are planned and assessed by the Citizenship Committee, an organization under the CSR Committee, in meetings every six months.

Main Activities in Fiscal 2018

	Activity	Location	Timing	Description
Cleanup Campaigns	Cleanup around plant	JX Nippon Tomakomai Chemical Co., Ltd.	Throughout the year	Four times in the year, the company took part in cleanup activities undertaken by local volunteers in the city of Tomakomai and the waterfront business association.
	Participation in cleanup activities at Mikata Goko lakes	JX Nippon Tsuruga Recycle Co., Ltd.	April 2018	Fifteen members took part in cleaning the area from the parking lot of the Mihama town general gymnasium to the area around the Mikata Goko lakes.
	Participation in Sagami River Cleanup Campaign	Kurami Works	June 3, 2018	Cleanup efforts along the Sagami River were joined by 95 people (employees and their family members) from the Kurami Works.
Educational Activities and Plant Tours	Cooperation in high school social science study	Kakegawa Works of JX Metals Precision Technology Co., Ltd.	September 21, 2018	A plant tour was held for 34 students from Ogasa High School.
	Plant tour for local residents	Hitachi Works	November 8, 2018	A plant tour was held for 33 local residents.
Events	Cooperation in Project Saganoseki & APU: Building the future together	Saganoseki Smelter & Refinery of Pan Pacific Copper Co., Ltd.	December 1, 2018 and other days	This project implemented by the local Chamber of Commerce and Industry and the Ritsumeikan Asia Pacific University (APU) targets local revitalization; Saganoseki Smelter & Refinery assisted in the project's operation by conducting tours of its refinery.
	Firefly watching event	JX Nippon Tsuruga Recycle Co., Ltd.	June 2018	Firefly watching events for local residents have been held for more than ten years.
	Participation in Kurobe Fair 2018	JX Nippon Mikkaichi Recycle Co., Ltd.	September 22-23, 2018	The company ran a booth where it introduced the business and conducted quizzes and games relating to copper.
Sports Promotion	Participation in Mt. Kurakake cherry tree restoration activities	Head Office and Hitachi Works	November 17, 2018	More than 60 persons including JXTG Group employees helped out with the reforestation work by clearing underbrush and cutting branches.
	Kendo (martial art) instruction	Hitachi Works	Throughout the year	Members of the kendo club at the Works taught local children from kindergarten to high school age.
	Baseball classes	Hibi Smelter of Pan Pacific Copper Co., Ltd.	Throughout the year	Members of the company baseball team held baseball classes at nearby kindergartens and other places.
Donations to Local Communities	Basketball clinic	Kakegawa Works of JX Metals Precision Technology Co., Ltd.	April 2018	Members of the JX-ENEOS Sunflowers basketball team coached 60 junior-high school students in the city.
	Donation of plastic bottle caps, etc.	JX Metals Trading Co., Ltd. and JX Nippon Tomakomai Chemical Co., Ltd.	Throughout the year	Collected plastic bottle caps and used postage stamps were donated.
	Donation of relief money	JXTG Group	July 2018	The Group donated ¥30 million in disaster relief to areas affected by the torrential rainfall in July 2018.
Activities outside Japan	Donation of "A Bouquet of Children's Stories" (an anthology of prizewinning stories from the Annual JXTG Children's Story Award)	JXTG Group	November 2018	The anthology was given to local communities in areas around JX Nippon Mining & Metals Group companies and operating sites.
	Donations to elementary school children	Nippon Mining & Metals (Suzhou) Co., Ltd.	Throughout the year	Donations were made to local elementary school children to help pay for their tuition and living expenses.
	Cooperation in short-term overseas training by university students	Nippon Mining & Metals (Suzhou) Co., Ltd.	September 7, 2018	A plant tour was held for 22 students and accompanying teachers from Okayama University.
	Truck operator training	Minera Lumina Copper Chile (MLCC)	November 2018	Five weeks of training was provided for those wishing to be hired as ore-hauling truck drivers in the commune of Tierra Amarilla.

Social Contribution Activities in Japan

Cleanup Campaigns

Participation in Kitaibaraki City's Activities to Improve the Appearance of the Local Environment
Isohara Works, JX Nippon Mining & Metals Corporation

On May 27, 2018, in advance of the National Sports Festival held in Ibaraki Prefecture in 2019, some 150 employees and family members from the Works and affiliated companies took part in activities to tidy up the local area in conjunction with a welcoming and hospitality cleanup campaign. Starting in the early morning, they cleaned the area around the Ohtsu Port. Besides helping to make the area more attractive, these activities contributed to promotion of the sports festival.



Ibalucky, the mascot of the Ibaraki sports festival, joined in as well

Educational Activities and Plant Tours

Cooperation in Saganoseki Elementary School Social Science Study
Saganoseki Smelter & Refinery, Pan Pacific Copper Co., Ltd.

As part of activities contributing to the local community, on October 5, 2018, PPC invited 12 fifth-graders for a tour of the smelting and refining facilities. Many of the children were already familiar with the plant's large smokestack, visible from the school. On their first visit to the refinery, they were full of interest and unable to contain their amazement at the huge equipment as they enjoyed a lively tour.



Students listen to an explanation about copper and the smelter

Events

Summer Festivals

Hitachi Works, Kurami Works, Isohara Works, Saganoseki Smelter & Refinery of Pan Pacific Copper, and Toho Titanium

Each year the Group plans and puts on summer festivals, inviting families of employees as well as residents of surrounding communities. The festivities are enlivened by refreshment stands run by employees, lotteries, and local children playing instruments and dancing. Some of the festivals include traditional arts and fireworks shows. For the local residents, these events have become a much-anticipated summer tradition.



Hitachi Works Sanjinsai festival

Sports Promotion

The 18th Toho Southern Cup

Toho Titanium Co., Ltd.

Toho Titanium sponsors this tournament to support the development of boys and girls through soccer. This year, 16 Kanagawa teams took part, demonstrating lively play. The company's soccer team also conducts soccer clinics in the Chigasaki and Samukawa areas.



The tournament winners

Social Contribution Activities outside Japan

Support for Establishment of a High-Altitude Laboratory by the University of Atacama
Minera Lumina Copper Chile (MLCC)

MLCC donated funds for establishment of a high-altitude research facility by the university. The university plans to build a laboratory near the Nevado Ojos del Salado volcano, at an elevation of 3,800 meters above sea level, for conducting scientific research in multiple fields of study. Positioning Atacama as a benchmark for resource exploration in high-altitude regions, the university is promoting international collaboration in interdisciplinary research, and has expressed hopes for mutual technical cooperation with MLCC.



High-Altitude Laboratory by the University of Atacama

Cooperation in Site Survey Targeting Improvement of the Lautaro Reservoir
Minera Lumina Copper Chile (MLCC)

A decision was taken to devote a year to investigations prior to restoration of the region around the Lautaro Reservoir, which had been damaged by flooding. MLCC contributed research funds to supplement funding by the Fondo Nacional de Desarrollo Regional (FNDR). Moreover, the company cooperated in meetings regarding the site survey, proposing measures for solving the region's water storage inefficiency.



Lautaro Reservoir



Respecting Human Rights

Fundamental Policy

The JX Nippon Mining & Metals Group Code of Conduct states, "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."

Maintaining sound business practices while respecting the human rights of local residents, customers, employees, business partners and all others involved in the supply chain, is seen as a major premise for the continued operation of the Group. Based on this belief, we aim to conduct our business activities with due consideration for human rights, making use of initiatives such as explanatory meetings for local residents and interviews with employees and business partners. To create a corporate climate where human rights are respected, we are also actively engaged in educational activities.

Respect for Human Rights: Principles and Rules

JXTG Group

The JXTG Group Code of Conduct and JXTG Group Human Rights Policy include the following statements on human rights.

The JXTG Group Code of Conduct

1. We shall not infringe on human rights through our business activities. We respect internationally accepted human rights standards and diversity, acknowledging differences pertaining to gender, age, nationality, race, ethnicity, skin color, culture, thought, religion, belief, political opinions, sexual orientation, and the presence or absence of disability.
2. We shall not engage in any type of discrimination or harassment.
3. We shall not engage in any forms of forced labor or child labor.
4. We shall not engage in business transactions which may lead to the prolongation of conflicts, human rights violations, or inhumane acts.

JXTG Group Human Rights Policy

The JXTG Group conducts its business activities under the JXTG Group Philosophy, which states that we will contribute to the development of our communities and help to ensure a vibrant future through creation and innovation in energy, resources, and materials.

This policy was formulated as a guideline for promoting respect for human rights across the entire Group and fulfilling related obligations pursuant to the United Nations Guiding Principles on Business and Human Rights.

1. Basic Approach

The JXTG Group fully recognizes that human rights must be respected in all of the countries and regions where it conducts its business activities.

2. Compliance with Applicable Laws and Regulations

The JXTG Group complies with the laws, ordinances and regulations applicable in the countries and regions where it conducts its business activities. In addition, the JXTG Group will pursue a method for respecting international principles on human rights in case of a contradiction between internationally recognized human rights and the laws and regulations of each country and region.

3. Respect for International Norms on Human Rights

The JXTG Group supports and respects the International Bill of Human Rights (consisting of the Universal Declaration of Human Rights, International Covenant on Civil and Political Rights, and the International Covenant on Economic, Social and Cultural Rights), which stipulates the fundamental human rights of all people, along with international norms on human rights such as the ILO Declaration on the Fundamental Principles and Rights at Work of the International Labor Organization, which sets forth fundamental labor rights, other conventions relating to the human rights of workers on wages and working hours, the Declaration on the Rights of Indigenous Peoples, and the Children's Rights and Business Principles. As a participant in the UN Global Compact, we support and respect the 10 principles of the UN Global Compact.

4. Fulfillment of Responsibility to Respect Human Rights

The JXTG Group will establish and continually implement a mechanism for human rights due diligence. Human rights due diligence refers to the continuous process of conducting preventive surveys and investigations, rectifying issues using appropriate means, and disclosing the progress and results of such externally, in order to prevent or mitigate possible adverse impacts on human rights caused by the company.

• Human Rights Due Diligence

The JXTG Group will establish and continually implement a mechanism for human rights due diligence. Human rights due diligence refers to the continuous process of conducting preventive surveys and investigations, rectifying issues using appropriate means, and disclosing the progress and results of such externally, in order to prevent or mitigate possible adverse impacts on human rights caused by the company.

• Dialogue and Discussions

The JXTG Group conducts in earnest dialogue and discussions with relevant stakeholders to ensure that it comprehends and addresses the impacts it has on human rights from the perspective of those affected.

5. Training

The JXTG Group will provide appropriate training to its officers and employees to ensure that this policy is incorporated into the business activities of all companies belonging to the JXTG Group.

6. Information Disclosure

The progress and results of initiatives for respect for human rights under this policy will be disclosed on our website and in reports, among other media.

7. Applicable Scope

This policy applies to all officers and employees of the JXTG Group. All business partners involved in the JXTG Group's business activities will be asked to cooperate with this policy.

8. Positioning

This policy supplements the provisions of the JXTG Group As a corporate group with global business operations, the Philosophy and the JXTG Group Code of Conduct.

JX Nippon Mining & Metals Group

The JX Nippon Mining & Metals Group Compliance Regulation likewise states explicitly the commitment to prohibiting unjust discrimination, preventing harassment, protecting personal information, and preventing child labor, forced labor, and other abuses.

Prohibition of unjust discrimination

JX Nippon Mining & Metals Group Company and its Officers and Employees etc. shall not discriminate against employees for (including but not limited to) hiring, payment of salary, working hours, work conditions or business terms due to (including but not limited to) race, nationality, sex, age, religious belief, social status or physical features.

Prevention of harassment

JX Nippon Mining & Metals Group Company and its Officers and Employees etc. shall proactively engage themselves in creating a harassment-free environment, and shall refuse to accept sexual harassment (including gender harassment) and/or power harassment.

Protection of personal information

JX Nippon Mining & Metals Group Company and its Officers and Employees etc. shall comply with the Personal Information Protection Law and related regulations and internal rules, adequately protect the personal information of (including but not limited to) customers, business partners and employees, and in situations whereby such personal information needs to be managed, manage it with the utmost care.

Prevention of child labor and forced labor

JX Metals Group Company and its Officers and Employees etc. shall not associate themselves directly with child-labour and/or forced-labour, and shall put efforts to contribute to solve such issues.

Raising Employee Awareness

The Company provides and makes known guidelines on human rights including prevention of discrimination, harassment, forced labor, and child labor. Each year, compliance inspections are carried out voluntarily at each workplace to confirm the extent to which these guidelines are upheld. We further endeavor to comply with labor-related laws and regulations in the countries and regions where we conduct business.

Regarding employee remuneration in Japan, we conduct regular negotiations with our labor unions on suitable wage levels and labor conditions, and verify the appropriateness of overall wages.

Providing Human Rights Training (e-Learning)

A human rights training program making use of e-learning was provided in fiscal 2018 for all officers and employees of the Group. The training instilled understanding of our thinking on human rights and the importance of accommodating diverse values in conducting global business.

Hours of human rights education given in fiscal 2018
1,479 hours

Note: This figure represents the total hours (hours implemented × number of persons) for the above e-learning program and other human rights-related education.

Initiatives Relating to Business Partners

We perform checks on suppliers and other business partners in accordance with the Basic Procurement Policy (JX Nippon Mining & Metals Group Basic Policy and Policy for Selecting Procurement Partners). Among the matters confirmed are respect for human rights and ensuring

workers' rights, the absence of discrimination in hiring and work, the elimination of forced labor and child labor, and compliance with the prohibition against purchasing conflict minerals.

JX Nippon Mining & Metals Group Basic Procurement Policy

Basic Policy

1. Comply with laws, regulations, and rules and engage in fair transactions.

- Respect the letter and spirit of relevant laws and social norms in executing business operations.
- Conduct purchasing activities based on fair evaluations.
- Maintain appropriate relationships with business partners based on the highest ethical values.

2. Protect intellectual property rights.

- Strictly control personal information obtained in the course of procurement activities.
- Do not illegally obtain or illegally use intellectual property, including the patents, utility models, designs, and trademarks of third parties, and do not infringe such rights.

3. Build relationships with business partners based on mutual understanding and trust.

- Provide business partners with high reliability and satisfaction through accurate, fast, and highly transparent activities.
- Endeavor to achieve robust communication with business partners and consistently promote creativity and innovation through advanced ideas.
- Contribute to the development of a sustainable society by promoting the purchase of environmentally friendly materials and machinery.

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 infringements through such illegal activities.
- Respect the guidance of the Organisation for Economic Co-operation and Development related to raw materials procurement from conflict-affected areas, and control supply chains in an appropriate manner.

Policy for Selecting Procurement Partners

In the conduct of the JX Nippon Mining & Metals Group's business operations, it is necessary for not only the Group but also our business partners' supply chains to fulfill their responsibility to society. Therefore, we also require our business partners to operate in accordance with the following.

1. Comply with laws, regulations, and social norms, such as those below, and place priority on human rights and environmental impact.

- Obey laws and regulations related to manufacturing and sales, etc.
- Comply with labor-related laws and regulations.
- Abide by laws and regulations related to safety and health and develop a proper labor environment.
- Prohibit child labor and forced labor.
- Prohibit discrimination based on race, gender, etc. and respect the human rights, personality, and individuality of employees.
- Comply with environmental laws and regulations.
- Prohibit bribery and other unfair conduct.
- Do not engage in conflict minerals procurement or use that contributes to inhumane acts.
- Preclude all relations with "antisocial forces" (the term used to refer to organized crime groups in Japan)

2. Engage in sound and fair business management.

3. Based on the JX Nippon Mining & Metals Group's Green Purchasing Guideline, build environmental management systems and properly manage specified chemical substances.

4. Offer stable supply capacity and satisfy the quality, price, delivery, and service requirements of the JX Nippon Mining & Metals Group.

5. Possess technological capabilities that meet the requirements of the JX Nippon Mining & Metals Group.

CSR Purchasing Questionnaire Surveys

In fiscal 2019, the JX Nippon Mining & Metals Group began conducting CSR Purchasing Questionnaire surveys across the entire supply chain to fulfill its responsibility to society in areas including respect for human rights, occupational health and safety, compliance, and environmental protection.

The fiscal 2019 surveys targeted 219 business partners that accounted for approximately 80% of the value of the items purchased and accepted in fiscal 2018 by the Company, JX Nippon Environmental Services Co., Ltd., and Pan Pacific Copper Co., Ltd. Responses were received from 218 business partners, for a response rate of 99.5%.

Based on the survey results, we will provide feedback to business partners, devoting our efforts to promoting CSR activities throughout the supply chain.

Confronting the Problem of Conflict Minerals

"Conflict minerals" is the general term for minerals that are mined (illegally, in most cases) in conflict-affected regions, providing a source of funds for local armed groups. The use of these minerals may lead to the prolonging of conflicts and the expansion of human rights abuses and dehumanizing acts. Global moves to restrict trade of conflict minerals began in the late 1990s, and today various organizations have devised rules and programs.

In 2011, the Organisation for Economic Co-operation and Development established the Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, advising corporations and others to manage their own operations so as to avoid involvement in the trade of conflict minerals. In the United States, from 2013 the Dodd-Frank Wall Street Reform and Consumer Protection Act obligated companies listed on the U.S. stock exchanges to submit reports on their usage of specific conflict minerals (tin, tantalum, tungsten, and

gold) to the Securities and Exchange Commission. The aim of such measures is to stop companies from using conflict minerals through information disclosure and social pressure.

In line with these global trends, industry organizations relevant to the Group (including the LBMA^{*1} and RBA^{*2}) have established monitoring programs for eliminating conflict minerals. These programs request that companies cooperate with surveys and undergo external audits by an independent organization.

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

*2 RBA: Responsible Business Alliance
An alliance of companies formed with the aim of ensuring responsible conduct in the electronics industry supply chain.

Initiatives in the Gold and Silver Supply Chains

Pan Pacific Copper Co. Ltd. as a producer of gold ingots, and JX Nippon Mining & Metals as a producer of silver ingots, have established and operate a management system for supply chain due diligence that calls for actions including the following to be taken.

1. Performing supply chain due diligence before purchasing mineral raw materials (confirming the place of origin of the materials, assessing risks, confirming materials after delivery, confirming distribution route, preserving relevant documents, etc.).
2. Notifying suppliers of the policy on exclusion of conflict minerals.
3. Conducting in-house education on supply chain due diligence and its background.
4. Conducting internal audits and undergoing external audits.

The implementation status of supply chain due diligence is audited by an independent organization specified by the LBMA, and the results are reported to the LBMA. As a result of following these procedures, the gold ingots produced at Pan Pacific Copper's Saganoseki Smelter &

Refinery and the silver ingots produced at the Company's Hitachi Works are both included on the LBMA's Good Delivery List. At the same time, the Saganoseki Smelter & Refinery and the Hitachi Works have been included on the RMAP Conformant Smelters list compiled by the RBA and GeSI^{*3}—recognition that they are taking proper measures to exclude conflict minerals.

*3 GeSI: Global e-Sustainability Initiative (a trade association of the information and communications technology industry in Europe)
The RBA and GeSI together created the Responsible Minerals Assurance Process (RMAP) certification program, based on their relationship with the electronic and communications equipment industries, where the risk of conflict mineral use is especially high.

Initiatives in the Tantalum Supply Chain

H.C. Starck Tantalum and Niobium GmbH ("HCS TaNb"), 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, HCS TaNb purchases materials with tags that the ITSCI^{*4} distributes and tracks to guarantee non-involvement in conflicts, child labor, or other human rights violations within conflict-affected areas. HCS TaNb also performs supply chain due diligence to confirm the tags. As a result of these initiatives, HCS TaNb has been included on the RMAP Conformant Smelters list in recognition that HCS TaNb is taking proper measures to exclude conflict minerals.

Since June 2019, moreover, HCS TaNb has begun implementing a supply chain due diligence system similar to the ITSCI, by means of the Better Sourcing Program (BSP) made available by the RCS Global Group, a global responsible sourcing auditor for the raw materials supply chain.

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

Initiatives Relating to 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 and implement measures to ensure coexistence and coprosperity with local communities.

Today, SCM Minera Lumina Copper Chile, the operator of the Caserones Copper Mine, applies a basic three-point policy for supporting local communities: respect for life,

respect for the community and environment, and respect for current law. In keeping with this policy, from the project launch in 2007, the operator began holding explanatory meetings and engaging in dialog with the Collas, indigenous people living in the area around the mine site, endeavoring to build up trust.

In fiscal 2018 there were no cases of violations of the rights of people in local communities.



Insisting on Full Compliance

Fundamental Policy

The JX Nippon Mining & Metals Group insists that officers and employees comply fully with laws, regulations, and other rules. We are building an organizational structure for compliance, aimed at ensuring corporate activities are conducted fairly, and at increasing public trust in the Group. To those ends, we are implementing a multilayered system of checks, providing relevant rules and regulations, and enhancing education to raise awareness, among other initiatives.

Performance regarding Key Compliance Goals in Fiscal 2018

Provision of Compliance Rules and Ensuring Full Compliance

(1) Checking and improving the implementation of compliance rules

We determined the extent to which compliance rules were being implemented at each Group company, and took steps to rectify organizational or operational issues that were identified.

(2) Taking steps to eliminate association with antisocial forces and implementing anti-bribery measures

Audits were conducted at the Company and Group companies to confirm the extent to which measures for ensuring compliance are in place and being implemented. In fiscal 2018, there were no adverse dispositions from regulatory authorities (license revocation, orders for improvement, fines, etc.) for bribery.

(3) Program for ensuring compliance with laws for prevention of unfair competition

Given the growing trend in countries around the world to make competition laws more rigorous, the JX Nippon Mining & Metals Group established a program to ensure compliance with such laws. The program specifies checks that must be made prior to attending gatherings of competing firms or engaging in transactions that may violate competition laws, and mandates regular reporting by managers to the office in charge. Audits of the program's implementation status during fiscal 2018 again verified that it is generally being carried out properly

(There were no adverse dispositions from regulatory authorities for anti-competitive behavior.)

Implementation of Compliance Inspections and Effective Response to Matters Identified

Besides addressing matters identified in the compliance inspections conducted in fiscal 2017, we carried out inspections in fiscal 2018 aimed at determining the status of legal compliance in each department, operating site, and affiliated company. These included investigations, questionnaires, interviews, self-statements, and environment and safety audits.

Effective Response to Matters Identified in Inspections of Environmental and Safety-Related Compliance and Labor Compliance

In fiscal 2018, we conducted inspections of environment- and safety-related compliance at 20 of the Group's operating sites to confirm their compliance with laws and regulations relating to the environment and safety. Overall, laws and regulations on the environment and on occupational health and safety were well understood at these sites, and the inspections found no major deficiencies in comprehension. Appropriate measures were taken to address matters identified in the inspections.

Also in fiscal 2018, the Group conducted inspections at 15 operating sites to check legal compliance regarding human resources and labor, and verified that the relevant laws and regulations were being implemented appropriately for the most part.

Enhancing compliance knowledge and awareness among officers and employees

The Group seeks to educate officers and employees fully to increase their knowledge and awareness of compliance, so that they will act properly from a compliance standpoint in each of their work processes.

In fiscal 2018, a total of 35 compliance education sessions were provided to approximately 900 persons, including level-specific training, quality control training, and education on laws and legal affairs. Questionnaires administered following the sessions showed that the attendees generally found the education useful.

(1) Level-specific compliance education

Compliance education was given for officers of the Company, management-level employees, and newly appointed managers, with content geared to their respective roles and responsibilities. A total of 17 sessions were provided for approximately 300 persons.

(2) Education on quality assurance

In fiscal 2018, 5 sessions were conducted at the Head Office and operating sites for approximately 260 persons in charge of quality control.

(3) Education on laws and legal affairs

At Group head offices and operating sites, 10 sessions were given for approximately 340 persons on internal control, security export control, the Stamp Tax Act and other such topics.

Organizational Structure for Compliance

Compliance Committee

Measures related to compliance in the Group, including basic policy, priority issues for the fiscal year, and education, are determined at meetings of the Compliance Committee (held twice a year as a rule). The committee consists mainly of the JX Nippon Mining & Metals president and officers in charge of compliance at each department of the Company and at major Group companies in Japan and overseas.

It receives reports on the status of compliance from each department of the Company and from Group companies. Based on these reports, the committee evaluates the risk of fraudulent acts, legal violations, and other misconduct related to business operations, and reflects its conclusions primarily in setting priority issues and formulating educational plans.



Compliance Committee meeting

responsibility for accepting reports under the program and adopted a policy of accepting anonymous reports.

We have also taken a range of measures to spread awareness of the program throughout the Group, such as displaying posters to publicize the program at operating sites, describing it in pocket editions of the Group Philosophy distributed to all employees, creating a section on the Company intranet dedicated to the program, and including the program in compliance education sessions.

In fiscal 2018, multiple reports were confirmed. Necessary measures were carried out for all incidents in accordance with relevant rules and regulations, while taking due care to protect the whistleblowers.

Information Management

(1) Protection of Personal Information

We have drawn up the JX Nippon Mining & Metals Group Personal Information Protection Rules and have taken other measures to ensure proper handling of personal information, tailored to the situation at each Group company and the materiality of the information it handles.

(2) Management of Confidential Information

We have drawn up the JX Nippon Mining & Metals Group Basic Policy on Confidential Information Management and endeavor to manage confidential information properly, in accordance with the materiality of the information.

(3) Information Security

We have drawn up the JX Nippon Mining & Metals Group Information Security Regulations and accompanying Information Security Guidelines, and we implement security measures governing company computers and networks.

Whistleblower Program

To increase the reliability of the whistleblower program in the Group, we asked an external organization to take over

In Sustainability Report 2018 it was stated that "In fiscal 2017 as in previous years, there were no adverse dispositions from regulatory authorities (license revocation, orders for improvement, fines, etc.) for violations of laws and regulations with respect to those governing bribery and anti-competitive behavior." In fact, however, a fine was imposed on Chinese subsidiary Nikko Fuji Precision (Wuxi) Co., Ltd. for violation of the law on waste management. We sincerely regret this omission.

Corporate Governance

The JX Nippon Mining & Metals Group recognizes that earning the trust of stakeholders is essential to carrying out its business, and it therefore endeavors to enhance the integrity and transparency of its management through corporate governance.

Corporate Governance System

Board of Directors

The Company has established the Board of Directors to discuss matters stipulated in laws, regulations, and the Articles of Incorporation, as well as other important management issues. The Board is composed of the president and six other directors*¹ (all male) (As of June 2019). Auditors also attend Board of Directors meetings and can offer their opinions.

*¹ All directors are internal directors and serve concurrently as executive officers.

Executive Meeting

The Company has established an Executive Meeting as an advisory body to the president. The Executive Meeting consults on matters important for the management of the Company. The status of operational execution and other issues are also reported and communicated to it. The Executive Meeting consists of the president and executive officers designated by the president. Full-time auditors also attend the Executive Meeting and can offer their opinions.

Auditors

Auditors attend Board of Directors meetings, Executive Meetings, and other important meetings, offering their views as necessary for raising the effectiveness of audits. They also review important documents and meet with officers and employees of JX Nippon Mining & Metals and each Group company, endeavoring to keep aware of the execution of duties by officers and employees.

In addition, auditors receive regular reports from the Internal Audit Department and independent auditors regarding auditing plans and their implementation status and results, while coordinating with these parties by exchanging views and information.

Compensation for Directors

The directors of JX Nippon Mining & Metals receive a monthly fixed compensation based on their role, and variable performance-based bonus payments. Bonus

amounts are based on the consolidated business results of JX Nippon Mining & Metals as well as JXTG Holdings. We do not have a retirement benefit program for directors. In July 2017, a stock remuneration plan was introduced. A Board Incentive Plan (BIP) Trust is employed for this stock remuneration plan, whereby shares in JXTG Holdings acquired by the BIP Trust are granted to directors as part of their compensation, based on their executive position.

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 pertaining to the management of individual Group companies are communicated to the Company via the supervising department, and these matters are referred and reported to Board of Directors meetings, the Executive Meetings, and other important meetings as necessary.

Internal Control System

The JX Nippon Mining & Metals Group has drawn up a basic policy for the establishment and operation of an internal control system, laying out rules on such matters as corporate governance, compliance, internal auditing, and

risk management. Based on this policy, we have established an internal control system that ensures operations are carried out efficiently and properly.

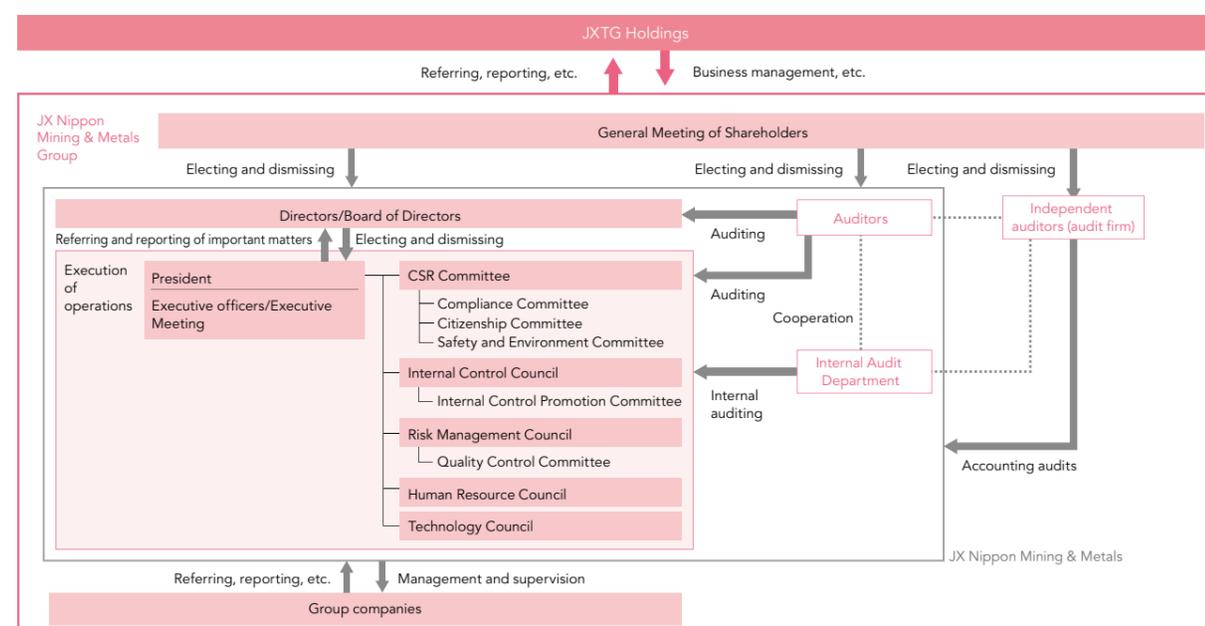
Internal Control Council

To develop and operate the Group's internal control system, we set up the Internal Control Council as an advisory body to the president, with the role of monitoring the status of internal controls and holding discussions to address issues as necessary. As a rule, the council meets once a year.

Internal Control Promotion Committee

The Internal Control Promotion Committee was set up for advising and assisting with the duties of the Internal Control Council. The committee's responsibilities include monitoring internal control activities. As a rule, the committee meets twice each fiscal year, once in the first half and once in the second half of the year.

Corporate Governance Structure of the JX Nippon Mining & Metals Group



Internal Auditing

Internal auditing is carried out across the entire JX Nippon Mining & Metals Group to investigate, study, and assess the status of business administration, operations, and assets preservation from the standpoints of their legality, efficiency, and effectiveness. The Internal Audit Department is responsible for these functions.

The Internal Audit Department draws up a medium-term policy at about three-year intervals and drafts auditing plans for each fiscal year, carrying out internal auditing

systematically. Internal auditing of Group companies is conducted with the collaboration and cooperation of auditors sent from the Company to Group companies. Based on the results of the audits, improvements are recommended as needed, and implementation of the recommended measures is tracked. Auditing results and findings are reported to the relevant Group company and to the president of JX Nippon Mining & Metals, as well as being reported as necessary to the Executive Meeting.

Risk Management

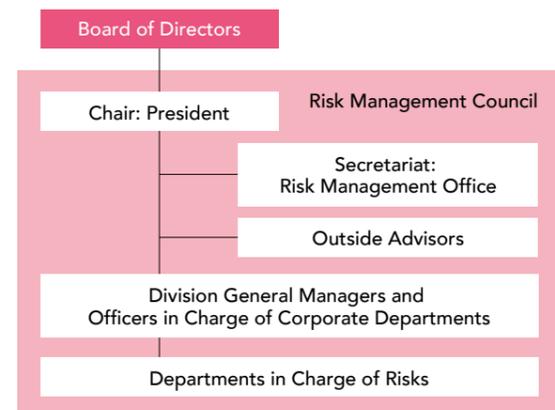
Risk Management Office leads risk management activities based on Risk Management Regulation to identify risks that may threaten Group business management and to prevent them from occurring.

Risk Management Activities

Risk Management Council

The Risk Management Council is in charge of approving the annual plan for risk management framework, selecting significant risks, preparing risk response plans, and evaluating and verifying the performance of those activities. The Council is chaired by President and consists of general managers of each of the divisions, officers in charge of corporate departments, and outside advisors as members. In fiscal 2018, the Council met each quarter for a total of four meetings.

Risk Management Council Structure



Meeting of the Risk Management Council

Selecting Significant Risks

Each fiscal year, all organizations in the Group including affiliated companies, implement a risk assessment to identify risks, that may threaten the business management of the Group, based on the impact and likelihood of occurrence. Of these, risks critically effecting on the business management from a Group-wide standpoint are selected as significant risks in the Risk Management Council.

Examples of significant risks selected in past fiscal years

Investment management, credit management, business continuity plan (BCP), information Security, etc.

Responding to Significant Risks

The departments in charge of significant risks (see figure on left) draw up the concrete response plan and implement actions for managing significant risks with the Risk Management Office providing support at each step. The respective current risk situation is reported, evaluated, and verified at Risk Management Council, leading to further improvement.

Raising Risk Awareness

Risk management training is provided periodically for officers and management personnel, including at Group companies overseas, to raise awareness of risks among them. In fiscal 2018, training was provided for the top management of JX Nippon Mining & Metals and for local (national staff) management personnel in Chinese Group companies.

BCP (Business Continuity Planning) Initiatives

The Group has drawn up business continuity plans for the Head Office, each operating site, and affiliated companies to minimize damage and quickly recover in the event of a major earthquake or any other incident that could disrupt

operations.

The plans will undergo verification through regular training, and we will seek to build up our Business Continuity Management (BCM) to carry out improvements.

BCP Training

In fiscal 2018, BCP training was implemented at the JX Nippon Mining & Metals Head Office, Kurami Works, and Isohara Works. The training assumed damage from an earthquake with local seismic intensity of 6+ on the Japanese scale of 0 to 7. The training, conducted based on scenarios not made known to the participants in advance, involved (1) setting up a disaster response headquarters, (2) confirming safety, (3) determining the extent of damage in and outside company premises, and (4) sharing reports on these matters and deliberating and implementing response measures. Since the training made clear the need to update initial response manuals, improvements continue to be made even now.

Through further repeated training, the Group will endeavor to raise BCP effectiveness and employees' understanding of BCP.

Initial response to a major earthquake

The Company has introduced a safety confirmation system to promptly check on the safety of employees and their family members in the case of a major earthquake, as well as checking if employees' homes have been damaged. Employees can use the system to report damage even when they are at home or otherwise away from Company premises, making use of their mobile phones, PCs, or other devices.

Business transceivers are provided in the homes of disaster response team members as a means of communication in case a major earthquake occurs in the Tokyo area at night or on a holiday and a member is unable to make it to the Head Office. In addition, we have introduced an emergency teleworking system for senior managers and above, as well as employees assigned to critical operations, that connects their home PCs to company computers enabling them to continue their duties from home. These arrangements too are subject to periodic drills in preparation for their use in an actual emergency.

As a measure to support employees who are unable to return home due to a disaster, a minimum of one week's worth of food, water, and other supplies for employees are stored at each operating site.



Disaster response headquarters meeting (Head Office)



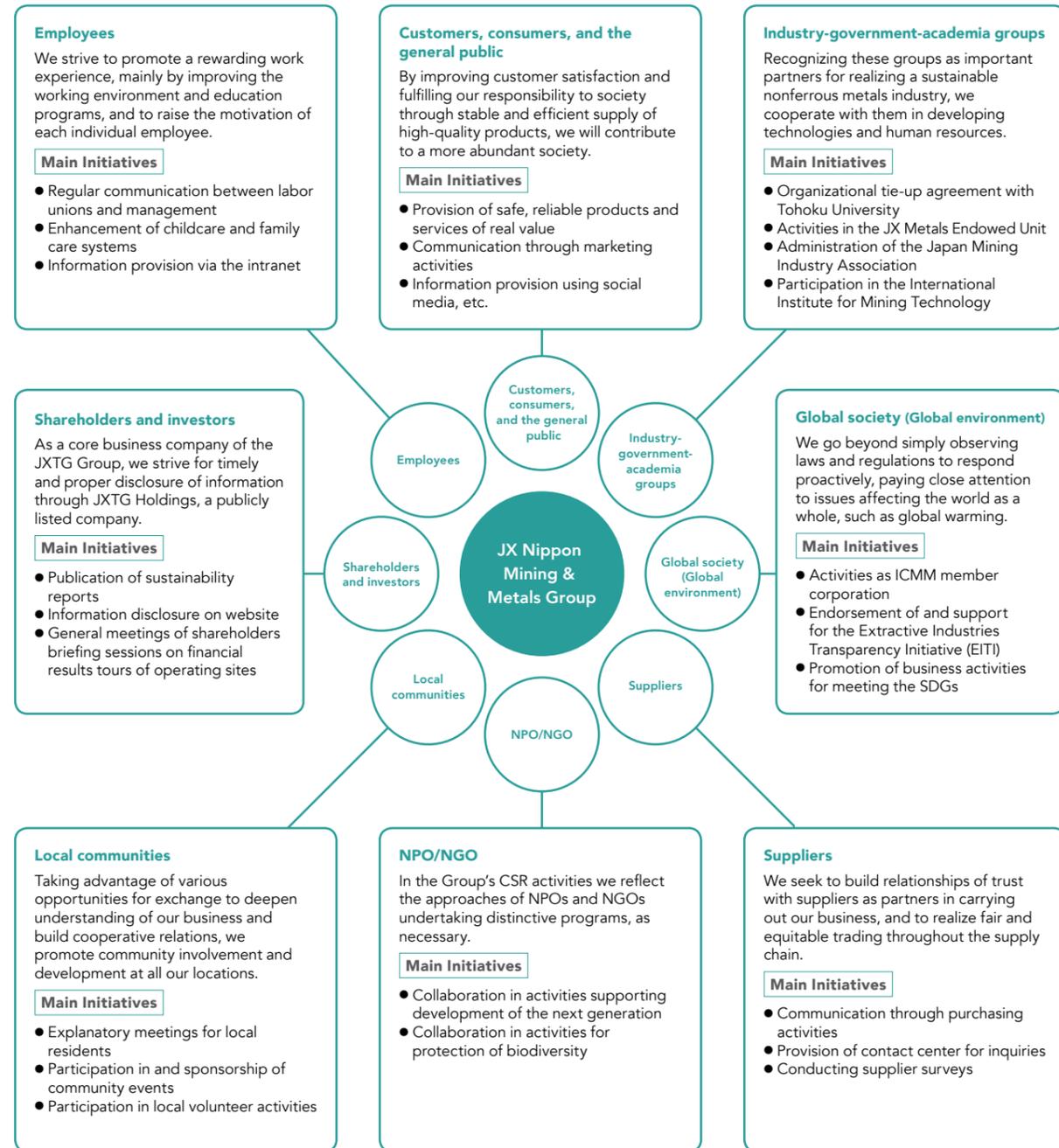
Secretariat in action (Kurami Works)



Disaster response teams in action (Isohara Works)

Our Relationship with Stakeholders

Taking into consideration the JXTG Group Philosophy, the JX Nippon Mining & Metals Code of Conduct, and the Group supply chain, we have identified the following stakeholders of relevance in undertaking our CSR activities. By accurately grasping the needs of various stakeholders and addressing these sincerely, we seek to gain the trust of society.



Participation in Initiatives

As a member of the global society, the Group is participating actively in initiatives in and outside Japan and in various industry organizations to fulfill our responsibility to society and contribute to the realization of a sustainable society.

Communicating Internationally

Organization/Framaeork	Description
Membership in the International Council on Mining & Metals (ICMM)	The ICMM is a global association of companies involved in mining and metal smelting and refining. Its aim is for nonferrous metals industries to help society grow sustainably. As an ICMM member, JX Nippon Mining & Metals has formulated its Code of Conduct in accordance with the ICMM 10 Principles for sustainable development, and works to solve the issues described in these principles and the ICMM Position Statements that supplement them.
Endorsement of and Support for the the Extractive Industries Transparency Initiative (EITI)	The EITI is a multinational cooperative framework that seeks greater transparency in the flows of funds from extractive industries, such as oil, natural gas, and metal mining, to the governments of resource-producing countries. The aim is to prevent corruption and conflicts, promoting responsible resource development that will lead to poverty reduction and growth. JX Nippon Mining & Metals, with its involvement in global resources development, endorses the EITI and actively supports its activities.
Participation in the United Nations Global Compact	The United Nations Global Compact is a worldwide framework whereby corporations and other organizations pledge to act as good members of society to achieve sustainable growth. JX Nippon Mining & Metals joined the United Nations Global Compact in August 2008. We support the Ten Principles on human rights, labor, the environment, and anti-corruption, and are committed to realizing these ideals.
Membership in the Responsible Business Alliance (RBA)	The RBA is an alliance of companies formed with the aim of ensuring responsible conduct in the electronics industry supply chain. Its RBA Code of Conduct consists of standards for labor, health and safety, the environment, ethics, and management systems, drawn up to encourage improvement in corporate ethics and CSR.

As of June 2019

Communication with Industry Organizations

Organization	Role within the organization	Overview and activities of the organization
Japan Mining Industry Association (JMIA)	Vice chairman, director, etc.	The JMIA represents companies engaged in the resource development and/or smelting and refining of nonferrous metals. With a view to the sound growth of the industry, it conducts surveys and other research on improving technologies, disseminates and publicizes knowledge, and proposes policies to government agencies, with respect to resource development, smelting and refining, and recycling. The JX Nippon Mining & Metals Group is a governing member, serves on various committees, and participates in running the association.
The Sulphuric Acid Association of Japan	Chairman	The association works toward the growth of the sulfuric acid industry and promotes friendly relations and mutual benefits for sulfuric acid manufacturers. The Company serves on the Operations Committee and the General Affairs Committee, is involved in surveys and reports on sulfuric acid supply and demand conditions, and takes part in governance of the association.
Japan Copper and Brass Association (JCBA)	Director	The JCBA is an industry association of companies manufacturing copper alloy products, namely plates, strips, pipes, and wires made by melting and rolling copper and copper alloys. By encouraging contacts and cooperation among members, it promotes the progress and growth of the rolled copper industry as a whole. The Group serves on the Road Map Committee, is involved in developing new demand and improving quality, and as a member of the Statistics Subcommittee, is involved in surveys and reports on market size.
Japan Society of Newer Metals	Director	The society focuses on new metals that are supporting the advance of high-tech industries. By conducting surveys and research, and collecting and providing information, it aims for the sound growth of the new metals industry and related industries. As a member of the Compound Semiconductors Subcommittee and the Target Subcommittee, the Company is involved mainly in market size surveys and reports and in making proposals to government agencies. The Company also works to improve health and safety as a member of the Safety Committee.
Japan Catalyst Recovering Association	Chairman	The association is made up of companies engaged in the reuse of catalysts and aims to promote the recycling of precious metals, rare metals, and other metal resources through the proper treatment of spent catalysts, etc. It conducts surveys and compiles statistics on recycling, and holds regular training sessions to improve technologies and promote friendship among members. The Company provides the chairman of the association, serves on the Public Relations Committee, and is involved in issuing survey reports and organizing general meetings.

As of June 2019

ICMM 10 Principles

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



ICMM Position Statements

- Mining and Protected Areas
- Indigenous Peoples & Mining
- Principles for Climate Change Policy Design
- Transparency of Mineral Revenues
- Mining Partnerships for Development
- Mercury Risk Management
- Tailings Governance
- Water Stewardship

The EITI Principles

1. We share a belief that the prudent use of natural resource wealth should be an important engine for sustainable economic growth that contributes to sustainable development and poverty reduction, but if not managed properly, can create negative economic and social impacts.
2. We affirm that management of natural resource wealth for the benefit of a country's citizens is in the domain of sovereign governments to be exercised in the interest of their national development.
3. We recognise that the benefits of resource extraction occur as revenue streams over many years and can be highly price dependent.
4. We recognise that a public understanding of government revenues and expenditure over time could help public debate and inform choice of appropriate and realistic options for sustainable development.
5. We underline the importance of transparency by governments and companies in the extractive industries and the need to enhance public financial management and accountability.
6. We recognise that achievement of greater transparency must be set in the context of respect for contracts and laws.
7. We recognise the enhanced environment for domestic and foreign direct investment that financial transparency may bring.
8. We believe in the principle and practice of accountability by government to all citizens for the stewardship of revenue streams and public expenditure.
9. We are committed to encouraging high standards of transparency and accountability in public life, government operations, and in business.
10. We believe that a broadly consistent and workable approach to the disclosure of payments and revenues is required, which is simple to undertake and to use.
11. We believe that payments' disclosure in a given country should involve all extractive industry companies operating in that country.
12. In seeking solutions, we believe that all stakeholders have important and relevant contributions to make—including governments and their agencies, extractive industry companies, service companies, multilateral organisations, financial organisations, investors, and non-governmental organisations.

Ten Principles of the United Nations Global Compact

Human Rights

- Principle 1 Businesses should support and respect the protection of internationally proclaimed human rights; and
- Principle 2 make sure that they are not complicit in human rights abuses.



Labour

- Principle 3 Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
- Principle 4 the elimination of all forms of forced and compulsory labour;
- Principle 5 the effective abolition of child labour; and
- Principle 6 the elimination of discrimination in respect of employment and occupation.

Environment

- Principle 7 Businesses should support a precautionary approach to environmental challenges;
- Principle 8 undertake initiatives to promote greater environmental responsibility; and
- Principle 9 encourage the development and diffusion of environmentally friendly technologies.

Anti-Corruption

- Principle 10 Businesses should work against corruption in all its forms, including extortion and bribery.

RESPONSIBLE BUSINESS ALLIANCE CODE OF CONDUCT (excerpt)

A. LABOR

Participants are committed to uphold the human rights of workers, and to treat them with dignity and respect as understood by the international community. This applies to all workers including temporary, migrant, student, contract, direct employees, and any other type of worker.

B. HEALTH and SAFETY

Participants recognize that in addition to minimizing the incidence of work-related injury and illness, a safe and healthy work environment enhances the quality of products and services, consistency of production and worker retention and morale. Participants also recognize that ongoing worker input and education is essential to identifying and solving health and safety issues in the workplace.

C. ENVIRONMENTAL

Participants recognize that environmental responsibility is integral to producing world class products. In manufacturing operations, adverse effects on the community, environment and natural resources are to be minimized while safeguarding the health and safety of the public.

D. ERHICS

To meet social responsibilities and to achieve success in the marketplace, Participants and their agents are to uphold the highest standards of ethics including.

E. MANAGEMENT SYSTEMS

Participants shall adopt or establish a management system whose scope is related to the content of this Code. The management system shall be designed to ensure: (a) compliance with applicable laws, regulations and customer requirements related to the participant's operations and products; (b) conformance with this Code; and (c) identification and mitigation of operational risks related to this Code. It should also facilitate continual improvement.

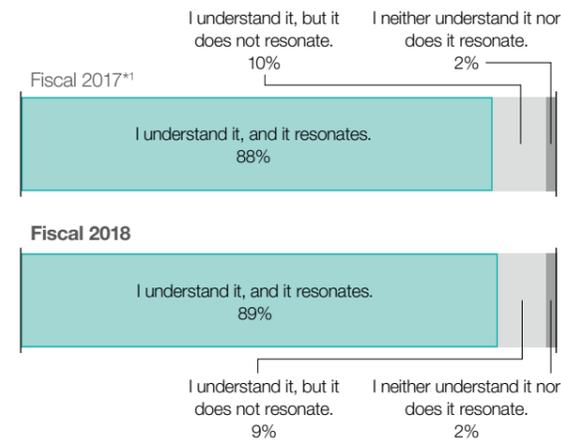
CSR Surveys

Surveys of employees were conducted as described below to determine the extent of employee awareness of CSR and involvement in its practice.

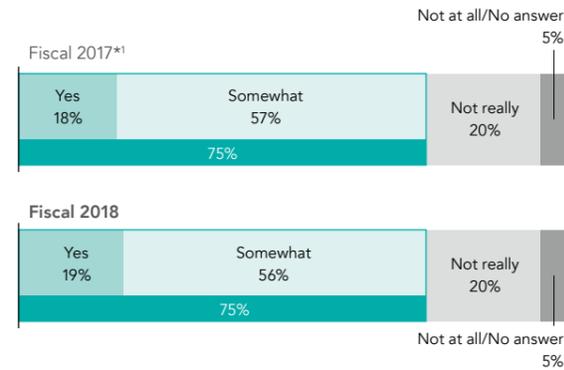
Timing: October to December 2018
 Survey method: Distribution of a questionnaire with *Sustainability Report 2018*
 Respondents: 5,697 employees at 29 domestic operating sites (94% of the 6,059 employees who received the questionnaire)

(1) Results relating to the JXTG Group Philosophy and JX Nippon Mining & Metals Code of Conduct

Understanding/resonance
 (whether respondents felt that they understood the Code of Conduct and it resonated with them)

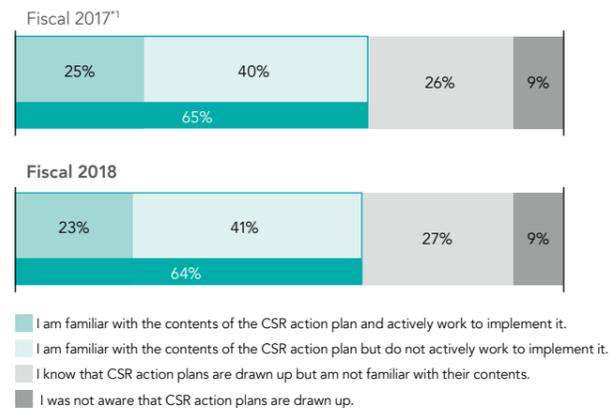


Employee awareness
 (whether respondents felt that employees were aware of the Code of Conduct in their own organizations and workplaces)



(2) Results relating to CSR action plans

Employee awareness
 (Are you aware of the CSR action plan in your organization and how are you putting it into practice?)



(3) Requests and suggestions for Sustainability Report 2018

- It would be good to have it in PDF format for viewing on a tablet.
- I would like more information on the web.
- Numbering would help to show clearly how many major themes there are, and how many items there are under them.
 - ▷ We clarified the roles of the website (giving a full range of specialized information) and booklet (clear structure along the lines of the Material Issues). We also revised the report's organization to improve readability.
- The explanations tend to be text-heavy, making for hard reading in some cases. A bit more use of figures and charts would be helpful.
 - ▷ We adjusted the report's composition for easy readability, making use of photos, illustrations, and figures.
- Regarding female work styles, I would like to see features on people who took childcare or maternity leave.
 - ▷ We have enhanced features on Material Issues and the latest trends in society.

*1 Respondents to the fiscal 2017 survey totaled 5,517 employees at 31 domestic operating sites (93% of the 5,933 employees who received the questionnaire). The survey was conducted from October to December 2017, and questionnaires were collected in the same way as in fiscal 2018.

CSR Glossary

Term	Meaning
CSV	Creating Shared Value. A management approach first introduced in 2011 by US economist Michael E. Porter, by which companies pursue profits and social contribution simultaneously through their core business activities.
ESG	An acronym of environmental, social, and governance. These are the three elements considered necessary for long-term growth of a company and also gaining attention as criteria for investment decisions.
FIT	Feed-in Tariff. A system obligating power companies to purchase electricity generated from renewable energy sources at a government-set price and for a fixed time period.
GRI Standards	Guidelines for preparing sustainability reports, issued in October 2016 by the Global Reporting Initiative (GRI), a nonprofit organization established to formulate international standards on sustainability.
IIRC	International Integrated Reporting Council. An international NGO set up in the UK in 2010, mainly for promoting development of integrated reports that combine both corporate financial reporting and nonfinancial information.
ISO	The International Organization for Standardization. A nonprofit corporate entity headquartered in Geneva, Switzerland, that issues international standards (ISO Standards) in various fields.
LGBT	An acronym of lesbian, gay, bisexual, and transgender. However, it is used as an umbrella term that refers to all sexual minorities other than those in this document.
REACH Regulation	A regulation on management of chemical substances, issued in the EU in 2007. It requires producers and importers to manage the risk of chemicals that may have an impact on human health and the environment.
RE100	Renewable Energy 100%. A global corporate leadership initiative bringing together businesses committed to using 100% renewable electricity for their operations.
SDGs	Sustainable Development Goals. International goals adopted at the United Nations Sustainable Development Summit in September 2015, as a successor to the Millennium Development Goals (MDGs) drafted in 2001. They consist of 17 goals and 169 targets for 2030.
Society 5.0	A "supersmart society" made possible by the latest technologies including the Internet of Things (IoT) and artificial intelligence (AI), which will be integrated into every industry, as well as people's daily life, to create innovations. The aim is to solve the problems faced by society in ways suitable to the needs of each individual. Society 5.0 represents the fifth stage of human society's evolution, following upon the hunting society, agricultural society, industrial society, and information society.
SRI	Socially Responsible Investment. Investment that considers not only corporate profit and growth potential but also ethically and socially responsible activities of companies in making investment choices.
TCFD	Task Force on Climate-Related Financial Disclosures. An organization established by the Financial Stability Board (FSB) with the central banks and financial regulatory authorities of major countries and regions as participating members. It seeks to develop recommendations for voluntary climate-related financial disclosures by corporations.
Outside-In approach	A strategy that considers what is necessary from global standpoints, sets goals on this basis, and seeks to close the gap between current achievement levels and those required. It contrasts with the Inside-Out approach that starts from an understanding of the impact of one's own company's activities on social and environmental issues and responds as needed.
Open innovation	Going beyond the framework of the organization to gather knowledge and technology widely and bring them together when developing new technologies and products. Typical examples are industry-academia-government projects, and collaborative research by big companies and venture companies.
Carbon offset	A scheme for offsetting emissions of CO ₂ and other greenhouse gases that are unavoidable in daily life or economic activities by purchasing greenhouse gas reduction credits or undertaking reduction activities.
Circular economy	An economic system where things that were previously discarded or unused are utilized as resources. By designing waste and pollutions out of the system, it aims to reduce waste and help achieve environmental and economical sustainability.
Thermal recycling	A recycling system that recovers and uses energy generated by burning waste.
Human rights due diligence	A continuous process of conducting preventive surveys and investigations, taking appropriate corrective actions, and disclosing the progress and results, in order to prevent or mitigate potential adverse impacts on human rights caused by the company.
Zero emissions	A concept advocated by the United Nations University calling for full use of resources and reduction of waste to as close to zero as possible, with the aim of creating a more sustainable industrial-societal system.
Diversity & Inclusion	Aiming to foster a workplace climate that welcomes people who ascribe to different values, regardless of gender, nationality, sexual orientation, gender identity, or disabilities, and enables them to make full use of their abilities.
Paris Agreement	An international framework that went into effect in November 2016 aimed at reducing greenhouse gas emissions from 2020 onward. Its goal is to limit the rise in global mean surface temperature to less than 2°C (ideally less than 1.5°C) above pre-industrial levels.

Note: The above terminology was selected based on global trends in the CSR field and includes terms not found in this report.

GRI Standards Content Index (Core Option)

No.	Disclosure	Reporting requirements	Relevant contents
GRI 102: General disclosures			
102-1	Name of the organization	a. Name of the organization.	P17: Corporate Data
102-2	Activities, brands, products, and services	a. A description of the organization's activities. b. Primary brands, products, and services, including an explanation of any products or services that are banned in certain markets.	P15-16: Business Portfolio P31-37: Segment Information
102-3	Location of headquarters	a. Location of the organization's headquarters.	P17: Corporate Data
102-4	Location of operations	a. Number of countries where the organization operates, and the names of countries where it has significant operations and/or that are relevant to the topics covered in the report.	P17-18: Global Network
102-5	Ownership and legal form	a. Nature of ownership and legal form.	P17: Corporate Data
102-6	Markets served	a. Markets served, including: i. geographic locations where products and services are offered; ii. sectors served; iii. types of customers and beneficiaries.	P17-18: Global Network P19-20: Group Products All Around Us P29: Revenue by Region
102-7	Scale of the organization	a. Scale of the organization, including: i. total number of employees; ii. total number of operations; iii. net sales (for private sector organizations) or net revenues (for public sector organizations); iv. total capitalization (for private sector organizations) broken down in terms of debt and equity; v. quantity of products or services provided.	P17-18: Global Network P28: Business Results in Fiscal 2018 P54: Our Business Activities and the Environment
102-8	Information on employees and other workers	a. Total number of employees by employment contract (permanent and temporary), by gender. b. Total number of employees by employment contract (permanent and temporary), by region. c. Total number of employees by employment type (full-time and part-time), by gender. d. Whether a significant portion of the organization's activities are performed by workers who are not employees. If applicable, a description of the nature and scale of work performed by workers who are not employees. e. Any significant variations in the numbers reported in Disclosures 102-8-a, 102-8-b, and 102-8-c (such as seasonal variations in the tourism or agricultural industries). f. An explanation of how the data have been compiled, including any assumptions made.	P76: Employment Data (JX Nippon Mining & Metals Group)
102-9	Supply chain	a. A description of the organization's supply chain, including its main elements as they relate to the organization's activities, primary brands, products, and services.	P19-20: Group Products All Around Us P21-22: The Long-Term Vision of the JX Nippon Mining & Metals Group
102-10	Significant changes to the organization and its supply chain	a. Significant changes to the organization's size, structure, ownership, or supply chain, including: i. Changes in the location of, or changes in, operations, including facility openings, closings, and expansions; ii. Changes in the share capital structure and other capital formation, maintenance, and alteration operations (for private sector organizations); iii. Changes in the location of suppliers, the structure of the supply chain, or relationships with suppliers, including selection and termination.	N/A
102-11	Precautionary Principle or approach	a. A list of externally-developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes, or which it endorses.	P55-56: Environmental Risk Management P87-88: Risk Management
102-12	External initiatives	a. A list of externally-developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes, or which it endorses.	P90-92: Participation in Initiatives
102-13	Membership of associations	a. A list of the main memberships of industry or other associations, and national or international advocacy organizations.	P90-92: Participation in Initiatives
102-14	Statement from senior decision-maker	a. A statement from the most senior decision-maker of the organization (such as CEO, chair, or equivalent senior position) about the relevance of sustainability to the organization and its strategy for addressing sustainability.	P3-6: Message from the President
102-15	Key impacts, risks, and opportunities	a. A description of key impacts, risks, and opportunities.	P21-22: The Long-Term Vision of the JX Nippon Mining & Metals Group P23-24: Value Creation Model of the JX Nippon Mining & Metals Group
102-16	Values, principles, standards, and norms of behavior	a. A description of the organization's values, principles, standards, and norms of behavior.	P13-14: Philosophical Framework of the JX Nippon Mining & Metals Group
102-17	Mechanisms for advice and concerns about ethics	a. A description of internal and external mechanisms for: i. seeking advice about ethical and lawful behavior, and organizational integrity; ii. reporting concerns about unethical or unlawful behavior, and organizational integrity.	
102-18	Governance structure	a. Governance structure of the organization, including committees of the highest governance body. b. Committees responsible for decision-making on economic, environmental, and social topics.	P26: CSR Promotion System P85-86: Corporate Governance
102-19	Delegating authority	a. Process for delegating authority for economic, environmental, and social topics from the highest governance body to senior executives and other employees.	
102-20	Executive-level responsibility for economic, environmental, and social topics	a. Whether the organization has appointed an executive-level position or positions with responsibility for economic, environmental, and social topics. b. Whether post holders report directly to the highest governance body.	
102-21	Consulting stakeholders on economic, environmental, and social topics	a. Processes for consultation between stakeholders and the highest governance body on economic, environmental, and social topics. b. If consultation is delegated, describe to whom it is delegated and how the resulting feedback is provided to the highest governance body.	
102-22	Composition of the highest governance body and its committees	a. Composition of the highest governance body and its committees by: i. executive or non-executive; ii. independence; iii. tenure on the governance body; iv. number of each individual's other significant positions and commitments, and the nature of the commitments; v. gender; vi. membership of under-represented social groups; vii. competencies relating to economic, environmental, and social topics; viii. stakeholder representation.	

No.	Disclosure	Reporting requirements	Relevant contents
102-23	Chair of the highest governance body	a. Whether the chair of the highest governance body is also an executive officer in the organization. b. If the chair is also an executive officer, describe his or her function within the organization's management and the reasons for this arrangement.	
102-24	Nominating and selecting the highest governance body	a. Nomination and selection processes for the highest governance body and its committees. b. Criteria used for nominating and selecting highest governance body members, including whether and how: i. stakeholders (including shareholders) are involved; ii. diversity is considered; iii. independence is considered; iv. expertise and experience relating to economic, environmental, and social topics are considered.	
102-25	Conflicts of interest	a. Processes for the highest governance body to ensure conflicts of interest are avoided and managed. b. Whether conflicts of interest are disclosed to stakeholders, including, as a minimum: i. Cross-board membership; ii. Cross-shareholding with suppliers and other stakeholders; iii. Existence of controlling shareholder; iv. Related party disclosures.	
102-26	Role of highest governance body in setting purpose, values, and strategy	Highest governance body's and senior executives' roles in the development, approval, and updating of the organization's purpose, value or mission statements, strategies, policies, and goals related to economic, environmental, and social topics.	
102-27	Collective knowledge of highest governance body	a. Measures taken to develop and enhance the highest governance body's collective knowledge of economic, environmental, and social topics.	
102-28	Evaluating the highest governance body's performance	a. Processes for evaluating the highest governance body's performance with respect to governance of economic, environmental, and social topics. b. Whether such evaluation is independent or not, and its frequency. c. Whether such evaluation is a self-assessment. d. Actions taken in response to evaluation of the highest governance body's performance with respect to governance of economic, environmental, and social topics, including, as a minimum, changes in membership and organizational practice.	
102-29	Identifying and managing economic, environmental, and social impacts	a. Highest governance body's role in identifying and managing economic, environmental, and social topics and their impacts, risks, and opportunities – including its role in the implementation of due diligence processes. b. Whether stakeholder consultation is used to support the highest governance body's identification and management of economic, environmental, and social topics and their impacts, risks, and opportunities.	
102-30	Effectiveness of risk management processes	a. Highest governance body's role in reviewing the effectiveness of the organization's risk management processes for economic, environmental, and social topics.	
102-31	Review of economic, environmental, and social topics	a. Frequency of the highest governance body's review of economic, environmental, and social topics and their impacts, risks, and opportunities.	
102-32	Highest governance body's role in sustainability reporting	a. The highest committee or position that formally reviews and approves the organization's sustainability report and ensures that all material topics are covered.	
102-33	Communicating critical concerns	a. Process for communicating critical concerns to the highest governance body.	
102-34	Nature and total number of critical concerns	a. Total number and nature of critical concerns that were communicated to the highest governance body. b. Mechanism(s) used to address and resolve critical concerns.	
102-35	Remuneration policies	a. Remuneration policies for the highest governance body and senior executives for the following types of remuneration: i. Fixed pay and variable pay, including performance-based pay, equity-based pay, bonuses, and deferred or vested shares; ii. Sign-on bonuses or recruitment incentive payments; iii. Termination payments; iv. Clawbacks; v. Retirement benefits, including the difference between benefit schemes and contribution rates for the highest governance body, senior executives, and all other employees. b. How performance criteria in the remuneration policies relate to the highest governance body's and senior executives' objectives for economic, environmental, and social topics.	
102-36	Process for determining remuneration	a. Process for determining remuneration. b. Whether remuneration consultants are involved in determining remuneration and whether they are independent of management. c. Any other relationships that the remuneration consultants have with the organization.	
102-37	Stakeholders' involvement in remuneration	a. How stakeholders' views are sought and taken into account regarding remuneration. b. If applicable, the results of votes on remuneration policies and proposals.	
102-38	Annual total compensation ratio	a. Ratio of the annual total compensation for the organization's highest-paid individual in each country of significant operations to the median annual total compensation for all employees (excluding the highest-paid individual) in the same country.	
102-39	Percentage increase in annual total compensation ratio	a. Ratio of the percentage increase in annual total compensation for the organization's highest-paid individual in each country of significant operations to the median percentage increase in annual total compensation for all employees (excluding the highest-paid individual) in the same country.	
102-40	List of stakeholder groups	a. A list of stakeholder groups engaged by the organization.	P89: Our Relationship with Stakeholders
102-41	Collective bargaining agreements	a. Percentage of total employees covered by collective bargaining agreements.	P75: Maintaining Good Labor-Management Relations
102-42	Identifying and selecting stakeholders	a. The basis for identifying and selecting stakeholders with whom to engage.	P89: Our Relationship with Stakeholders
102-43	Approach to stakeholder engagement	a. The organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group, and an indication of whether any of the engagement was undertaken specifically as part of the report preparation process.	P75: Maintaining Good Labor-Management Relations P89: Our Relationship with Stakeholders P93: CSR Surveys
102-44	Key topics and concerns raised	a. Key topics and concerns that have been raised through stakeholder engagement, including: i. how the organization has responded to those key topics and concerns, including through its reporting; ii. the stakeholder groups that raised each of the key topics and concerns.	P75: Maintaining Good Labor-Management Relations

No.	Disclosure	Reporting requirements	Relevant contents
102-45	Entities included in the consolidated financial statements	a. A list of all entities included in the organization's consolidated financial statements or equivalent documents. b. Whether any entity included in the organization's consolidated financial statements or equivalent documents is not covered by the report.	P1-2: Boundary of the Report/ Group Companies Covered by This Report
102-46	Defining report content and topic Boundaries	a. An explanation of the process for defining the report content and the topic Boundaries. b. An explanation of how the organization has implemented the Reporting Principles for defining report content.	P25-26: Material Issues for CSR Activities and the SDGs
102-47	List of material topics	a. A list of the material topics identified in the process for defining report content.	P25-26: Material Issues for CSR Activities and the SDGs
102-48	Restatements of information	a. The effect of any restatements of information given in previous reports, and the reasons for such restatements.	P53: Environmental Management Systems P83-84: Insisting on Full Compliance
102-49	Changes in reporting	a. Significant changes from previous reporting periods in the list of material topics and topic Boundaries.	
102-50	Reporting period	a. Reporting period for the information provided.	P1: Reporting Period
102-51	Date of most recent report	a. If applicable, the date of the most recent previous report.	P1: Publication Date
102-52	Reporting cycle	a. Reporting cycle.	P1: Publication Date
102-53	Contact point for questions regarding the report	a. The contact point for questions regarding the report or its contents.	Back cover: Address
102-54	Claims of reporting in accordance with the GRI Standards	a. The claim made by the organization, if it has prepared a report in accordance with the GRI Standards, either: i. 'This report has been prepared in accordance with the GRI Standards: Core option'; ii. 'This report has been prepared in accordance with the GRI Standards: Comprehensive option'.	P1: Editorial Policy GRI Standards Content Index (This page)
102-55	GRI content index	a. The GRI content index, which specifies each of the GRI Standards used and lists all disclosures included in the report. b. For each disclosure, the content index shall include: i. the number of the disclosure (for disclosures covered by the GRI Standards); ii. the page number(s) or URL(s) where the information can be found, either within the report or in other published materials; iii. if applicable, and where permitted, the reason(s) for omission when a required disclosure cannot be made.	GRI Standards Content Index (This page)
102-56	External assurance	a. A description of the organization's policy and current practice with regard to seeking external assurance for the report. b. If the report has been externally assured: i. A reference to the external assurance report, statements, or opinions. If not included in the assurance report accompanying the sustainability report, a description of what has and what has not been assured and on what basis, including the assurance standards used, the level of assurance obtained, and any limitations of the assurance process; ii. The relationship between the organization and the assurance provider; iii. Whether and how the highest governance body or senior executives are involved in seeking external assurance for the organization's sustainability report.	P1: Editorial Policy P102: Independent Assurance Report

Specific Standard Disclosures

Establishing a Low-Carbon Society			
GRI-103: Management approach			
103-1	Explanation of the material topic and its Boundary	—	P49: Establishing a Low-Carbon Society (Fundamental Policy)
103-2	The management approach and its components	—	P49: Targets for Establishing a Low-Carbon Society P51-52: Environmental Data/ Environmental Targets
103-3	Evaluation of the management approach	—	P26: CSR Promotion System P53: Environmental Management Systems
GRI-302: Energy			
302-1	Energy consumption within the organization	a. Total fuel consumption within the organization from nonrenewable sources, in joules or multiples, and including fuel types used. b. Total fuel consumption within the organization from renewable sources, in joules or multiples, and including fuel types used. c. In joules, watt-hours or multiples, the total: i. electricity consumption ii. heating consumption iii. cooling consumption iv. steam consumption d. In joules, watt-hours or multiples, the total: i. electricity sold ii. heating sold iii. cooling sold iv. steam sold e. Total energy consumption within the organization, in joules or multiples. f. Standards, methodologies, assumptions, and/or calculation tools used. g. Source of the conversion factors used.	P49-50: Reduction in Energy Consumption for Manufacturing Activities P54: Our Business Activities and the Environment
302-2	Energy consumption outside of the organization	a. Energy consumption outside of the organization, in joules or multiples. b. Standards, methodologies, assumptions, and/or calculation tools used. c. Source of the conversion factors used.	P50: Energy Consumption and CO ₂ Emissions in the Logistics Stage
302-3	Energy intensity	a. Energy intensity ratio for the organization. b. Organization-specific metric (the denominator) chosen to calculate the ratio. c. Types of energy included in the intensity ratio; whether fuel, electricity, heating, cooling, steam, or all. d. Whether the ratio uses energy consumption within the organization, outside of it, or both.	P49-50: Reduction in Energy Consumption for Manufacturing Activities

Overview		Strategy		CSR		Information	
No.	Disclosure	Reporting requirements	Relevant contents	No.	Disclosure	Reporting requirements	Relevant contents
302-4	Reduction of energy consumption	a. Amount of reductions in energy consumption achieved as a direct result of conservation and efficiency initiatives, in joules or multiples. b. Types of energy included in the reductions; whether fuel, electricity, heating, cooling, steam, or all. c. Basis for calculating reductions in energy consumption, such as base year or baseline, including the rationale for choosing it. d. Standards, methodologies, assumptions, and/or calculation tools used.	P49-50: Reduction in Energy Consumption for Manufacturing Activities	302-5	Reductions in energy requirements of products and services	a. Reductions in energy requirements of sold products and services achieved during the reporting period, in joules or multiples. b. Basis for calculating reductions in energy consumption, such as base year or baseline, including the rationale for choosing it. c. Standards, methodologies, assumptions, and/or calculation tools used.	
GRI-305: Emissions							
305-1	Direct (Scope 1) GHG emissions	a. Gross direct (Scope 1) GHG emissions in metric tons of CO ₂ equivalent. b. Gases included in the calculation; whether CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ , NF ₃ , or all. c. Biogenic CO ₂ emissions in metric tons of CO ₂ equivalent. d. Base year for the calculation, if applicable, including: i. the rationale for choosing it; ii. emissions in the base year; iii. the context for any significant changes in emissions that triggered recalculations of base year emissions. e. Source of the emission factors and the global warming potential (GWP) rates used, or a reference to the GWP source. f. Consolidation approach for emissions; whether equity share, financial control, or operational control. g. Standards, methodologies, assumptions, and/or calculation tools used.	P50: CO ₂ Emissions from Manufacturing Activities P54: Our Business Activities and the Environment	305-2	Energy indirect (Scope 2) GHG emissions	a. Gross location-based energy indirect (Scope 2) GHG emissions in metric tons of CO ₂ equivalent. b. If applicable, gross market-based energy indirect (Scope 2) GHG emissions in metric tons of CO ₂ equivalent. c. If available, the gases included in the calculation; whether CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ , NF ₃ , or all. d. Base year for the calculation, if applicable, including: i. the rationale for choosing it; ii. emissions in the base year; iii. the context for any significant changes in emissions that triggered recalculations of base year emissions. e. Source of the emission factors and the global warming potential (GWP) rates used, or a reference to the GWP source. f. Consolidation approach for emissions; whether equity share, financial control, or operational control. g. Standards, methodologies, assumptions, and/or calculation tools used.	P50: CO ₂ Emissions from Manufacturing Activities P54: Our Business Activities and the Environment
305-3	Other indirect (Scope 3) GHG emissions	a. Gross other indirect (Scope 3) GHG emissions in metric tons of CO ₂ equivalent. b. If available, the gases included in the calculation; whether CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ , NF ₃ , or all. c. Biogenic CO ₂ emissions in metric tons of CO ₂ equivalent. d. Other indirect (Scope 3) GHG emissions categories and activities included in the calculation. e. Base year for the calculation, if applicable, including: i. the rationale for choosing it; ii. emissions in the base year; iii. the context for any significant changes in emissions that triggered recalculations of base year emissions. f. Source of the emission factors and the global warming potential (GWP) rates used, or a reference to the GWP source. g. Standards, methodologies, assumptions, and/or calculation tools used.	P50: Energy Consumption and CO ₂ Emissions in the Logistics Stage	305-4	GHG emissions intensity	a. GHG emissions intensity ratio for the organization. b. Organization-specific metric (the denominator) chosen to calculate the ratio. c. Types of GHG emissions included in the intensity ratio; whether direct (Scope 1), energy indirect (Scope 2), and/or other indirect (Scope 3). d. Gases included in the calculation; whether CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ , NF ₃ , or all.	P50: CO ₂ Emissions from Manufacturing Activities
305-5	Reduction of GHG emissions	a. GHG emissions reduced as a direct result of reduction initiatives, in metric tons of CO ₂ equivalent. b. Gases included in the calculation; whether CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ , NF ₃ , or all. c. Base year or baseline, including the rationale for choosing it. d. Scopes in which reductions took place; whether direct (Scope 1), energy indirect (Scope 2), and/or other indirect (Scope 3). e. Standards, methodologies, assumptions, and/or calculation tools used.		305-6	Emissions of ozone-depleting substances (ODS)	a. Production, imports, and exports of ODS in metric tons of CFC-11 (trichlorofluoromethane) equivalent. b. Substances included in the calculation. c. Source of the emission factors used. d. Standards, methodologies, assumptions, and/or calculation tools used.	
305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	a. Significant air emissions, in kilograms or multiples, for each of the following: i. NOx ii. SOx iii. Persistent organic pollutants (POP) iv. Volatile organic compounds (VOC) v. Hazardous air pollutants (HAP) vi. Particulate matter (PM) vii. Other standard categories of air emissions identified in relevant regulations b. Source of the emission factors used. c. Standards, methodologies, assumptions, and/or calculation tools used.	P54: Our Business Activities and the Environment P55-56: Environmental Risk Management				
Establishing a Recycling-Oriented Society							
GRI-103: Management approach							
103-1	Explanation of the material topic and its Boundary	—	P45: Establishing a Recycling-Oriented Society (Fundamental Policy)				

No.	Disclosure	Reporting requirements	Relevant contents
103-2	The management approach and its components	—	P45-48: Targets for Establishing a Recycling-Oriented Society/ Usage of Recycled Resources as Raw Materials/ Reuse and Reduction of Waste Materials/ Use of By-Products/ Effective Use of Water Resources/ Management of Closed Mines P51-52: Approach to Environmental Protection/ Environmental Targets
103-3	Evaluation of the management approach	—	P26: CSR Promotion System P53: Environmental Management Systems
GRI-301: Materials			
301-1	Materials used by weight or volume	a. Total weight or volume of materials that are used to produce and package the organization's primary products and services during the reporting period, by: i. non-renewable materials used; ii. renewable materials used.	P45: Usage of Recycled Resources as Raw Materials P54: Our Business Activities and the Environment
301-2	Recycled input materials used	a. Percentage of recycled input materials used to manufacture the organization's primary products and services.	P45: Usage of Recycled Resources as Raw Materials
301-3	Reclaimed products and their packaging materials	a. Percentage of reclaimed products and their packaging materials for each product category. b. How the data for this disclosure have been collected.	
Using Nonferrous Metal Resources Effectively			
GRI-103: Management approach			
103-1	Explanation of the material topic and its Boundary	—	P39: Using Nonferrous Metal Resources Effectively (Fundamental Policy)
103-2	The management approach and its components	—	P39-40: Using Nonferrous Metal Resources Effectively
103-3	Evaluation of the management approach	—	P26: CSR Promotion System P39-40: Using Nonferrous Metal Resources Effectively
Ensuring Occupational Health and Safety			
GRI-103: Management approach			
103-1	Explanation of the material topic and its Boundary	—	P57: Ensuring Occupational Health and Safety (Fundamental Policy)
103-2	The management approach and its components	—	P57-60: Safety Measures at JX Nippon Coil Center/ Basic Policy on Health and Safety/ Organization for Occupational Health and Safety Management
103-3	Evaluation of the management approach	—	P59-60: Organization for Occupational Health and Safety Management
GRI-403: Occupational Health and Safety			
403-1	Workers representation in formal joint management-worker health and safety committees	a. The level at which each formal joint management-worker health and safety committee typically operates within the organization. b. Percentage of workers whose work, or workplace, is controlled by the organization, that are represented by formal joint management-worker health and safety committees.	P59-60: Organization for Occupational Health and Safety Management
403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	a. Types of injury, injury rate (IR), occupational disease rate (ODR), lost day rate (LDR), absentee rate (AR), and work-related fatalities, for all employees, with a breakdown by: i. region; ii. gender. b. Types of injury, injury rate (IR), and work-related fatalities, for all workers (excluding employees) whose work, or workplace, is controlled by the organization, with a breakdown by: i. region; ii. gender. c. The system of rules applied in recording and reporting accident statistics.	P60: Safety Performance in 2018
403-3	Workers with high incidence or high risk of diseases related to their occupation	a. Whether there are workers whose work, or workplace, is controlled by the organization, involved in occupational activities who have a high incidence or high risk of specific diseases.	
403-4	Health and safety topics covered in formal agreements with trade unions	a. Whether formal agreements (either local or global) with trade unions cover health and safety. b. If so, the extent, as a percentage, to which various health and safety topics are covered by these agreements.	P75: Maintaining Good Labor-Management Relations
Assuring Product Quality			
GRI-103: Management approach			
103-1	Explanation of the material topic and its Boundary	—	P61: Assuring Product Quality (Fundamental Policy)
103-2	The management approach and its components	—	P61-64: Initiatives by the Quality Control Department/ Basic Quality Policy/ Quality Management Systems/ Development of Human Resources in the Area of Quality/ Initiatives to Ensure High Quality and Reliability
103-3	Evaluation of the management approach	—	P61-62: Initiatives by the Quality Control Department P63: Roles of the Quality Control Department P64: Awards Received from Our Customers

Overview	Strategy	CSR	Information
No.	Disclosure	Reporting requirements	Relevant contents
GRI-416: Customer health and safety			
416-1	Assessment of the health and safety impacts of product and service categories	a. Percentage of significant product and service categories for which health and safety impacts are assessed for improvement.	
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	a. Total number of incidents of non-compliance with regulations and/or voluntary codes concerning the health and safety impacts of products and services within the reporting period, by: i. incidents of non-compliance with regulations resulting in a fine or penalty; ii. incidents of non-compliance with regulations resulting in a warning; iii. incidents of non-compliance with voluntary codes. b. If the organization has not identified any non-compliance with regulations and/or voluntary codes, a brief statement of this fact is sufficient.	P63: Roles of the Quality Control Department
Developing Human Resources			
GRI-103: Management approach			
103-1	Explanation of the material topic and its Boundary	—	P65: Developing Human Resources (Fundamental Policy)
103-2	The management approach and its components	—	P65-66: Strengthening the Education System to Support the Energizing of Individuals and Organizations
103-3	Evaluation of the management approach	—	P65-66: Strengthening the Education System to Support the Energizing of Individuals and Organizations
GRI-404: Training and education			
404-1	Average hours of training per year per employee	a. Average hours of training that the organization's employees have undertaken during the reporting period, by: i. gender; ii. employee category.	P65: Training Programs Implemented in Fiscal 2018
404-2	Programs for upgrading employee skills and transition assistance programs	a. Type and scope of programs implemented and assistance provided to upgrade employee skills. b. Transition assistance programs provided to facilitate continued employability and the management of career endings resulting from retirement or termination of employment.	P65-66: Strengthening the Education System to Support the Energizing of Individuals and Organizations
404-3	Percentage of employees receiving regular performance and career development reviews	a. Percentage of total employees by gender and by employee category who received a regular performance and career development review during the reporting period.	
Providing a Rewarding Work Experience			
GRI-103: Management approach			
103-1	Explanation of the material topic and its Boundary	—	P69: Providing a Rewarding Work Experience (Fundamental Policy)
103-2	The management approach and its components	—	P69-73: Work Style Reform Initiatives of the JX Nippon Mining & Metals Group/ Initiatives Promoting Diversity
103-3	Evaluation of the management approach	—	P69-73: Work Style Reform Initiatives of the JX Nippon Mining & Metals Group/ Initiatives Promoting Diversity
GRI-401: Employment			
401-1	New employee hires and employee turnover	a. Total number and rate of new employee hires during the reporting period, by age group, gender and region. b. Total number and rate of employee turnover during the reporting period, by age group, gender and region.	P76: Employment Data (JX Nippon Mining & Metals Group)
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	a. Benefits which are standard for full-time employees of the organization but are not provided to temporary or part-time employees, by significant locations of operation. These include, as a minimum: i. life insurance; ii. health care; iii. disability and invalidity coverage; iv. parental leave; v. retirement provision; vi. stock ownership; vii. others. b. The definition used for 'significant locations of operation'.	
401-3	Parental leave	a. Total number of employees that were entitled to parental leave, by gender. b. Total number of employees that took parental leave, by gender. c. Total number of employees that returned to work in the reporting period after parental leave ended, by gender. d. Total number of employees that returned to work after parental leave ended that were still employed 12 months after their return to work, by gender. e. Return to work and retention rates of employees that took parental leave, by gender.	P75: Data Relating to Diversity (JX Nippon Mining & Metals)
GRI-405: Diversity and Equal Opportunity			
405-1	Diversity of governance bodies and employees	a. Percentage of individuals within the organization's governance bodies in each of the following diversity categories: i. Gender; ii. Age group: under 30 years old, 30-50 years old, over 50 years old; iii. Other indicators of diversity where relevant (such as minority or vulnerable groups). b. Percentage of employees per employee category in each of the following diversity categories: i. Gender; ii. Age group: under 30 years old, 30-50 years old, over 50 years old; iii. Other indicators of diversity where relevant (such as minority or vulnerable groups).	P76: Employment Data (JX Nippon Mining & Metals Group) P85-86: Corporate Governance System
405-2	Ratio of basic salary and remuneration of women to men	a. Ratio of the basic salary and remuneration of women to men for each employee category, by significant locations of operation. b. The definition used for 'significant locations of operation'.	

No.	Disclosure	Reporting requirements	Relevant contents
Promoting Community Involvement and Development			
GRI-103: Management approach			
103-1	Explanation of the material topic and its Boundary	—	P77: Promoting Community Involvement and Development (Fundamental Policy)
103-2	The management approach and its components	—	P14: JX Nippon Mining & Metals Code of Conduct P77: Activity Policies and Activities Undertaken in Fiscal 2018
103-3	Evaluation of the management approach	—	P26: CSR Promotion System P77: Activity Policies and Activities Undertaken in Fiscal 2018
GRI-203: Indirect Economic Impacts			
203-1	Infrastructure investments and services supported	a. Extent of development of significant infrastructure investments and services supported. b. Current or expected impacts on communities and local economies, including positive and negative impacts where relevant. c. Whether these investments and services are commercial, in-kind, or pro bono engagements.	P78: Social Contribution Activities outside Japan
203-2	Significant indirect economic impacts	a. Examples of significant identified indirect economic impacts of the organization, including positive and negative impacts. b. Significance of the indirect economic impacts in the context of external benchmarks and stakeholder priorities, such as national and international standards, protocols, and policy agendas.	
GRI-411: Rights of Indigenous Peoples			
411-1	Incidents of violations involving rights of indigenous peoples	a. Total number of identified incidents of violations involving the rights of indigenous peoples during the reporting period. b. Status of the incidents and actions taken with reference to the following: i. Incident reviewed by the organization; ii. Remediation plans being implemented; iii. Remediation plans that have been implemented, with results reviewed through routine internal management review processes; iv. Incident no longer subject to action.	P82: Initiatives Relating to Local Residents
Respecting Human Rights			
GRI-103: Management approach			
103-1	Explanation of the material topic and its Boundary	—	P79: Respecting Human Rights (Fundamental Policy)
103-2	The management approach and its components	—	P14: JX Nippon Mining & Metals Code of Conduct P79-80: Respect for Human Rights: Principles and Rules
103-3	Evaluation of the management approach	—	P80-82: Raising Employee Awareness/ Initiatives Relating to Business Partners/ Initiatives Relating to Local Residents
GRI-412: Human Rights assessment			
412-1	Operations that have been subject to human rights reviews or impact assessments	a. Total number and percentage of operations that have been subject to human rights reviews or human rights impact assessments, by country.	
412-2	Employee training on human rights policies or procedures	a. Total number of hours in the reporting period devoted to training on human rights policies or procedures concerning aspects of human rights that are relevant to operations. b. Percentage of employees trained during the reporting period in human rights policies or procedures concerning aspects of human rights that are relevant to operations.	P80: Raising Employee Awareness
412-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	a. Total number and percentage of significant investment agreements and contracts that include human rights clauses or that underwent human rights screening. b. The definition used for 'significant investment agreements'.	
Insisting on Full Compliance			
GRI-103: Management approach			
103-1	Explanation of the material topic and its Boundary	—	P83: Insisting on Full Compliance (Fundamental Policy)
103-2	The management approach and its components	—	P83-84: Performance regarding Key Compliance Goals in Fiscal 2018/ Organizational Structure for Compliance
103-3	Evaluation of the management approach	—	P83-84: Performance regarding Key Compliance Goals in Fiscal 2018/ Organizational Structure for Compliance
GRI-206: Anti-competitive Behavior			
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	a. Number of legal actions pending or completed during the reporting period regarding anti-competitive behavior and violations of anti-trust and monopoly legislation in which the organization has been identified as a participant. b. Main outcomes of completed legal actions, including any decisions or judgments.	P83-84: Performance regarding Key Compliance Goals in Fiscal 2018



Independent Assurance Report

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

We were engaged by JX Nippon Mining & Metals Corporation (the "Company") to undertake a limited assurance engagement of the environmental and social performance indicators marked with for the period from April 1, 2018 to March 31, 2019 included in its Sustainability Report 2019 (the "Report") for the fiscal year ended March 31, 2019, the Company's self-declaration that the Report is prepared in accordance with the Global Sustainability Standards Board's GRI Sustainability Reporting Standards ("GRI Standards") at a core level, the alignment of the Company's policies to the International Council on Mining and Metals ("ICMM")'s 10 Sustainable Development ("SD") Principles and the applicable mandatory requirements set out in ICMM position statements, the Company's identification and prioritization of material issues, and the Company's approach and management of its material issues.

The Company's Responsibility

The Company is responsible for the preparation of the Indicators in accordance with its own reporting criteria (the "Company's reporting criteria"), as described in the Report, self-declaring that the Report is prepared in accordance with the criteria stipulated in the GRI Standards, reporting on the alignment of the Company's policies to the ICMM's 10 SD Principles and the applicable mandatory requirements set out in ICMM position statements, reporting on the Company's identification and prioritization of material issues, and reporting on the Company's approach and management of its material issues.

Our Responsibility

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

Our assurance procedures included:

- Interviewing the Company's responsible personnel to obtain an understanding of its policy for preparing the Report and reviewing the Company's reporting criteria.
- Inquiring about the design of the systems and methods used to collect and process the Indicators.
- Performing analytical procedures on the Indicators.
- Examining, on a test basis, evidence supporting the generation, aggregation and reporting of the Indicators in conformity with the Company's reporting criteria, and recalculating the Indicators.
- Visiting one of the Company's domestic factories selected on the basis of a risk analysis.
- Evaluating the Company's self-declaration that the Report is prepared in accordance with the GRI Standards at a core level against the criteria stipulated in the GRI Standards.
- Assessing the alignment of the Company's policies to the ICMM's 10 SD Principles and the applicable mandatory requirements set out in ICMM position statements through documentation reviews and interviews.
- Interviewing the Company's responsible personnel and reviewing documents with respect to the Company's process of identifying and prioritizing its material issues.
- Interviewing the Company's responsible personnel and reviewing documents with respect to the Company's approach to and management of its material issues.
- Evaluating the overall presentation of the Indicators.

Conclusion

Based on the procedures performed, as described above, nothing has come to our attention that causes us to believe that:

- the Indicators in the Report are not prepared, in all material respects, in accordance with the Company's reporting criteria as described in the Report;
- the Company's self-declaration that the Report is prepared in accordance with the GRI Standards at a core level does not conform to the criteria stipulated in the GRI Standards;
- the Company's policies are not aligned to the ICMM's 10 SD Principles and the applicable mandatory requirements set out in ICMM position statements as described on page 91;
- the Company has not identified and prioritized its material issues as described on pages 25-26; and
- the Company has not approached and managed its material issues as described on pages 25-26, 39, 45, 49, 51-53, 57, 59-60, 61-64, 65-66, 69, 73-75, 77, 79-82, and 83-84.

Our Independence and Quality Control

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

KPMG AZSA Sustainability Co., Ltd.

KPMG AZSA Sustainability Co., Ltd.
Tokyo, Japan
February 7, 2020

We welcome your views and questions regarding *Sustainability Report 2019*

as well as suggestions on how to make the next report even better.

JX Nippon Mining & Metals Corporation

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