

May 14, 2024  
JX Advanced Metals Corporation

## **JX Metals Group's Medium- to Long-term Business Strategies and Business Targets**

JX Metals Corporation (President: Hayashi Yoichi; “the Company”) hereby announces that it has updated its Medium-Term Management Plan<sup>1</sup> for FY 2023 to 2025, the previous version of which was announced in May 2023, and has formulated medium- to long-term business strategies and business targets based on its current initiatives and business environment. In order to ensure the implementation of those strategies and targets, JX Metals Corporation and its subsidiaries and affiliates (“the Group”) will work together to contribute to social development and innovation with advanced materials as a global leader in semiconductor and ICT materials.

### 1. Management Policies

In May 2023, the Group revised a part of “Long-Term Vision 2040” and established as its basic policy. By transitioning from a “process industry-type firm” to a “technology-based firm”, the Group aims to contribute to the realization of a sustainable society as a global leader in semiconductor and ICT materials sectors to realize a highly profitable structure even in the face of intensifying international competition. Under this policy, we aim to achieve profit growth that exceeds market growth by positioning our Focus Businesses consisting of the Semiconductor Materials segment and the ICT Materials segment as the core of our growth strategy, developing differentiated technologies in the advanced materials field, and creating markets. In addition, our Base Businesses consisting of the Metals & Recycling segment support our Focus Businesses by strengthening the supply chain of copper and minor metals. Under an optimally sized business structure, we aim to provide a stable supply of clean and green raw materials that contribute to issues such as carbon footprints, and improve the circular economy and traceability.

### 2. Business Environment Outlook

#### (1) Focus Businesses: Semiconductor Materials Segment

- The semiconductor logic and memory markets expanded at an average annual rate of 6.1%<sup>2</sup> from 2017 to 2022. Adjustments in the market continued in 2023. However, going forward, the markets are expected to grow at an average annual rate of 7.6%<sup>2</sup> from 2023 to 2027, propelled by the growth of generative AI and the growing penetration of electric vehicles and other products.
- The usage of sputtering targets for semiconductors, which are the Company’s main products used in PVD<sup>3</sup> and are used in the manufacture of various semiconductor devices such as logic and memory, is expected to increase because the semiconductor market is growing and major customers are planning to start operating new factories. In addition, with the growth of advanced semiconductors that require multilayering and miniaturization, the use of sputtering targets for semiconductors in PVD is expected to increase, as is the need for thin film formation by CVD<sup>4</sup> and ALD<sup>5</sup>. In the medium- to long-term, the market penetration of chiplets is expected, and we expect the film-

<sup>1</sup> [https://www.jx-nmm.com/english/newsrelease/upload\\_files/2023/05/11/6018119\\_11\\_20230511\\_03.pdf](https://www.jx-nmm.com/english/newsrelease/upload_files/2023/05/11/6018119_11_20230511_03.pdf)

<sup>2</sup> TechInsight Manufacturing Analysis Inc. “Worldwide Silicon Demand History and Forecast” (as of March 2024; based on silicon wafer area shipment)

<sup>3</sup> Abbreviation for “Physical Vapor Deposition.” A common PVD process, sputtering is a technology in which argon ions are bombarded onto a sputtering target in a vacuum apparatus, and the released target atoms or molecules are deposited on a substrate such as a silicon wafer or glass to form a thin film.

<sup>4</sup> Abbreviation for Chemical Vapor Deposition, which is a method that uses chemical reactions to form thin films.

<sup>5</sup> Abbreviation for Atomic Layer Deposition, which is a method of forming thin films by controlling the thickness at the atomic layer level.

forming demand to expand for applications such as wiring between chiplets.

(2) Focus Businesses: ICT Materials Segment

- Sales of rolled annealed copper foil for FPC<sup>6</sup>, the Company's main product, fell due to adjustments in the market for electronics products which occurred in fiscal year 2023. However, we believe that demand for the product has already bottomed out and will return to a growth trajectory in fiscal year 2024. The total area of FPC installed in electronic equipment products is expected to grow at an average annual rate of 7.1%<sup>7</sup> from 2023 to 2028.
- In the future, the use of rolled annealed copper foil is expected to increase in peripheral devices such as wearables, including smartwatches and smart glasses, in addition to the further enhancement and refinement of components for smartphones and personal computers due to reasons such as the installment of AI. In addition, with the increase in global EV sales, the use of rolled annealed copper foil for shielding materials used for wiring and malfunction prevention is expected to expand. In the medium- to long term, the use of rolled annealed copper foil, which has strong fatigue resistance against complex movements, is expected to increase due to the continuing trends to achieve miniaturization and reduce weight of equipment in fields such as industrial machinery and robots.
- Although demand for ultra-fine nickel powder used as the ultra-thin electrode materials for multi-layer ceramic capacitors (MLCCs) is on a recovery track after bottoming out at the end of the fiscal year 2023, we expect the market to return to a growth trajectory by the end of the fiscal year 2024, driven by the spread of high-performance of telecommunications devices with AI, further electrification with the spread of EVs and automated driving, and growth of data servers and AI servers, etc.

(3) Base Business: Metals & Recycling Segment

- In order to achieve a decarbonized society, the introduction of renewable energy has been expanded, and electrification in various industries and business sectors is under way. Therefore, demand for copper is expected to increase over the medium-to long term in various business sectors such as electrical substation equipment and electric vehicles. For example, it is said that motor coils and batteries for electric vehicles use about four times as much copper as those of gasoline vehicles. While demand for copper is increasing, the supply of copper from existing mines and recycled raw materials is limited; accordingly, the supply-demand situation for copper is expected to be tight, and we believe that copper price will remain resilient.
- Due to factors such as technological innovation, shorter product lifespans, and an increase in populations, the amount of generation of e-waste, which is waste from electrical and electronic devices, is increasing and is expected to reach 82 million tons in 2030, up from 55.5 million tons in 2020.<sup>8</sup> On the other hand, procurement costs of recycled raw materials are expected to increase due to an increased global awareness of efforts toward decarbonization, which is accelerating the move to secure recycled raw materials, as well as the trend toward stricter environmental regulations.
- Due to increasing construction of new smelters in the Asian region, there will be more competition for sales of refined copper.

3. Medium- to Long-term Business Strategies

(1) Focus Businesses: Semiconductor Materials Segment

- By leveraging our strengths in technologies such as high purification, composition, and microstructure control, surface treatment, and analysis and evaluation, the Company has established strong relationships with semiconductor manufacturing equipment manufacturers and obtained designation as the standard material, thereby ensuring a stable supply of high-quality products to semiconductor manufacturers. As for sputtering targets, which is our main product categories, in addition to copper and copper alloys, which are used in the main wiring layer of semiconductors, and tantalum, which is used in the barrier layer of semiconductors, we have the top global market share<sup>9</sup> in several products such as titanium, cobalt, and tungsten, which are used in the circuit formation and

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<sup>6</sup> Abbreviation for Flexible Printed Circuits, which is a substrate with electric circuits formed on a base material consisting of an insulating base film and conductive metal such as copper foil.

<sup>7</sup> Prismark Partners LLC "The printed Circuit Report Fourth Quarter / February 2024"

<sup>8</sup> UNITAR "The Global E-waste Monitor 2024"

<sup>9</sup> Survey conducted by an external research organization at the request of the Company (actual records in 2021 based on the Company's share and sales value in the target markets for semiconductors, excluding AI systems)

transistor part of semiconductors, etc.

- Looking ahead to the expansion of demand for semiconductors, particularly the growth of advanced semiconductors, we will continue to develop and propose materials that meet customer needs ahead of other companies, and will make expansive investments to capture market growth. In March 2022, we acquired large-scale sites for the construction of new plants in Hitachinaka City, Ibaraki Prefecture and the state of Arizona in the United States (approximately 240,000 m<sup>2</sup> and 260,000 m<sup>2</sup>, respectively), and we plan to increase our production capacity for semiconductor materials, particularly for highly profitable sputtering targets for semiconductors, whose demand is expected to increase rapidly in the future. The new factory in Arizona is scheduled to begin operations gradually from July 2024.
- In addition, we will strengthen the next-generation semiconductor materials business in a wide range of products. The crystal materials sector is expected to grow due to the increase in the number of data centers, the increase in mobile traffic, and the sophistication of sensing technologies, etc. We are working to make the crystal materials<sup>10</sup> business a pillar of next-generation earnings in the semiconductor materials segment by supplying the market with high-quality crystal materials through our purification, composition control, and temperature control technologies. In April 2024, the Company established Crystalline Material Business Promotion Department in its Technology Group to strengthen the field of InP (indium phosphorus), which is used for light emitting and receiving devices used in data centers and others, and CdZnTe (cadmium zinc telluride), which is used in applications such as infrared detectors and radiation detectors. We will also rapidly and steadily expand our business scale in the fields of lithography and photomask materials used in semiconductor manufacturing processes and materials for CVD or ALD, which are expected to be next-generation semiconductor materials.

## (2) Focus Businesses: ICT Materials Segment

- To date, the Company has expanded its business by implementing production technologies for copper foils with excellent flexibility, vibration resistance and other attractive qualities, and a market-oriented development approach that proposes materials directly to end users. Our main product, rolled annealed copper foil for FPC, has the world's No. 1 market share (actual records in 2022: 76.5%)<sup>11</sup>.
- Going forward, we will capture the needs for advanced functionality and miniaturization in existing applications, expand our business to take advantage of opportunities for increased demand in wearables, mobility, industrial machinery, robots, and other fields, and review our product portfolio by shifting to high value-added products. We will also develop products in new business areas by developing our core technologies such as rolling, surface treatment, and electrolysis, and build a business structure that is resilient to fluctuations in demand by means such as utilizing outsourced processing, reviewing production shifts, and multi-functionalizing facilities. In addition, we aim to increase profitability by implementing price optimization activities by passing on higher material, energy, and other costs to products.
- In order to meet the increasing demand for ultra-fine nickel powder for multi-layer ceramic capacitors (MLCCs), our subsidiary Toho Titanium Co., Ltd. decided to construct a new plant to increase production capacity and is planning to start operation during the fiscal year 2025.

## (3) Base Business: Metals & Recycling Segment

- In order to stably ensure mineral resources that are necessary raw materials used by the Group, we will consider developing not only copper mines but also minor metal mines such as tantalum and titanium. On the other hand, in order to pursue the optimal business scale in the combination of mineral materials development business and recycling business, in fiscal year 2022, we acquired all shares of the largest recycler of e-waste in Canada, eCycle Solutions Inc.. In addition, from fiscal year 2022 to 2023, with regards to the resource business, we transferred a portion of the shares of the Caserones Copper Mine and the Los Pelambres Copper Mine, and with regards to the metals and recycling business, we sold all of the shares of LS-Nikko Copper Inc. and transferred a portion of the shares of Pan Pacific Copper Co., Ltd. ("PPC").

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<sup>10</sup> A crystal is a solid in which atoms, molecules, and ions of a single or multiple elements are regularly arranged. The use of high-quality crystal materials allows for greater efficiency of elements and detectors.

<sup>11</sup> Fuji Chimera Research Institute "Electronics Mounting New Materials Handbook 2023" (actual record in 2022; for FPC only, based on shipping volume)

- We will make efforts to achieve the Sustainable Copper Vision,<sup>12</sup> which was established in 2022 to achieve carbon neutrality and meet increasing demand for copper. Specifically, we will improve Green Hybrid Smelting,<sup>13</sup> which uses virtually no fossil fuels, and aim to add high value to electrolytic copper. Furthermore, we announced that in order for the Company and our customers to cooperate in promotion of resource recycling and decarbonization, we would launch 100% recycled electrolytic copper applying the mass balance method.<sup>14</sup>
- In order to realize a circular economy that continues to reuse mined resources without discarding them, the Company, together with Mitsubishi Corporation (“MC”), will establish a new company to promote the reuse of waste home appliance, waste electronic equipment, and waste automotive lithium-ion batteries, etc., and plan to start operations by July 2024.<sup>15</sup> By leveraging MC’s global, cross-industry network and knowledge, we aim to strengthen our recycled material collection and coordination throughout the supply chain, and minimize the disposal of non-ferrous metal resources such as copper and minor metals.

#### (4) Capital Allocation Policy

- In order to help ensure demand for semiconductors, such as advanced nodes, which will increase in the future, is captured, and to stably supply high-quality materials, we will give the highest priority to growth investment in the semiconductor materials segment and reduce interest-bearing debts in parallel.
- We plan to invest approximately 270 billion yen over the next three years. Each investment will be made after careful examination of its necessity and investment efficiency.
- As for New Hitachinaka Factory, which is our main investment destination, as announced in the press release dated March 6, 2024, after another close examination based on the recent necessity of investment in each product, we have decided to forgo some investments and focus on semiconductor-related investments such as sputtering targets for semiconductors, which have high profitability and are expected to see a rapid increase in demand. As a result, the total investment is estimated to be approximately 150 billion yen instead of approximately 200 billion yen, which was originally planned.<sup>16</sup>

#### (5) Structural Reform

- We established a structural reform team in fiscal year 2023 and are proceeding with structural reform through reorganization centered on the Base Business, improvement of working capital, optimization of capital, review of expansion of sales and sales prices, and optimization of costs, including indirect costs, in all of our group companies.
- With respect to restructuring, as mentioned above, we have reduced interest-bearing debt by approximately 200 billion yen in the fiscal year 2023 through the transfer of some shares of PPC, etc. As a result of these reorganizations, we expect that the profit composition ratio of the Focus Businesses in consolidated operating income will increase and the consolidated operating margin will rise significantly beyond fiscal year 2024.
- In addition, the Company is working to further improve the profitability and capital efficiency through making fair inventory standards and fair payment terms of accounts receivable and accounts payable, and reviewing amounts of investment in plants and equipment, procurement costs, and outsourcing costs. In fiscal year 2023, we achieved an improvement in operating income of approximately 3.0 billion yen (vs. fiscal year 2022), an improvement in working capital of approximately 20 billion yen (vs. fiscal year 2022), and a reduction in investments of approximately 55 billion yen (vs. fiscal year 2022 budget). We aim to improve operating income by the same amount or more in fiscal year 2024. We will also continue to improve working capital and optimize

<sup>12</sup> This is JX Metal’s view on sustainable copper production aimed to achieve a stable supply of copper using both copper ore and recycled raw materials and to promote reduction of CO2 emission, resource recycling, and responsible procurement in alliance with other companies and universities.

<sup>13</sup> This is a smelting method making full use of the oxidation reaction heat generated by the copper ore itself to increase processing of recycled materials with virtually no use of fossil fuel. This aims to achieve both offering of a stable supply system to support growing demand and conducting ESG-oriented production and supply (characterized by decarbonization, resource recycling, etc.).

<sup>14</sup> [https://www.jx-nmm.com/english/newsrelease/fy2023/20240131\\_04.html](https://www.jx-nmm.com/english/newsrelease/fy2023/20240131_04.html)

<sup>15</sup> [https://www.jx-nmm.com/english/newsrelease/fy2024/20240422\\_02.html](https://www.jx-nmm.com/english/newsrelease/fy2024/20240422_02.html)

<sup>16</sup> [https://www.jx-nmm.com/english/newsrelease/fy2023/20240306\\_02.html](https://www.jx-nmm.com/english/newsrelease/fy2023/20240306_02.html)

investments.

#### 4. Medium- to Long-term Business Targets

The Company group has set the following medium- to long-term business targets based on the business environment outlook and the business strategies above.

		Actual results (fiscal year ended March 31, 2023)	Actual results (fiscal year ended March 31, 2024)	Target in fiscal year ending March 31, 2028
Operating income	Consolidated	Approx. 72.0 billion Yen	Approx. 86.0 billion yen	CAGR 10% ~ 15% (fiscal year ended March 2024 to fiscal year ending March 31, 2028)
	Focus Businesses	Approx. 55.0 billion yen	Approx. 27.0 Billion yen	CAGR 35% ~ 40% (fiscal year ended March 2024 to fiscal year ending March 31, 2028)
Operating margin	Consolidated	Approx. 4.5%	Approx. 5.5%	12% ~ 17%
	Focus Businesses	Approx. 15%	Approx. 8.5%	15% ~ 20%
	Semiconductor materials segment	Approx. 23%	Approx. 21.5%	23% ~ 28%
	ICT materials segment	Approx. 9.5%	Approx. 0.5%	7% ~ 12%
Profit composition ratio	Focus Businesses <sup>17</sup>	Approx. 60%	Approx. 25%	67% or more
	Semiconductor materials segment <sup>18</sup>	Approx. 35%	Approx. 25%	45% or more
ROE		Approx. 7%	Approx. 18%	10% or more
Net Debt/EBITDA <sup>18</sup>		Approx. 4.0x	Approx. 2.6x	Less than 1.5x

The targets shown above are based on an assumed exchange rate for the fiscal year ending March 31, 2025 of 140 yen/dollar, an assumed exchange rate during and after the fiscal year ending March 31, 2026 of 135 yen/dollar, and an assumed copper price in and after the fiscal year ending March 31, 2025 of 380¢/lb.

In the fiscal year ended March 31, 2023, the Company recorded the valuation loss of 74.2 billion yen following the transfer of 51% of the shares of SCM Minera Lumina Copper Chile (“MLCC”), which is an operator of the Caserones Copper Mine, to Lundin Mining Corporation.<sup>19</sup> The figures of the consolidated operating income, consolidated operating margin, profit composition ratio for Focus Businesses, profit composition ratio for semiconductor materials segment, ROE, and Net Debt/EBITDA above include the effects.

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

We plan to sell an additional 19% of MLCC’s shares, bringing the final transfer ratio to 70%.

<sup>17</sup> This is calculated based on the operating income of the Focus Businesses (semiconductor materials segment and ICT materials segment) and the Base Businesses (Metals & Recycling segment) excluding the business common costs. The operating income of the Focus Businesses is the simple sum of the operating income of the semiconductor materials segment and the ICT materials segment.

<sup>18</sup> This is calculated by dividing the Net Debt (interest-bearing debts – cash and cash equivalents (including ENEOS Holdings group short-term loans)) by EBITDA (operating income + depreciation expense).

<sup>19</sup> [https://www.jx-nmm.com/english/newsrelease/fy2023/20230714\\_02.html](https://www.jx-nmm.com/english/newsrelease/fy2023/20230714_02.html)

As business restructuring transactions that we expect will have an impact on the business results, in March 2024, we transferred 20% of the shares of PPC, of which the Company held 67.8%, and 3.27% of the interests of the Los Pelambres Copper Mine, of which the Company indirectly held 15.79%, to Marubeni Corporation.<sup>20</sup>

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

End

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