

JCR Green Loan Evaluation by Japan Credit Rating Agency, Ltd.

Japan Credit Rating Agency, Ltd. (JCR) announces the following Green Loan Evaluation Results.

## JCR Assigns Green 1 to the Long-term Loan of JX Metals Circular Solutions Europe GmbH

Borrower	:	JX Metals Circular Solutions Europe GmbH
Subject	:	JX Metals Circular Solutions Europe GmbH Long-term Loan
Type	:	Long-term Loan
Lender	:	Mizuho Bank, Ltd.
Borrowing Amount	:	9 million EUR
Execution Date	:	April, 2022 (Planned)
Maturity Date	:	April, 2027 (Planned)
Use of Proceeds	:	Investment in R&D facilities related to the recycling of lithium-ion batteries for automotive applications

### <Green Loan Evaluation Results>

Overall Evaluation	Green 1
Greenness Evaluation (Use of proceeds)	g1
Management, Operation and Transparency Evaluation	m1

### Chapter 1: Evaluation Overview

JX Metals Circular Solutions Europe GmbH (JX CSE) is a 100% owned subsidiary of JX Nippon Mining & Metals Corporation (JX NMM). JX NMM opened the Hitachi Mine in 1905 and started the resource development business and the metal smelting business. From its foundation to the present day, the company has fulfilled its social mission of providing a stable supply of non-ferrous metal resources and materials. In recent years, amid calls for environmentally friendly economic activities in various industries, JX NMM Group has been developing, ahead of its competitors, recycling technologies to recover rare metals contained in used automotive lithium-ion batteries (LiBs) in preparation for the coming era of massive generation of such batteries. In addition, European countries are pioneering the development of regulations and preferential treatment systems that will spur the shift to electric vehicles (EVs). Initiatives such as the establishment of a supply chain for LiBs, technological partnerships for the recycling of used

LiBs, and research and development of next-generation battery materials are booming in various sectors of industry, government, and academia. Under these circumstances, the JX NMM Group has been considering the commercialization of LiB recycling together with TANIJOBIS GmbH (TANIJOBIS), a German-based group company. As part of this, JX CSE was established in Frankfurt, Germany, on August 1, 2021. JX NMM has positioned JX CSE as an organization that strategically promotes the recycling of LiBs and the development of next-generation battery materials in Europe. JX NMM aims to contribute to the realization of a resource recycling-oriented society through cooperation with industry, government, and academia in Europe, the center of the lithium ion battery industry, utilization of the accumulated knowledge and expertise of the JX NMM Group to advance recycling technologies and realize a "closed-loop recycling" in which raw materials for LiBs for automotive applications are recovered from LiBs for automotive applications after their life cycle is over.

The subject of this evaluation is a long-term loan (the loan), which will be used to finance JX CSE's investment in R&D facilities related to the recycling of LiBs. LiBs are indispensable as a major part of EVs, and since the use of the funds is to establish the recycling process, JCR has evaluated that the project falls under "Circular economy adapted products, production technologies and processes and/or certified eco-efficient products," "Pollution prevention and control (waste recycling)" under the green project classification. JCR also confirmed that JX CSE has taken appropriate avoidance or mitigation measures against possible negative environmental impacts and that the project is unlikely to have negative environmental impacts that exceed the benefits of environmental improvements. Based on the above, JCR has assessed that the project for which the funds are to be used for this assessment has an environmental improvement effect.

JCR also confirmed that a system for managing and operating the green project for which the loan proceeds are to be used has been established, that the selection criteria and processes and cash management are highly transparent, and that the management of JX CSE and the parent company JX NMM has positioned environmental issues as a high-priority issue. Based on its JCR Green Finance Evaluation Methodology, JCR assigned "g1" for "Greenness Evaluation (Use of Proceeds)" and "m1" for "Management, Operation and Transparency Evaluation." As a result, it assigned "Green1" for the overall "JCR Green Loan Evaluation".

JCR evaluates that the Loan meets the standards for the items required in the Green Loan Principles<sup>1</sup> and the Ministry of the Environment's Green Loan and Sustainability Linked Loan Guidelines<sup>2</sup>.

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<sup>1</sup> LMA (Loan Market Association), APLMA (Asia Pacific Market Loan Association), LSTA (Loan Syndications and Trading Association) Green Loan Principle 2021 <https://www.lma.eu.com/>

<sup>2</sup> Ministry of the Environment's Green Loan and Sustainability Link Loan Guidelines <http://www.env.go.jp/press/files/jp/113511.pdf>

## Chapter 2: Current Status of the Project on Each Evaluation Factor and JCR's Evaluation

### Evaluation Phase 1: Greenness Evaluation

Based on the current status described below and JCR's evaluation of the subject, JCR evaluated that the use of proceeds was 100% for green projects and assigned the highest rank of "g1" for Phase 1: Greenness Evaluation.

#### (1) JCR's Key Consideration on This Factor

In this section, JCR first confirms whether the proceeds are used for green projects that have clear environmental improvement effects. Next, in cases where the use of proceeds is expected to have a negative impact on the environment, JCR confirms whether the impact is fully examined by an internal specialist department or an external third party and whether necessary measures have been taken for its avoidance and mitigation. Finally, JCR confirms the consistency with the Sustainable Development Goals (SDGs).

#### (2) Current Status of Evaluation Targets and JCR's Evaluation

##### a. Environmental Improvement Effects of the Project

- i. **The entire amount of proceeds is scheduled to be appropriated for capital investment in R&D facilities related to the recycling of LiBs, and the effect of environmental improvement can be expected.**

The entire amount of the loan will be used to finance capital investment in R&D facilities related to the recycling of LiBs for automotive applications and refinancing of the said funds.

##### <Overview of Uses of Proceeds>

Currently, rare metals such as lithium (Li), cobalt (Co), nickel (Ni), and the like, which are raw materials for LiBs, are mainly extracted from mines (mines and salt lakes for Li). Due to the increase in demand for LiBs for automotive use, there are concerns about price hikes and supply troubles for these resources. In addition, since ore mined from mines requires a smelting process that consumes a large amount of energy, environmental impact and CO<sub>2</sub> emissions also become large. In addition, through widespread use of EVs, mass disposal of used LiBs is also anticipated. Waste LiBs also contain hazardous substances, so a safe treatment system is necessary. From the above, a system of recycling which can safely and efficiently recover rare metal resources used in LiBs is required.

Currently, rare metals in LiBs are still recovered as alloys and recycled. In other words, the recycling is centered on "cascade recycling" in which rare metals do not return to the quality of the original products and the quality is lowered. Although it is possible to reduce waste in the cascade recycling, it is insufficient for the construction of a recycling-oriented society because rare metal resources are reused in applications with lower values than those before recycling.<sup>3</sup>

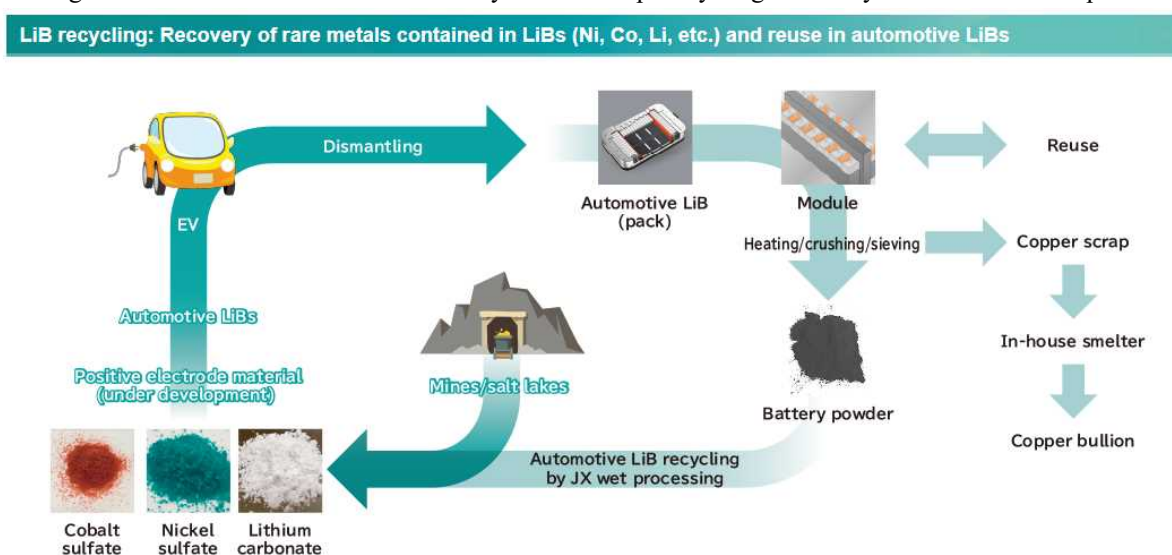
Metal smelting technology is divided into a dry process, in which smelting is performed by heat treatment, and a wet process, in which refining of metals is performed in an aqueous solution such as an acid, an alkali, or a solvent. Though the recycling by dry process has an advantage that the LiBs can be directly placed, it has disadvantages that the energy consumption is big, that Co and Ni cannot be separated (recycled as alloy), and

<sup>3</sup> The Institute of Advanced Industrial Science and Technology's Metal Resource Recycling Society: Realizing "Horizontal Recycling"  
<https://unit.aist.go.jp/env-mri/sure/resycle.html>

that Li shifts to slag. On the other hand, in the wet process, Co and Ni can be separated and Li can be recovered. However, it is believed that the treatment process will become complicated and drug consumption will also become large, making it less profitable.<sup>4</sup>

The JX NMM Group possesses a technology to detoxify used LiBs by heat treatment, then recover the battery powder by crushing and sieving, and treat this battery powder through its own wet process, and recover the Li, Co, and Ni contained in the battery powder as high-purity metal salts. Within the JX NMM Group, basic research to extract valuable metals from battery powders has already been completed, and at present, medium-scale demonstration tests are under operation in Japan based on the technology. JX CSE plans to optimize and upgrade existing technologies while deepening collaboration with industry, government, and academia in Europe, the center of EV shift. Specifically, JX CSE will optimize the treatment conditions to match the LiBs generated in the European EV market, improve the metal recovery rate, and demonstrate the effectiveness of the established technology. Through these efforts, the company aims to realize "closed-loop recycling," which recovers the raw materials of LiBs for automobiles again from LiBs for automobiles that have completed their life cycles, i.e., reuses them as products equivalent to the original products. The use of funds for the loan is investment in facilities for such demonstration research.

Figure 1. Overview of Lithium Ion Battery Closed-Loop Recycling Aimed by the JX NMM Group



(Source: JX NMM website)<sup>5</sup>

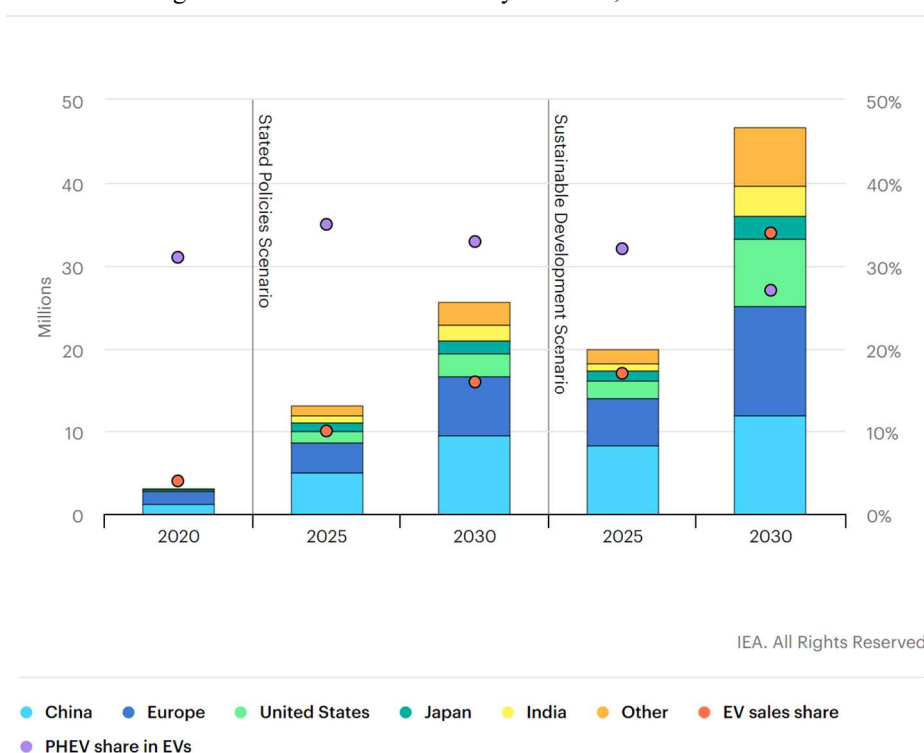
Based on the above, JCR evaluated that the projects for which the loan is to be used has a high environmental improvement effect.

<sup>4</sup> Japan Oil, Gas and Metals National Corporation 19\_03\_vol.48  
Lithium Production Technology Overview-Current Situation and Future Trends-March 29, 2019 Satoshi Okubo  
Production Technology Section, Mineral Resources & Technology Department  
<sup>5</sup> [https://nmmjx-dc.com/products/lithium\\_ion/lib.html](https://nmmjx-dc.com/products/lithium_ion/lib.html)

- ii. This use of proceeds falls under the category of "Circular economy adapted products, production technologies and processes and/or certified eco-efficient products", "Pollution prevention and control (waste recycling)" in the Green Loan Principles, and "Projects concerning eco-efficient products, production technologies, and processes", "Projects for pollution prevention and control (Projects that contribute to the realization of a circular economy)" in the Ministry of the Environment's Green Loan and Sustainability Linked Loan Guideline.

The movement to promote the popularization of EVs to combat global warming has become remarkable in the world's major countries. According to projections by the International Energy Agency (IEA), global production of EVs in 2030 is expected to rapidly expand from 3.16 million units in 2020 to 46.64 million units, accounting for approximately 35% of total sales in the sustainable scenario<sup>6</sup>. In conjunction with this, demands for automotive LiBs used as batteries for EVs, and rare metals such as Li, Co, and Ni, which are raw materials for them, are expected to rapidly expand. According to the IEA's projections, under the sustainable scenario, about 40 times more Li and about 20 times more Co and Ni will be needed by 2040<sup>7</sup>. With these backgrounds in mind, the EU, which promotes the circular economy as a policy program, has established regulations requiring the recovery of LiBs and the recycling of rare metals contained in batteries at a high recovery rate, and has already decided to apply them from 2022.

Figure 2. IEA Global EV Sales by Scenario, 2020-2030

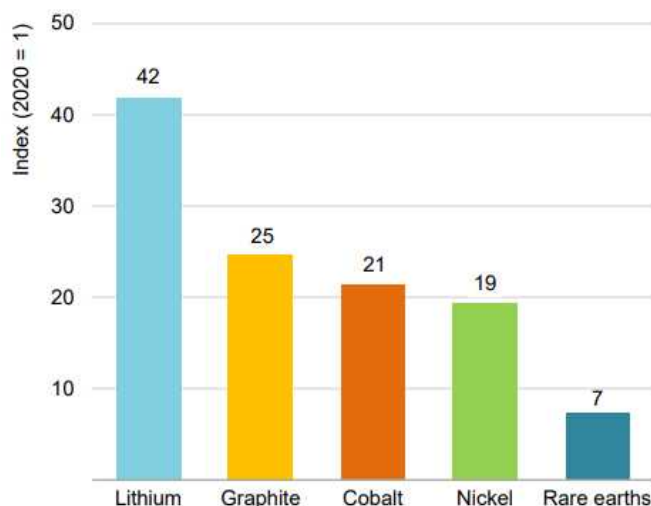


(Source: IEA Global EV car sales scenario 2020-2030)

<sup>6</sup> IEA Global EV car sales scenario 2020-2030 (Updated April 28, 2021)  
<https://www.iea.org/data-and-statistics/charts/global-ev-sales-by-scenario-2020-2030>

<sup>7</sup> IEA The Role of Critical Minerals in Clean Energy Transitions (May 2021)  
<https://iea.blob.core.windows.net/assets/ffd2a83b-8c30-4e9d-980a-52b6d9a86fdc/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf>

Figure 3. Growth of selected minerals in the SDS, 2040 relative to 2020



(Source: IEA: The Role of Critical Minerals in Clean Energy Transitions)

Based on the above, JCR evaluates that the initiative to recover battery raw materials directly from the automotive LiBs, which is the use of the funds for this loan, is one of the important solutions to respond to the rapid increase in demand for rare metals, which is expected to rise further in the future in consideration of the scenario of a transition to clean energy, and is an initiative that greatly contributes to the realization of a recycling-oriented society.

#### b. Negative Impacts on the Environment

JX CSE has established the following requirements for each facility to address the negative environmental impact of its R&D facilities for the recycling of LiBs, which are the intended use of the funds

- i. The facility must meet the administrative emission standards for air and water pollution (in Germany and in the EU)
- ii. If an environmental assessment is required for the construction of the facilities, the environmental assessment must have been completed or is expected to be completed.
- iii. There are no problems with neighboring residents

(Source: JX CSE Green Loan Framework)

In order to satisfy the above, the company plans to introduce treatment facilities to each facility. Therefore, the possibility that hazardous substances that exceed the standard will be discharged off-site in the operation process after the facility is put into operation is extremely limited. In addition, since R&D facilities are scheduled to be constructed within the premises of the plant of TANIOBIS, a group company in Germany, there is no risk of problems with local residents.

Based on the above, JCR judges that there is little likelihood that the use of funds will have a negative impact on the environment.

### c. Consistency with SDGs

Through the operation of the R&D facilities for the recycling of LiBs, which are the intended use of the funds, it is expected that CO2 emission of the whole society will be reduced through contribution to a resource recycling-oriented society by reducing the waste. JCR evaluated that the use of proceeds contributes to the following SDGs goals and targets in reference to ICMA's SDGs mapping.



#### Goal9 : Industry, innovation and infrastructure

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**Target9.4** By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities



#### Goal12 : Responsible consumption and production

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**Target12.2** By 2030, achieve the sustainable management and efficient use of natural resources

**Target12.5** By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse



#### Goal17 : Partnerships for the goals

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**Target17.17** Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships



## Evaluation Phase 2: Management, Operation and Transparency Evaluation

Based on the current situation described below and JCR's evaluation of the subject, JCR evaluated that the management and operation systems have been well developed, that transparency is very high and that it can be fully expected for the project to be implemented as planned and for the proceeds to be adequately allocated. In Phase 2, JCR evaluated the management, operation and transparency to be the highest level of "m1".

### 1. Appropriateness and Transparency Concerning Selection Standards and Processes for Use of Proceeds

#### (1) JCR's Key Consideration on This Factor

In this section, JCR confirms the objectives to be achieved through green financing, the appropriateness of green project selection standards and processes, and whether or not a series of processes are properly disclosed to lenders and others.

#### (2) Current Status of Evaluation Targets and JCR's Evaluation

##### a. Goals

The JX NMM Group recognizes that "a stable supply of non-ferrous resources and materials is its social mission." The Group's philosophy is to "continue working on innovation in the productivity of resources and materials by promoting recycling with the aim of achieving zero emissions." In addition, the Group has also formulated the Group's Basic Environmental Policy as a guideline for activities to implement this philosophy. The JX NMM Group is fully aware of the impact of its business activities on the environment, and its basic policy is to contribute to the conservation of the environment on a global scale by promoting technological development that enhances the productivity of resources and materials. In the Basic Environmental Policy, the Group stipulates that it will promote the formation of a decarbonized and a recycling-oriented society.

Figure 4. JX NMM Group Basic Environmental Policy



(Source: JX Nippon Mining & Metals Corporation Sustainability Report 2021)<sup>8</sup>

In 2019, the JX NMM Group formulated a long-term vision through 2040, and one of its basic policies is to contribute to the realization of a sustainable society as targeted by the SDGs. It has identified important social issues (materiality) that must be prioritized in order to realize this long-term vision, and has established the conservation of

<sup>8</sup> JX Nippon Mining & Metals Corporation Sustainability Report 2021  
[https://www.nmm.jx-group.co.jp/sustainabilityreport/2021/p69\\_78.html](https://www.nmm.jx-group.co.jp/sustainabilityreport/2021/p69_78.html)



the global environment as one of them. It has stated that it will "Contribute to global environmental conservation by creating a carbon-free and recycling-oriented society."

Figure 5. JX NMM Group Materialities

	Materialities	Initiatives	Fiscal 2020 KPIs	Related SDGs
E	Contributing to Environmental Conservation 	<ul style="list-style-type: none"> <li>Contribute to global environmental conservation by creating a carbon-free and recycling-oriented society.</li> </ul>	Total in-house CO <sub>2</sub> emissions: Promoting initiatives to achieve net zero CO <sub>2</sub> emissions in fiscal 2050 and 90% reduction in fiscal 2040 (vs. fiscal 2018)*	
			Increase Percentage of Recycled Raw Materials: expand the breadth of recycled materials to be treated	
			Landfill disposal rate (less than 1% in fiscal 2020)	
S	Provide Advanced Materials That Support Lives and Lifestyles 	<ul style="list-style-type: none"> <li>Advance development of new technologies and contribute to an IoT/AI society</li> </ul>	Develop advanced materials needed by the IoT/AI society	
	Build a framework to support technology-based management			
	Create Attractive Workplaces 	<ul style="list-style-type: none"> <li>Create a healthy, safe, and peaceful working environment for all employees.</li> <li>Create an environment in which diverse employees feel fulfilled and fully express their talents.</li> </ul>	Reduce serious occupational accidents: Less than 0.7 accidents (four days or more of lost work time) per 1,000 workers in fiscal 2020	
			Increase annual leave utilization rate: 80% or more in fiscal 2020	
			Implement initiatives to revitalize people and organizations	
Respect Human Rights 	<ul style="list-style-type: none"> <li>Conduct business activities that respect the human rights of all throughout the supply chain, including local community residents, customers, employees, and business partners.</li> </ul>	Percentage of employees taking human rights training (100% in fiscal 2020)		
		Conduct survey of human rights in supply chains		
Coexistence and Co-Prosperty With Local Communities 	<ul style="list-style-type: none"> <li>Foster relationships of trust with local communities through community-based social contribution activities and communications in every business location in Japan and abroad</li> </ul>	Continuous dialogue with local communities		
G	Strengthen Governance 	<ul style="list-style-type: none"> <li>Ensure sound, transparent business management via thorough compliance and risk management activities.</li> </ul>	Steady operation of group-wide risk management	
			Compliance training tailored to business characteristics and social movements, etc.	

\* We revised the long-term targets in fiscal 2021, moving our 90% reduction target forward to fiscal 2030.

(Source: JX Nippon Mining & Metals Corporation Sustainability Report 2021)

Based on the above, JCR has evaluated that the project to be undertaken by JX CSE through this loan is consistent with the JX NMM Group's Group Philosophy, Basic Environmental Policy, and Materiality.

**b. Selection criteria**

JX CSE's eligibility criteria for the green loan are as follows:

- |   |
|---|
| <ol style="list-style-type: none"> <li>i. Construction costs of facilities that contribute to R&amp;D</li> <li>ii. Material purchase cost for the above construction</li> </ol> |
|---|

(Source: JX CSE Green Loan Framework)

JCR evaluates this eligibility criteria established by JX CSE as appropriate because it covers the construction of R&D facilities for the recycling of LiBs, which are expected to have an environmental improvement effect, as

mentioned above, and the purchase of materials for such facilities. Negative environmental impacts are also properly identified and managed as described in Phase 1 of the evaluation.

**c. Processes**

JX CSE's finance and ESG promotion staff, together with the parent company JX NMM, select and draft the candidate projects for the use of the loan proceeds after reaching an agreement on their appropriateness as green projects. The departments involved in the selection within JX NMM are the Battery Material & Recycling Promotion Office, which is a specialized department for the project, the Planning & Coordination Dept., which is a specialized department for group financial strategy, and the ESG Promotion Dept., which is a specialized department for sustainability. The final decision is made by JX NMM's Board of Directors, which will formally select the use of funds. The Board of Directors is the second largest decision-making body within the JX NMM Group after the General Meeting of Shareholders.

Based on the above, JCR has evaluated that JX CSE has a clear process for evaluating the greenness of the use of the funds, as the departments and management with expertise in the parent company are appropriately involved in the selection and approval of the projects.

JCR has evaluated that that JX CSE's goals, selection criteria, and process related to this loan are transparent to lenders, because they are disclosed in this evaluation report and in the framework prepared by JX CSE.

## 2. Appropriateness and Transparency of Management of the Proceeds

### (1) JCR's Key Consideration on This Factor

It is usually assumed that the management of the proceeds varies widely depending on borrowers. JCR confirms whether the proceeds are surely appropriated to the green project and whether a mechanism and internal system are in place to enable easy tracking and management of the appropriation of funds.

JCR also gives importance to whether proceeds are scheduled to be used for green projects at an early stage and to the evaluation of management and operation methods for unallocated funds.

### (2) Current Status of Evaluation Targets and JCR's Evaluation

The loan will be appropriated within six months after procurement to fund the capital investment for R&D facilities for the recycling of LiBs described in Phase 1 of the evaluation, and will not be used for any other purposes. If the funds are to be used for refinancing, the company said that the use of funds would be limited to expenditures on eligible projects that were implemented within six months retroactively to the green loan procurement.

The proceeds will be disbursed from the account by the person in charge of financing each the eligible project progresses. Payments require the approval of two people, including the company's accounting officer.

The company's finance staff will track and manage the proceeds using a dedicated management table and will enter each expenditure related to the use of funds. In addition, the management-related forms shall be reconciled with the deposit balance every month and reported to the officer in charge of accounting for approval. Furthermore, JX CSE will report every month cash and deposit balances to JX NMM's accounting department. The status of all funds in deposit and loan balances and the status of project funds shall be subject to periodic internal audits by JX NMM's Audit Department and external audits by an auditing firm.

Regarding the documents related to the management of financing, those that do not require original documents are stored on the company's intranet in the form of electronic files for an unspecified period of time. In addition, original copies of contracts that are still in effect and important evidences related to contracts shall be retained until the termination of the contract, and electronic files (scan data) thereof shall be retained on the company intranet after the termination of the contract without specifying a time limit.

If temporary unappropriated funds arise, they will be invested in cash and cash equivalents. In addition, in the event that surplus funds arise in the implementation of capital investment for the purpose of the appropriation of funds, the company will consider measures including lump-sum repayment of surplus funds together with the lender after the fact is recognized.

Based on the above, JCR has evaluated that the appropriateness and transparency of fund management is appropriate because the funds are appropriated to finance capital investment for R&D facilities for the recycling of LiBs, that the fund management will be managed in an appropriate way by JX CSE and JX NMM, that a system is in place for confirmation by a third party through external audits, and that the handling of unappropriated funds is appropriate when they arise.

### 3. Reporting

#### (1) JCR's Key Consideration on This Factor

In this section, JCR evaluates whether the disclosure system for lenders is planned in a detailed and effective manner before and after the execution of the green loans.

#### (2) Current Status of Evaluation Targets and JCR's Evaluation

##### a. Reporting on the allocation status of the proceeds

The use of funds from this loan will be disclosed to the lender in the loan agreement or other documentation prior to the disbursement of the loan. The appropriations will be reported to the lender on an annual basis until the funds are appropriated. If significant changes in financing conditions occur after the amount of the proceeds has been appropriated, JX CSE will promptly notify the lender of such facts.

##### b. Reporting on environmental improvement effects

JX CSE intends to report the following items to the lender, to the extent practicable, as environmental improvement effects of the use of the funds, on an annual basis until the repayment of the loan is completed. In addition, JX CSE will promptly notify the lender of any major changes in circumstances, such as the discontinuation of development, after the amount of the proceeds has been appropriated.

1. Output index
  - Outline of Closed Loop Recycling Research Project for LiBs
2. Outcome index
  - Progress of research project
  - Aimed effects of research projects (purposes of use, expected additional effects, etc.)
3. Impact index
  - JX CSE will contribute to the realization of a decarbonized society and a circular economy by advancing technological development to efficiently recycle limited precious metal resources.

(Source: JX CSE Green Loan Framework)

JCR assesses that the content of the reporting on the appropriation of the funds and the effects of environmental improvement is appropriate and that the plan is to be disclosed appropriately to the lenders.

## 4. Organization's Environmental Initiatives

### (1) JCR's Key Consideration on This Factor

In this section, JCR evaluates whether the management of the borrower regards environmental issues as a matter of high priority for management and whether the green finance policy, process and selection criteria for green projects are clearly positioned through the establishment of a department specializing in environmental issues or in collaboration with external organizations.

### (2) Current Status of Evaluation Targets and JCR's Evaluation

The JX NMM Group recognizes that "a stable supply of non-ferrous resources and materials is its social mission." In all aspects of its business activities, the Group's philosophy is to "continue to promote recycling of resources and materials to achieve zero emission" in accordance with the Code of Conduct. At the same time, it states that "we will maintain and improve coexistence with various stakeholders, and through these, contribute to the sustainable development of society on a global scale." In addition, as guidelines for activities to implement this philosophy, the Group has formulated the Group's Basic Environmental Policy, which stipulates that in order to contribute to the conservation of the global environment, the Group will promote the formation of a decarbonized society and a recycling-oriented society.

In 2019, the JX NMM Group formulated a long-term vision through 2040 as the "ideal state" that the Group should aim to achieve. The company announced that it would aim to be a global company that contributes to the social development and innovation through advanced materials. Its basic policy is to transform from a "process industry-type" to a "technology-based firm" and contribute to the realization of a sustainable society as targeted by the SDGs, while realizing high income amid intensifying international competition. In addition, it has identified important social issues that need to be prioritized in order to realize this long-term vision, and has set the protection of the global environment as one of them.

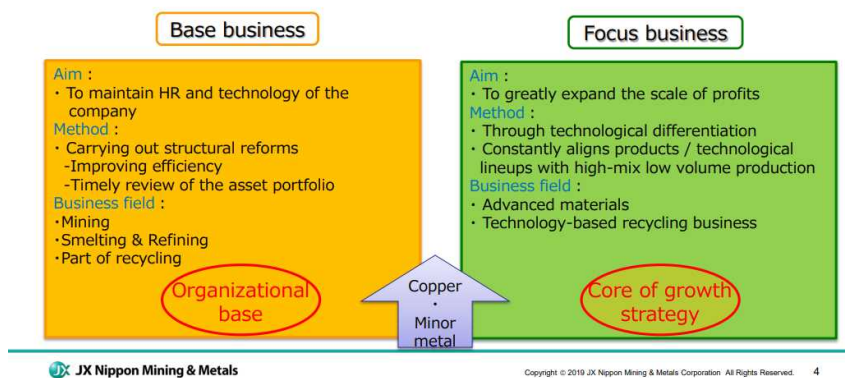
In May 2020, the JX NMM Group announced a medium-term management plan for fiscal 2020-2024 to promote the seeds for realizing its long-term vision and transforming into a technology-based firm. In May 2021, the Group revised its medium-term management plan to further promote ESG management in light of changes in the business environment. In the revised plan, it has announced the promotion of lithium-ion battery recycling as one of its measures in order to realize a resource recycling-oriented society. In addition, the Group has announced an investment of JPY 20 billion in ESG projects over the three-year period. At this time, JX CSE has not established its own medium-term management plan, but if it develops a business structure in the future, it plans to prepare a separate medium-term management plan in accordance with the parent company's policy.

Figure 6. Basic Policy of the JX NMM Group Long-Term Vision 2040

### 3. Basic policy – Long-Term Vision –

- ✓Moving from a process industry-type to a technology-based firm
- ✓Designing to continue generating high profits as well as contributing to the realization of sustainable society

- Positioning our individual businesses as a “focus business” or a “base business”
- Positioning minor metals essential to advanced materials as central domains



(Source: JX Nippon Mining & Metals Group Long-Term Vision 2040<sup>9</sup>)

Figure 7. JX NMM Group Medium-Term Management Plan Progress

2020-22 Plan Progress Details

### 2.5.3. ESG Management Promotion: Toward establishment of a recycling-oriented society

Promotion of hybrid smelting technology	Promotion of lithium-ion battery recycling
Aim for a <b>recycled materials input ratio of 50%</b> in copper smelting and refining by 2040	On the way to realizing <b>closed-loop recycling</b> of onboard lithium-ion batteries, work to establish mechanisms and technology
<b>Objectives</b> <ul style="list-style-type: none"> <li>■ Aim to <b>reduce energy consumption</b> and <b>obtain stable supplies of resources</b> by means of high-efficiency, large-scale recycling that makes effective use of excess heat generated in processing copper concentrate</li> </ul>	<b>Devise mechanisms</b> <ul style="list-style-type: none"> <li>■ <b>Collaborate with automakers</b>, and <b>link to development of cathode materials for solid-state lithium-ion batteries</b></li> </ul>
<b>Enhance organizational structure</b> <ul style="list-style-type: none"> <li>■ Newly established the Saganoseki Branch of the Technology Development Center (October 2020)</li> <li>■ Merged the Smelting Technology Department and the Recycling Technology Department (April 2021)</li> </ul>	<b>Develop technology</b> <ul style="list-style-type: none"> <li>■ Carry out ton-based <b>verification experiments</b> at Tsuruga*                      [Expected start of recovery]                      Nickel sulfate: 2021 first half                      Cobalt sulfate: 2022 first half</li> </ul>

\*JX Metals Circular Solutions was established in May 2021 and is to start operation in October.

(Source: JX Nippon Mining & Metals Group Medium-Term Management Plan for Fiscal 2020 to 2022 Progress Briefing <sup>10</sup>)

In addition, in October 2020, the JX NMM Group established ESG Promotion Department to oversee ESG initiatives in order to strengthen organizational responses and tackle ESG management from a company-wide perspective. The relevant committees have been established, and management is taking the initiative in promoting significant ESG-related matters.

<sup>9</sup> JX Nippon Mining & Metals Group Long-Term Vision 2040 (July, 2019)  
[https://www.nmm.jx-group.co.jp/english/newsrelease/upload\\_files/20190627\\_02\\_01.pdf](https://www.nmm.jx-group.co.jp/english/newsrelease/upload_files/20190627_02_01.pdf)

<sup>10</sup> JX Nippon Mining & Metals Group Medium-Term Management Plan for Fiscal 2020 to 2022 Progress Briefing (May, 2021)  
[https://www.nmm.jx-group.co.jp/english/company/vision/pdf/index\\_en02.pdf](https://www.nmm.jx-group.co.jp/english/company/vision/pdf/index_en02.pdf)

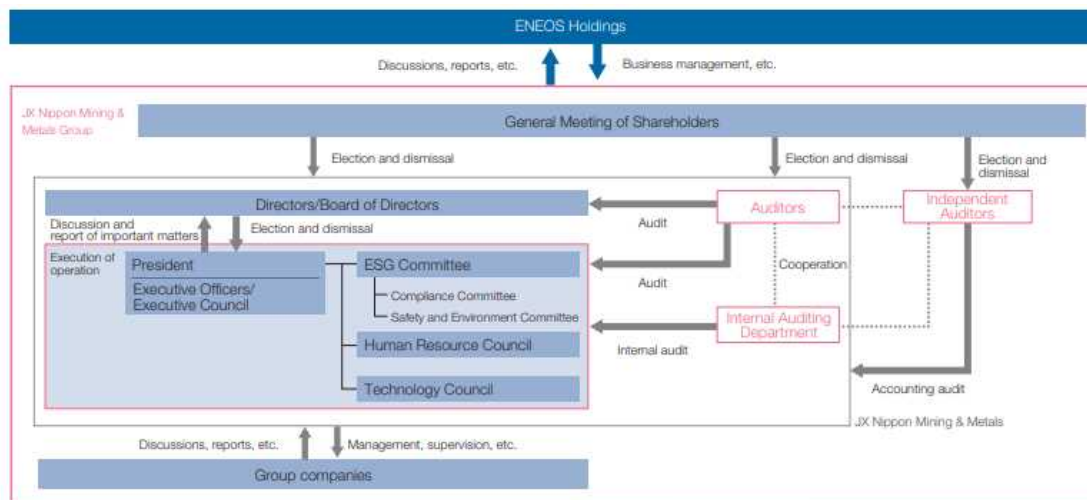


Figure 8. JX NMM Group ESG Promotion System



(Source: JX Nippon Mining & Metals Corporation Sustainability Report 2021)

Figure 9. JX NMM Group Corporate Governance Structure



(Source: JX Nippon Mining & Metals Corporation Sustainability Report 2021)

From the above, JCR has confirmed that JX CSE, including the management of JX NMM, the parent company, has positioned the environmental issues as a high-priority issue with regard to the environmental efforts of JX CSE organization. Based on the above, JCR assesses that green loan execution policies and processes and green project selection are appropriately implemented at JX CSE.



■Evaluation result

Based on its JCR Green Finance Evaluation Methodology, JCR assigned "g1" for the "Greenness Evaluation (Uses of Proceeds)" and "m1" for the "Management, Operation and Transparency Evaluation." As a result, it assigned "Green 1" for the "JCR Green Loan Evaluation". The Loan is considered to meet the standards for the items required in the Green Loan Guidelines and the Green Loan and Sustainability Linked Loan Guideline.

[JCR Green Loan Evaluation Matrix]

		Management, Operation, and Transparency Evaluation				
		m1	m2	m3	m4	m5
Greenness Evaluation	g1	Green 1	Green 2	Green 3	Green 4	Green 5
	g2	Green 2	Green 2	Green 3	Green 4	Green 5
	g3	Green 3	Green 3	Green 4	Green 5	Not qualified
	g4	Green 4	Green 4	Green 5	Not qualified	Not qualified
	g5	Green 5	Green 5	Not qualified	Not qualified	Not qualified

(Responsible analysts for this evaluation) Atsuko Kajiwara and Haruna Goto

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## Important explanations of this Green Finance Evaluation

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### 1. Assumptions, Significance and Limitations of JCR Green Finance Evaluation

JCR Green Finance Evaluation, which is determined and provided by the Japan Credit Rating Agency (JCR), is an expression of JCR's comprehensive opinion at this time on the extent to which the funds procured from the issuance of green bonds, which are subject to evaluation, are allocated to green projects defined by JCR and the extent to which the management, operation and transparency of the use of green bonds are ensured. It does not fully indicate the extent to which the funds procured from such green bonds are allocated and the management, operation and transparency of the use of the funds are ensured.

JCR Green Finance Evaluation assesses the plan or status of the appropriation of funds at the time of the planned green bond issuance or at the time of issuance and it does not guarantee the status of the appropriation of funds in the future. Furthermore, it does not prove the environmental effects of green bonds and is not responsible for their environmental effects. JCR confirms the environmental improvement effects of funds procured under the Green Finance Framework measured quantitatively and qualitatively by the issuer or by a third party nominated by the issuer, but in principle it does not directly measure such effects.

### 2. Method used to conduct this evaluation

The methods used in this evaluation are listed on JCR's website (Sustainable Finance & ESG in <https://www.jcr.co.jp/en>) as JCR Green Finance Evaluation Methodology.

### 3. Relationship with Acts Concerning Credit Rating Business

JCR Green Finance Evaluation is determined and provided by JCR as a related business, which is different from its activities related to the credit rating business.

### 4. Relationship with Credit Ratings

The evaluation differs from the credit rating and does not promise to provide or make available for inspection a predetermined credit rating.

### 5. Third-Party Evaluation of JCR Green Bond

There is no conflict of interest related to capital or personnel relationships between the subject of this evaluation and JCR.

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#### ■Glossary

JCR Green Finance Evaluation: This evaluates the extent to which the funds procured from the green finance are allocated to the green projects as defined by JCR and the degree to which the management, operation and transparency of the Green Loan are ensured. Evaluations based on a 5-point scale are given from top to bottom using the Green1, Green2, Green3, Green4, and Green5 symbols.

#### ■Status of registration as an external assessor of green finance

- Registered as an External Reviewer of Green Bonds by the Ministry of the Environment
- ICMA (registered as an observer with the International Capital Markets Association)

#### ■Status of registration as a credit rating agency, etc.

- Credit Rating Agency: the Commissioner of the Financial Services Agency (Rating) No.1
- EU Certified Credit Rating Agency
- NRSRO: JCR has registered with the following four of the five credit rating classes of the U.S. Securities and Exchange Commission's Nationally Recognized Statistical Rating Organization (NRSRO): (1) financial institutions, broker-dealers, (2) insurance companies, (3) general business corporations and (4) government and municipalities. If the disclosure is subject to Section 17g-7 (a) of the Securities and Exchange Commission Rule, such disclosure is attached to the news releases posted on the JCR website (<https://www.jcr.co.jp/en>).

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