

———— JCR Climate Transition Finance Evaluation By Japan Credit Rating Agency, Ltd. ————

Japan Credit Rating Agency, Ltd. (JCR) announces the following Climate Transition Loan Framework Evaluation as follows.

## JCR Assigned Green 1 (T)(F) to Transition Loan Framework of SUMITOMO CHEMICAL COMPANY, LIMITED.

Borrower : SUMITOMO CHEICAL COMPANY, LIMITED. (security code: 4005)  
SUMITOMO JOINT ELECTRIC POWER CO.,LTD.  
Subject : Transition Loan Framework of SUMITOMO CHEICAL COMPANY,  
LIMITED.

### <Evaluation Results of Climate Transition Loan Framework>

Overall Evaluation	Green 1(T)(F)
Green/Transition Evaluation (Use of Proceeds)	gt1(F)
Management, Operation and Transparency Evaluation	m1(F)

## Chapter 1: Overview of Evaluations

### [Company Profile]

SUMITOMO CHEICAL COMPANY, LIMITED. (Sumitomo Chemical, or the Company) is a leading diversified chemical company established in 1925. The Sumitomo Chemical Group (the Group) consists of Sumitomo Chemical and its 313 affiliated companies (as of March 31, 2021). Its main business areas are petrochemicals & plastics, energy & functional materials, IT-related chemicals, health & crop sciences, pharmaceuticals, and others.<sup>1</sup>

Sumitomo Chemical got its start by manufacturing fertilizers from harmful gases emitted from the Bessi Copper Mine smelting operations, thereby overcoming environmental problems and improving agricultural productivity. From this, it can be said that since its foundation, Sumitomo Chemical has conducted its business based on the idea of solving the issues facing society through its business. Sumitomo Chemical's management philosophy is based on one of the Sumitomo Spirits: "*Jiri-Rita Koushi-Ichinyo*: Sumitomo's business must benefit society at large, not just our own interests. (This means that Sumitomo's business must not only advance its own interests but also contribute to the nation and society)." Sumitomo Chemical has three business philosophies: creating new value by building on innovation, contributing to society through business activities, and developing a vibrant corporate culture and continuing to be a company that society can trust.

<sup>1</sup> Other businesses include power / steam supply, chemical industry equipment design / construction supervision, transportation / warehousing, physical property analysis / environmental analysis, etc.

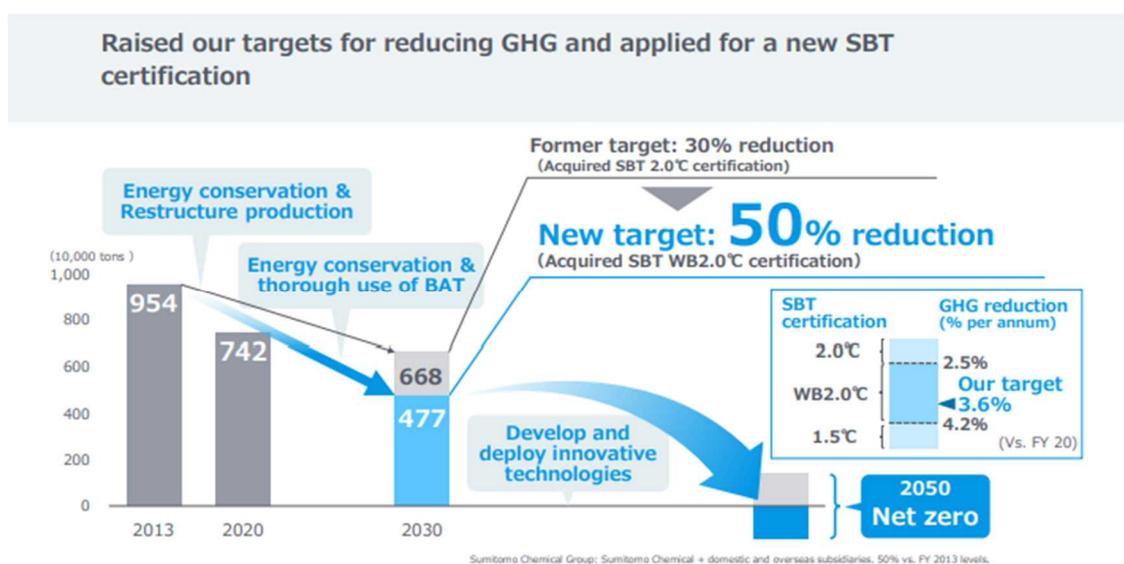
[Overview of Environmental Policy]

In 2010, Sumitomo Chemical established the Energy & Climate Change Office. In 2017, Sumitomo Chemical was the first Japanese company to announce its support for TCFD at that time. In 2018, Sumitomo Chemical obtained Science Based Target certification (target of 2.0°C) as the world's first diversified chemicals company, and has continued to take advanced measures.

Sumitomo Chemical's Grand design toward achieving carbon neutrality is "obligations," for which it approaches zero GHG emissions for the Sumitomo Chemical Group, and also "contributions", for which it reduces global GHG emissions through the group's products and technologies.

Regarding "obligations," the medium-to long-term GHG emission reduction targets were further raised in 2021, with a reduction of 50% in total GHG emissions by 2030 compared to 2013 (Scope 1, 2) and a net-zero in 2050. Science Based Target accreditation (target of WB 2.0°C) has been obtained by setting this target. According to Sumitomo Chemical, the Company's goal setting is close to the 1.5°C target even within the SBT-certified WB 2.0°C target.

Figure 1. Targets for GHG reductions at the Sumitomo Chemical Group



(Source: Sumitomo Chemical ESG Meeting (Dec.14, 2021))

Next, in the field of "contributions," the Company will strive to be the first to realize social implementation of products and technologies that contribute to global GHG reduction from the following three perspectives.

1. Provide products and solutions that contribute to carbon neutrality (CN)
2. Drive the development of technologies that contribute to CN and their rapid deployment into society
3. Take on long-term challenges including the development of carbon negative technologies

[Overview of Evaluation Targets]

The scope of this evaluation is the Transition Loan Framework (this framework) in which SUMITOMO JOINT ELECTRIC POWER CO., LTD. (Sumitomo Joint Electric Power) uses funds for new investment or refinancing in the construction of LNG-fired power generation facilities to be constructed on the premises of the Sumitomo Chemical Ehime Works in Niihama City, Ehime Prefecture, and LNG-fired power generation facilities to be constructed on the premises of the Chiba Works by Sumitomo Chemical. The Ehime Works' LNG-fired thermal power plant is expected to reduce CO<sub>2</sub> by converting from oil-and heavy-oil-fueled power generation facilities to gas-turbine power generation facilities with a high-efficiency combined-cycle power generation system. It also uses the by-product gas (hydrogen) generated in the chemical plant as fuel, and effectively utilizes the surplus low-pressure steam generated in the power

generation process within the chemical plant, thereby reducing emissions by approximately 650,000 tons/year, equivalent to approximately 13% of CO<sub>2</sub> emitted by the Ehime Works. The Chiba Works also plans to reduce 240,000 tons/year or more, which is equivalent to about 20% of CO<sub>2</sub> emitted by the Chiba Works, by converting power generation from petroleum coke to gas turbine power generation using a combined cycle power generation system using LNG fuel, and by effectively utilizing excess low-pressure steam generated in the power generation process at the same facility.

Construction of these LNG-fired power generation facilities is positioned as one of the main measures to reduce GHG emissions by 50% from the fiscal 2013 level by 2030, which is Sumitomo Chemical's mid-and long-term environmental target. In the future, the use of hydrogen in gas turbines will also be possible through future technological development and progress in social implementation. Therefore, JCR confirmed that it was not a technology to lock in fossil fuels. Based on the above, JCR evaluates that this use of funds will greatly contribute to the Sumitomo Chemical Group's medium-to long-term transition strategy

#### [Appropriateness of Transition Strategy and Contribution of the Use of Proceeds]

JCR confirmed that this Framework has been properly established and disclosed (to be established) for all four elements required by the Transition Finance and the Basic Guidelines on Climate Transition Finance issued by the Financial Services Agency, the Ministry of Economy, Trade and Industry, and the Ministry of the Environment and by the Climate Transition Finance Handbook ("CTFH") issued by the International Capital Markets Association ("ICMA") in December 2020.

#### [Management and Transparency of the Proceeds]

JCR confirmed that the standards for selecting the use of funds were appropriate as those for the Climate Transition Finance, which specified the use of proceeds, and that the relevant departments and management were appropriately involved in the selection process. The allocation plan, tracking management system and reporting of the proceeds are properly planned. Based on the above, JCR evaluates that the management and operation system for financing under the Framework is appropriate and that transparency is ensured. Furthermore, regarding the organization's environmental initiatives, the management has positioned environmental issues as a high priority. JCR confirmed that in the grand design for carbon neutrality announced at the ESG briefing held in December 2021, the Sumitomo Chemical Group set an ambitious target for reducing GHG emissions from the production process, which was certified by Science Based Target Initiative<sup>2</sup> as "well below a level of 2.0°C," and that it has a system and concrete investment plans in place to achieve this target. This indicates that the organization's approach to the environment is innovative and ambitious, and that the commitment of management is clear.

Based on the JCR Green Finance Evaluation Methods, JCR assigned "gt1(F)" for the evaluation of "Green/Transition Evaluation (Use of Proceeds)," "m1(F)" for the evaluation of "Management, Operation, and Transparency Evaluation." Consequently, JCR assigned "Green 1 (T)(F)" for the overall evaluation of the "JCR Climate Transition Finance Evaluation" for the Transition Loan Framework. Evaluation results are discussed in detail in the next chapter. The Framework is considered to meet the standards for items required by "Green Loan Principles<sup>3</sup>," "CTFH<sup>4</sup>," "Basic Guidelines for Climate Transition Finance<sup>5</sup>," and "Green Loan and Sustainability Linked Loan Guidelines<sup>6</sup>."

<sup>2</sup> SBTi is a joint initiative by WWF, CDP (formerly Carbon Disclosure Project), World Resources Institute (WRI), and the United Nations Global Compact. Promote corporates to set reduction targets consistent with scientific knowledge toward the goal of keeping global average temperature increases from climate change to 1.5 degrees, compared with pre-industrial levels. It emphasizes and recommends setting corporate visions and targets for greenhouse gas reduction based on long-term perspectives, such as 2050. Guidance and tools to support this goal setting have also been developed. In October 2020, more than 1000 companies worldwide committed to setting ambitious reduction targets under SBTi, making it a global standard for setting targets in line with the Paris Agreement.

<sup>3</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>4</sup> ICMA Climate Transition Finance Handbook <https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/CTFH-December-2020-091220.pdf>

<sup>5</sup> Financial Services Agency, the Ministry of Economy, Trade and Industry, and the Ministry of the Environment's Basic Guidelines for Climate Transition Finance (May 2021) <https://www.meti.go.jp/press/2021/05/20210507001/20210507001-1.pdf>

<sup>6</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 Target Projects in Each Evaluation Item and JCR Evaluation

### Evaluation Phase 1: Climate Transition Evaluation

Based on the current situation and JCR's evaluation, as detailed below, JCR assessed that 100% of the use of funds under the Framework is for Green Project and/or Environmental Improvement Effect Project (climate transition project) to be implemented during the transition phase to mitigate climate change, and evaluated Phase 1: Climate Transition Assessment at the highest level ("gt1(F)").

### 1. JCR's Key Consideration in this factor

#### Matters to be confirmed in this section

- ✓ Can the proceeds be used for Green Projects with clear environmental improvement effects and/or projects with environmental improvement effects to be implemented at the transition stage (Climate Transition Projects)?
- ✓ When a negative impact on the environment is anticipated in the use of funds, whether the impact is sufficiently examined by a specialized internal department or an external third-party organization, and necessary avoidance and mitigation measures are taken?

Does the borrower meet the four elements prescribed by ICMA's CTFH?

- ✓ Is there consistency of financial uses with the Sustainable Development Goals ("SDGs")?

### 2. Current Situation of Evaluation Subjects and JCR Evaluation

#### 2-1. Outline of Use of Proceeds

<Project 1>

Project	LNG-fired Thermal Power Generation Facilities Construction Project in Niihama City, Ehime Prefecture
Business Operator/Fund Raiser	Sumitomo Joint Electric Power
Location	5-1 Soubiraki-cho, Niihama City, Ehime Prefecture, and the area beyond the shore
Type of Driving Force	Gas turbines and steam power
Power Output	150,000 kW (generating end)
Type of fuel	LNG, by-product gas (hydrogen)
Scheduled start of operation	Around autumn 2022

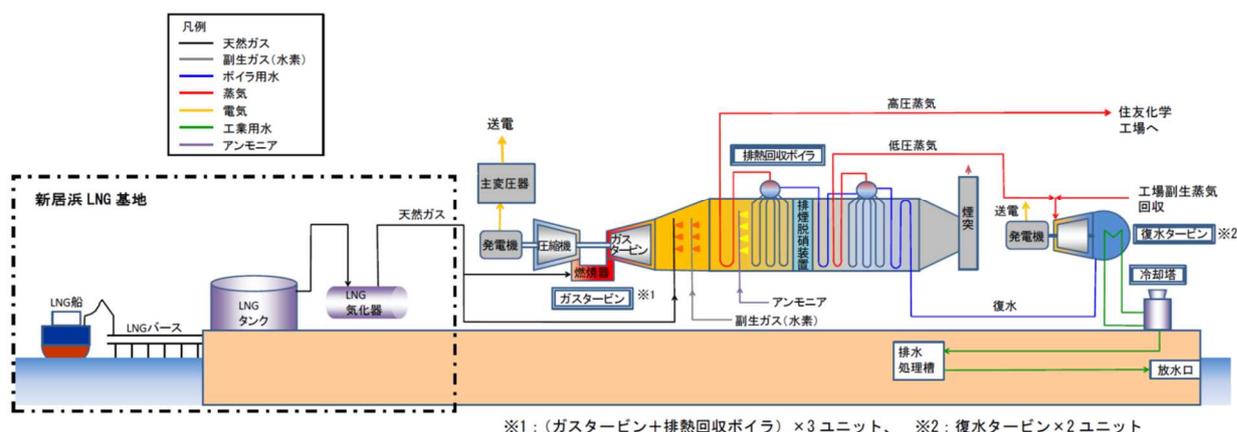
[Main environmental performance]

Sumitomo Joint Electric Power will construct the Niihama North Gas-Fired Power Plant in the Niihama area of Sumitomo Chemical's Ehime Works in order to provide a stable and continuous supply of high-quality electricity with low environmental impact to Sumitomo Group companies and domestic electricity demand in the future. The

following energy-efficiency improvement measures and CO<sub>2</sub> reduction effects are expected for this power generation facility.

- ✓ Reducing CO<sub>2</sub> Emissions by Shifting Fuel from Coal and Heavy Oil to LNG
- ✓ Plans to use natural gas as the main fuel and effectively use by-product gas (hydrogen) generated at chemical plants
- ✓ Building a cogeneration system  
A thermoelectric supply system that recovers the retained heat of exhaust gas from internal combustion power generation and gas turbine power generation to generate steam and hot water, which are then used for heating and cooling and as a heat source in factories.
- ✓ Combined cycle power generation system  
A power generation system combining a gas turbine and a steam turbine. By boiling water using the residual heat of the exhaust gas after the gas turbine is rotated, and then rotating the steam turbine to generate electricity, more electricity can be produced than the usual power generation method.
- ✓ The operation of this LNG-fired power plant is planned to reduce about 650,000 tons/year, equivalent to about 13% of CO<sub>2</sub> emissions from the Ehime Works.

Figure 2. Conceptual diagram of the Niihama North Gas-Fired Power Plant



(Source: SUMITOMO JOINT ELECTRIC POWER CO., LTD Press Release)<sup>7</sup>

In conjunction with the construction of this thermal power plant, Sumitomo Chemical has decided to construct an LNG terminal on the site of the Ehime Plant through a joint investment by five companies. Sumitomo Joint Electric, a group company, is planning to reduce CO<sub>2</sub> emissions at the Sumitomo Chemical Ehime Works by using the LNG supplied by this terminal at this thermal power plant.

<Project 2>

Project	LNG-fired Thermal Power Generation Facilities Construction Project in Sodegaura City, Chiba Prefecture
Location	2-1, Kitasode, Sodegaura City, Chiba (on the premises of Chiba Works)
Type of Driving Force	Gas turbine power generation facilities and exhaust heat recovery boilers

<sup>7</sup> Sumitomo Joint Electric Power Press Release (February 2018) Construction of the Niihama-Kita Thermal Power Plant <https://www.sumikyoko.jp/wp-content/uploads/2018/02/441477ceec5a2897ba4f6b6aea3ce142.pdf>

Power Output	Generation of 45,000kW or more, Vapor of 80 tons / hour or more
Type of fuel	LNG
Scheduled start of operation	Around autumn 2023

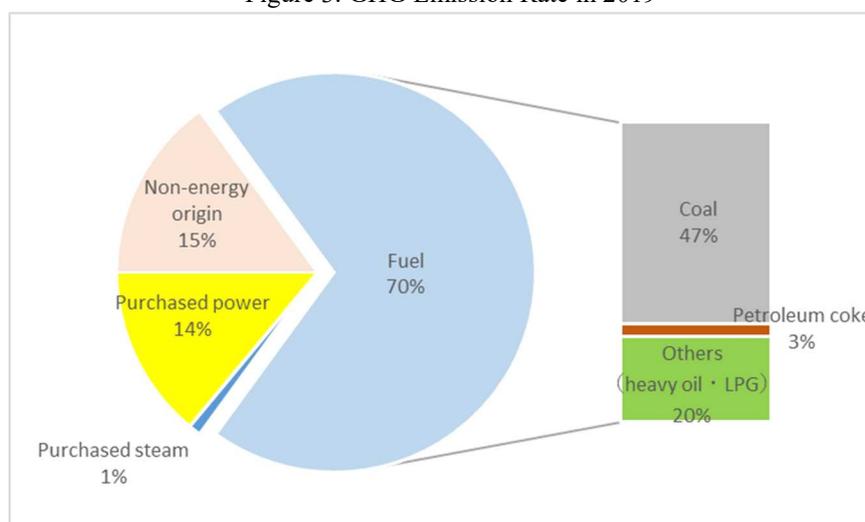
[Main environmental performance]

Among the thermal power generation facilities operated at the Chiba Works, Sumitomo Chemical will abolish petroleum coke power generation facilities and construct new gas turbine power generation facilities with high efficiency of combined cycle power generation system using LNG as fuel. The following energy-efficiency improvement measures and CO<sub>2</sub> reduction effects are expected for this power generation facility.

- ✓ Fuel conversion from petroleum coke to LNG
- ✓ Effective use of surplus low-pressure steam generated in the power generation process in chemical plants
- ✓ It will also supply electricity and steam to neighboring company of the Sumitomo Chemical Group KOEI CHEMICAL COMPANY, LIMITED (Koei Chemical).
- ✓ The plant is expected to reduce CO<sub>2</sub> emissions by 240,000 tons/year, or about 20% of the CO<sub>2</sub> emitted from the Chiba Plant. Koei Chemical expects to reduce 3,000 tons/year of CO<sub>2</sub> emissions, which is about 6% of the CO<sub>2</sub> emitted from the Chiba Works, by receiving electricity and steam from the Chiba Works.<sup>8</sup>

Of the Sumitomo Chemical Group's Scope1 and 2 emissions, Scope1's fuel-derived emissions account for 70% of the total, with the largest emissions from coal and petroleum coke. The projects covered by this framework are the largest CO<sub>2</sub> emission measures in the Sumitomo Chemical Group. Significant environmental improvement benefits are expected.

Figure 3. GHG Emission Rate in 2019



(Source: prepared by JCR from Ministry of Economy, Trade and Industry 4th Study Group on the Ideal Gas Business for 2050 Material 4 Sumitomo Chemical Explanatory Material)

**This use of funds corresponds to "energy efficiency" in the Green Loan Principles and "projects for energy efficiency" among the uses of funds illustrated in the Ministry of the Environment's Green Loan and Sustainability Linked Loan Guidelines.**

<sup>8</sup> The partnership project with Koei Chemical has been decided by the Ministry of Economy, Trade and Industry to grant a support subsidy for promoting investment in energy conservation (project to support businesses for rationalization of energy use, etc.) in fiscal 2020.

## 2-2. Negative impact on the environment and others

Sumitomo Chemical and Sumitomo Joint Electric Power are striving to reduce the environmental impact of the target projects by conducting environmental assessments or implementing voluntary reduction measures as follows.

### (1) Negative Impacts on the Environment in the Implementation of Businesses

#### 1. LNG-fired Thermal Power Generation Facilities Construction Project in Niihama City, Ehime Prefecture

Since this project is the scale of the project subject to environmental impact assessment, preliminary evaluations are conducted during the construction period and after the start of operation for the following items, and the results indicate that the impact is small.

- Atmospheric environment
- Noise and vibration wave sound
- Cooling tower white smoke
- Water environment
- Ecosystems of terrestrial and marine animals and plants

#### 2. LNG-fired Thermal Power Generation Facilities Construction Project in Sodegaura City, Chiba Prefecture

Since this project does not fall under the "target business scale" stipulated in the Environmental Impact Assessment Act (Ministry of Economy, Trade and Industry) and the Environmental Impact Assessment Regulation of Chiba Prefecture, implementation of environmental impact assessments based on this is unnecessary. However, it is subject to the environmental conservation agreement concluded between Chiba Prefecture and Sodegaura City. Prior consultation was held pursuant to Article 10 of the Agreement, which was approved by the governor of Chiba Prefecture on December 10, 2021.

### (2) Potential Lock-in to Fossil Fuels

Sumitomo Chemical believes that consideration that does not extend the life of LNG use is necessary as a precondition for the continued operation of this power generation facility. To this end, it is conceivable that it will co-fire hydrogen and LNG in the medium term and adapt to it by extracting hydrogen from ammonia in the long term. For both of these methods, the Company recognizes that there are issues to be addresses, such as progress in technological development as a fuel utilization and the activation of distribution, and plans to explore these issues and develop them broadly in the future.

Hydrogen is said to be in good compatibility with natural gas, but compared to natural gas, it has the following combustion characteristics: (i) lower calorific value, (ii) faster combustion speed, and (iii) higher adiabatic flame temperature. In addition, when utilizing the conventional LNG gas turbines, technical issues such as high flame temperature and localized hotspot generation and the necessity of suppression of thermal NOx generation are recognized. At the level of the demonstration experiment, when hydrogen is co-fired in an LNG-fired gas turbine, there are two main points to be modified: (i) the gas compressor needs to be enhanced to obtain the same amount of heat from hydrogen, which has less than 1/3 of the calorific value per unit volume of LNG, and (ii) it is necessary to change the specifications of the combustion cylinder due to the faster combustion speed of hydrogen (there is a possibility of backfire). In both cases, some overseas manufacturers already have compatible models, and domestic manufacturers have completed development, and some are in the stage immediately before commercialization.

This project is the most efficient and low CO<sub>2</sub> emission facility of the Sumitomo Chemical Group from the viewpoint of securing the stable electricity and heat required in the manufacturing process at the Ehime and

Chiba Plants. However, as mentioned above, in the future, it plans to consider conversion of fuel from LNG to lower carbon fuels such as hydrogen, etc. Therefore, JCR evaluates that this project is not a technology locked in to fossil fuels.

(3) Do No Significant Harm Assessment<sup>9</sup>

The use of the proceeds of the Framework may not significantly harm other Green Projects.

(4) Consideration for a Fair Transition

JCR confirmed that there are no employment relationships, etc. that could be adversely affected by the implementation of this project.

### 2-3. Fulfillment of Matters Required in the CTFH

#### Element 1: Borrower's Climate Transition Strategy and Governance

**(1) Whether the borrower that raises funds has a strategy for the transition for climate change mitigation or not.**

In 2010, Sumitomo Chemical established the Energy & Climate Change Office. In 2017, Sumitomo Chemical was the first Japanese company to announce its support for TCFD at that time. In 2018, Sumitomo Chemical obtained Science Based Target certification (target of 2.0°C) as the world's first diversified chemicals company, and has continued to take advanced measures.

Sumitomo Chemical's Grand design toward achieving carbon neutrality is "obligations," for which it approaches zero GHG emissions for the Sumitomo Chemical Group, and also "contributions", for which it reduces global GHG emissions through the group's products and technologies.

With regard to "obligations," the Company will set the following ambitious medium-to long-term goals and promote specific measures to realize them.

Figure 4. Roadmap for Medium-to Long-Term GHG Reduction



(Source: Sumitomo Chemical ESG Meeting (Dec.14, 2021))

<sup>9</sup> To verify whether implementing the project will hinder other green-eligible projects (projects that contribute to climate change adaptation, pollution/contamination prevention, clean water and ocean conservation, recycling-oriented economies, energy conservation, and the protection of the ecosystem).

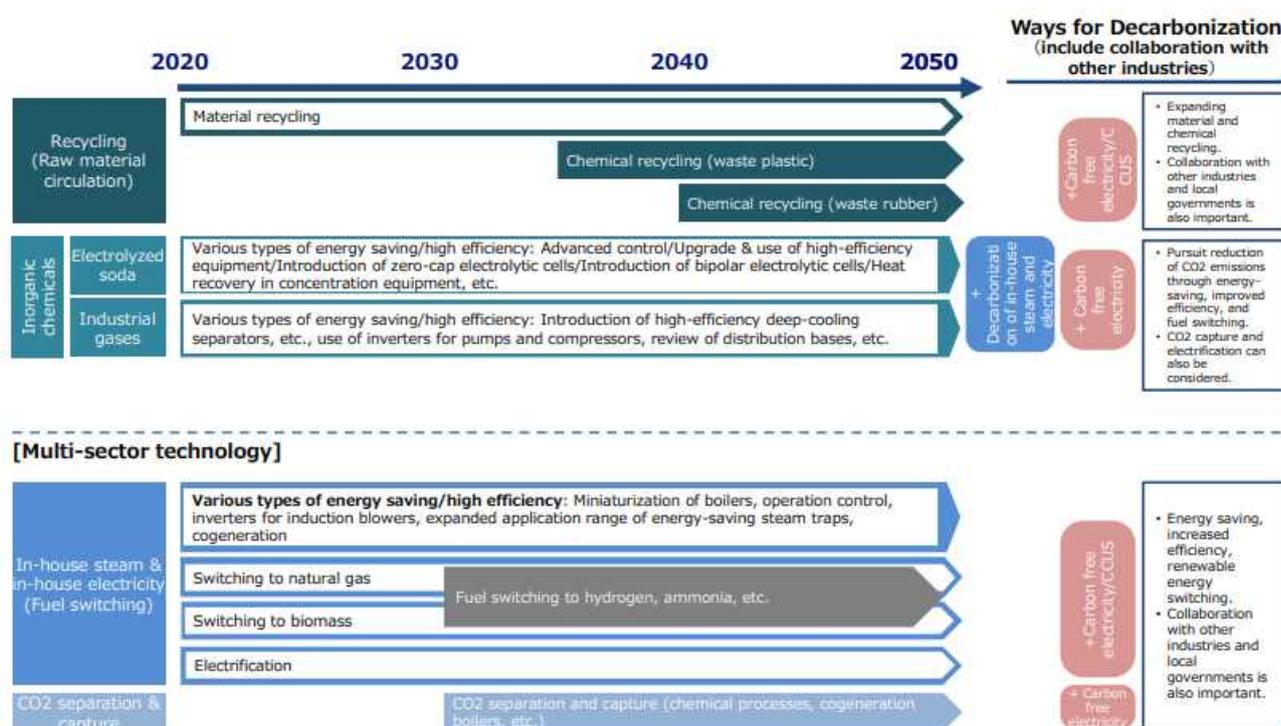
Next, in the field of "contributions," the Company will strive to be the first to realize social implementation of products and technologies that contribute to global GHG reduction from the following three perspectives.

1. Provide products and solutions that contribute to carbon neutrality (CN)
2. Drive the development of technologies that contribute to CN and their rapid deployment into society
3. Take on long-term challenges including the development of carbon negative technologies

[Consistency with Technology Roadmap in the Chemical Field on "Transition Finance"]<sup>10</sup>

According to the Technology Roadmap established by the Ministry of Economy, Trade and Industry, it is important for Japan's chemical industry to not wait for the establishment of decarbonization technologies, but to continue to promote "transition" such as energy conservation and energy conversion, as well as research and development, during the transition period looking ahead to 2030 and 2040, and products that contribute to the decarbonization of other industries can be eligible for transition financing. As the chemical field covers a wide range of materials, it is necessary to examine decarbonization technologies tailored to each product and manufacturing process, but three major measures can be considered: (i) heat source conversion, (ii) raw material conversion, and (iii) raw material recycling. In particular, the use of funds in this framework relates to (i) heat source conversion and is consistent with the roadmap assumed in the following multiple technologies.

Figure 5. Technology Roadmap in the Chemical Field (Excerpts from technologies related to multiple fields)



(Source: METI Technology Roadmap in the Chemical Field on "Transition Finance")

Based on the above, JCR assesses that the use of funds set forth in this framework is the main measure for reducing GHG emissions by 50%, which is the target for 2030, and that it will contribute to expanding Sumitomo

<sup>10</sup> Ministry of Economy, Trade and Industry December 2021 <https://www.meti.go.jp/press/2021/12/20211210004/20211210004-1.pdf>

Chemical's contribution to CO<sub>2</sub> reduction and is a strategy for the transition of the Sumitomo Chemical Group to mitigate climate change.

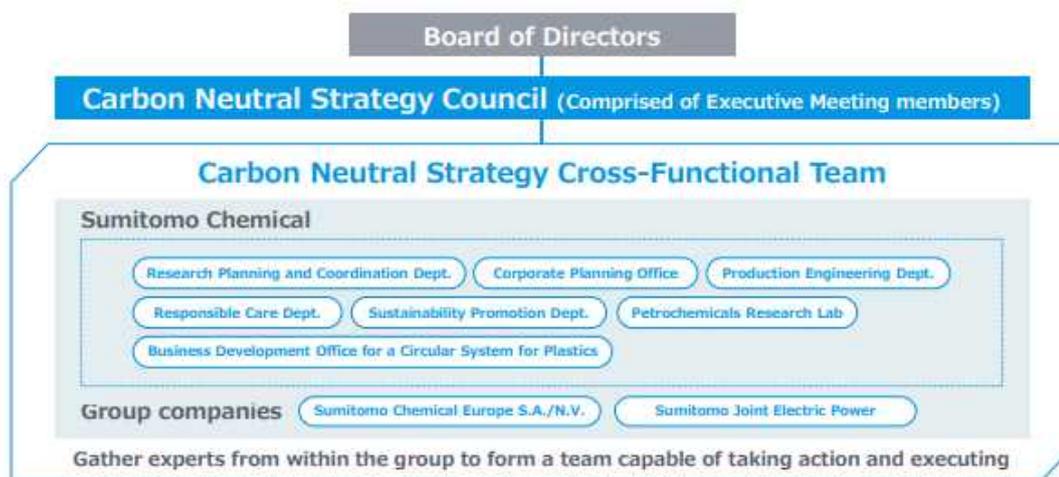
**(2) The purpose of using the "Transition" label in procuring funds to contribute to the realization of corporate strategies for Borrower, etc. to move to a business model that can effectively address climate change-related risks and contribute to the achievement of the goals of the Paris Agreement.**

As can be seen from Sumitomo Chemical's business philosophy since its foundation, the Company's business activities themselves can contribute to reducing society's GHG reduction through their own products and technologies, in addition to reducing their own emissions. Therefore, JCR assesses that the financing is intended to help the Group realize its corporate strategy to make a transition to a business model that will enable it to effectively address climate change-related risks and contribute to achieving the goals of the Paris Agreement.

**(3) The governance system established to ensure the effectiveness of the transition strategy.**

The Sumitomo Chemical Group has established the following organizational structure dedicated to advancing carbon neutrality by gathering experts from within the group, and has established a governance system to ensure the effectiveness of the transition strategy.

Figure 6. Organization for the advancement of carbon neutrality



(Source: Sumitomo Chemical ESG Meeting (Dec.14, 2021))

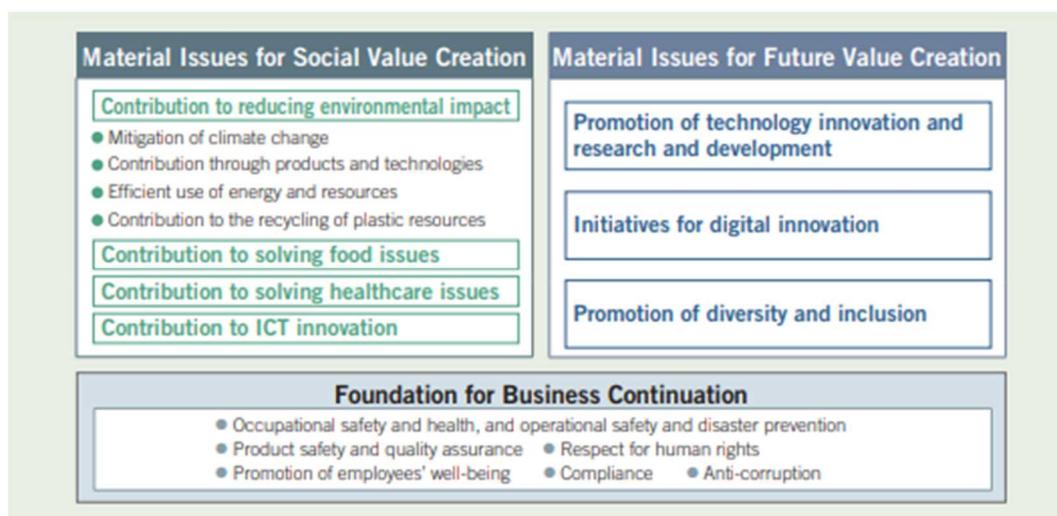
**Element 2: Business Model Environmental Materiality**

According to data from the National Institute for Environmental Studies, CO<sub>2</sub> emissions from the chemical industry were 56 million tons (fiscal 2019), accounting for about 15% of the industrial sector. One of the key issues in the Company's business model is promoting carbon decarbonization in the chemical industry, where the products it handles are diverse, and developing the provision of products that contribute to reducing CO<sub>2</sub> emissions in other industries.

Among the material issues (materiality) for sustainable value creation, the Sumitomo Chemical Group has identified mitigation of climate change as the first among its contributions to reducing environmental impact, particularly in relation to material issues for social value creation. In addition, JCR evaluates that the Sumitomo Chemical Group is addressing this issue as one of its most important issues, as it has set a GHG reduction target

that is certification of SBTi's WB2.0 (target of less than 2°C) ahead of the industry in the Sumitomo Chemical's Grand design toward achieving carbon neutrality, and has adopted internal carbon pricing when formulating investment plans.

Figure 7. Sumitomo Chemical's Material Issues



(Source: Sumitomo chemical Annual Report2021)

### Element 3: Climate Transition Strategy to be Science-based Including Targets and Pathways

JCR confirmed the following four points on the road map related to the transition of the Sumitomo Chemical Group.

- (1) Quantitatively measurable, covering Scope1 and 2 (it is desirable that Scope 3 be targeted to the extent feasible)

The Sumitomo Chemical Group sets GHG reduction targets as follows.

Items	Boundary	Goals	Fiscal 2020 Results
Greenhouse gas emissions (Scope 1+2)	Sumitomo Chemical Group Consolidated	Reduce 50% compared to fiscal 2013 levels by fiscal 2030 Getting to a net zero by fiscal 2050	Reduced 22% relative to fiscal 2013
Greenhouse gas emissions (Scope 3)	Sumitomo Chemical Group Consolidated	Reduce 14% compared to fiscal 2020 levels by fiscal 2030 Strive to become carbon neutral by fiscal 2050	Held Supplier briefing online due to the COVID-19 pandemic

※ Scope 1: Direct emissions from factory operations, such as fuel use in manufacturing processes

Scope 2: Indirect emissions from purchases of power and heat from outside the factory

Scope 3: Emissions from the manufacturing and transportation of purchased raw materials (Limited to GHG emissions from Category 1 and Category 3 defined by the GHG Protocol)

(Source: prepared by JCR from Sumitomo Chemical Sustainability Data Book 2021, Sumitomo Chemical ESG Meeting (Dec.14, 2021) and its website)

With regard to the setting of targets, JCR evaluates that the scope of the targets set by the Sumitomo Chemical Group is quantitatively measurable and it considers the entire value chain, given that the targets cover Scope 1, 2, 3 and that the Sumitomo Chemical Group is making efforts to understand Scope 3 even though the supply chain is extensive and difficult to grasp, and is actively encouraging suppliers to do so.

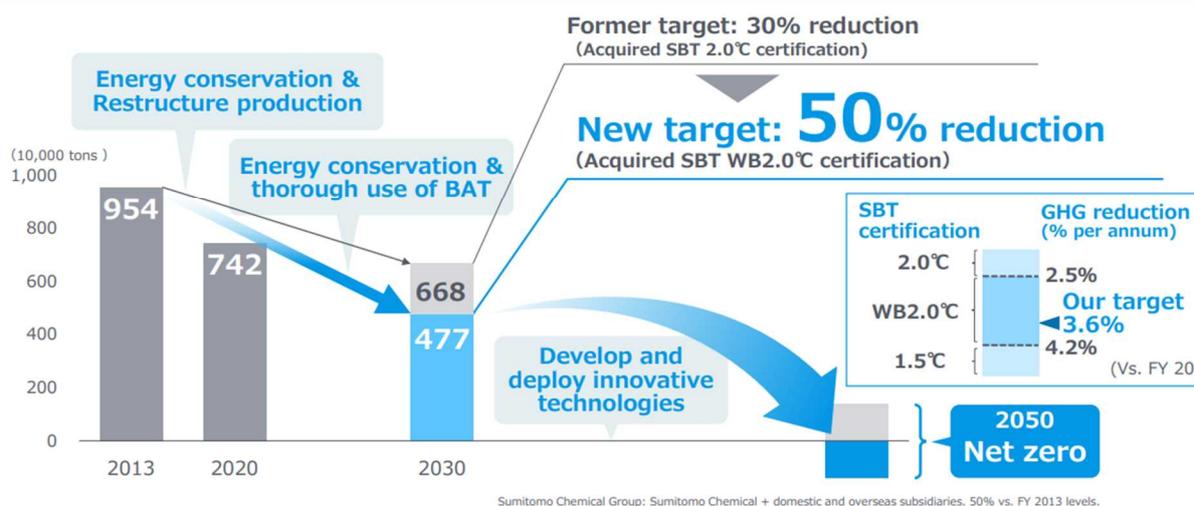
(2) Consistent with targeting based on generally accepted scientific evidence

Sumitomo Chemical has been certified as meeting SBTi's WB2.0 target in December 2021. SBTi's WB2.0 means that the increase in the global average temperature to well below 2°C above pre-industrial levels, subject to targets for reducing total GHG emissions (Scope 1, 2).

Regarding "obligations," the medium-to long-term GHG emission reduction targets were further raised in 2021, with a reduction of 50% in total GHG emissions by 2030 compared to 2013 (Scope 1, 2) and a net-zero in 2050. Science Based Targets certification (target of WB 2.0°C) has been obtained by setting these targets. According to Sumitomo Chemical, the Company's goal setting is close to the 1.5°C target even within the SBT-certified WB2.0°C target.

Figure 8. Targets for GHG reductions at the Sumitomo Chemical Group

**Raised our targets for reducing GHG and applied for a new SBT certification**

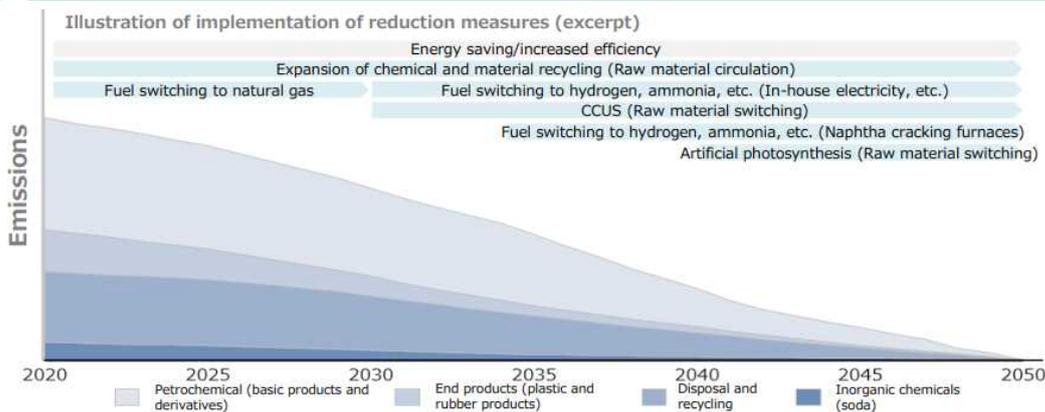


(Source: Sumitomo Chemical ESG Meeting (Dec.14, 2021))

In addition, JCR evaluates that it is consistent with the technology roadmap in the chemical sector on "Transition Finance" formulated by the Ministry of Economy, Trade and Industry.

Figure 9. Technology Roadmap in the Chemical Field of the Ministry of Economy, Trade and Industry

**Assumed CO2 Reduction Pathway\*1, 2**



Main reduction methods	Target	Overview
(1) Fuel switching	All sectors	<ul style="list-style-type: none"> <li>Fuel for naphtha cracking furnaces and in-house power generation will be switched to natural gas in the short term, and hydrogen, ammonia, etc. in the medium to long term.</li> <li>Incineration and thermal recycling of waste plastics and waste rubber will be reduced, and chemical and material recycling will be expanded.</li> <li>Chemicals and products will be switched to those that use biomass and CO2-derived raw materials. Artificial photosynthesis technology will also be used.</li> </ul>
(2) Raw material circulation (Recycling)	Disposal & recycling, petrochemicals	
(3) Raw material switching	Petrochemicals, End products	

\*1: Expected reduction in emissions in Japan's chemical industry as the sector covered by this Roadmap. In fact, chemical companies will all aim to achieve carbon neutrality under their own long-term strategies, so they are not required to conform with the above path.  
 \*2: Advances in energy-saving technologies, a stable and inexpensive supply of new fuels such as hydrogen and ammonia, CCUS and related infrastructure including DAC and others in collaboration with other industries, and the establishment of new social systems such as a circular economy are assumed to be in place.

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(Source: Technology Roadmap in the Iron and Steel Sector, Ministry of Economy, Trade and Industry)

**Element 4: Transparency is assured in the investment plan for the transition**

At the ESG briefing held in December 2021, the Sumitomo Chemical Group announced its investment plan based on internal carbon pricing as follows.

Figure 10. Investment plan for carbon neutrality



(Source: Sumitomo Chemical ESG Meeting (Dec.14, 2021))

## <JCR's Views on Satisfying the Transition Finance Handbook and Basic Guidelines>

Based on the above, JCR has evaluated that this framework satisfies the four elements required by the Climate Transition Finance Handbook.

### 2-4. Consistency with SDGs

JCR has assessed that the use of resources in the Framework will contribute to the following SDGs goals and targets, with reference to ICMA's SDGs mapping.



#### **Goal 3 : Good health and well-health**

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**Target3.9** By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination



#### **Goal 7: Affordable and clean energy**

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**Target7.3** By 2030, double the global rate of improvement in energy efficiency



#### **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



#### **Goal13 : Climate action**

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**Target13.3** Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

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

Based on the current situation described in detail below and JCR's evaluation of it, JCR evaluated that the management and operation system was firmly established, that the transparency was extremely high, and that the implementation of the project as planned and the appropriation of the procurement funds were sufficiently expected. Based on this evaluation, Phase 2: Management, Operation, and Transparency Evaluation was placed at the highest level, "m1(F)."

### 1. Appropriateness and transparency of the standards for selecting the use of funds and its process

#### 1-1. JCR's Key Consideration in this factor

In this section, JCR confirms that the objectives to be achieved through the green/Transition Projects, the criteria for selecting green projects, the appropriateness of the process, and the series of processes are appropriately disclosed to lenders.

#### 1-2. Current Situation of Evaluation Targets and JCR Evaluation

##### a. Goal

The Sumitomo Chemical's corporate philosophy and aspirations are shown in the diagram below.

Figure 11. The Framework of Sumitomo Chemical's Corporate Philosophy



(Source: Sumitomo chemical Annual Report2021)

Sumitomo Chemical got its start by manufacturing fertilizers from harmful gases emitted from the Bessi Copper Mine smelting operations, thereby overcoming environmental problems and improving agricultural productivity. From this, it can be said that since its foundation, Sumitomo Chemical has conducted its business based on the idea of solving the issues facing society through its business. Sumitomo Chemical's management philosophy is based on one of the Sumitomo Spirits: "*Jiri-Rita Koushi-Ichinyo*: Sumitomo's business must benefit society at large, not just our own interests. (This means that Sumitomo's business must not only advance its own interests but also contribute to the nation and society)." Sumitomo Chemical has three business philosophies: creating new value by building on innovation, contributing to society through business activities, and developing a vibrant corporate culture and continuing to be a company that society can trust.

The Sumitomo Chemical Group's Basic Principles for Promoting Sustainability are stipulated as follows.

#### Basic Principles for Promoting Sustainability

We at the Sumitomo Chemical Group are committed to promote sustainability by acting in accordance with Six Basic Principles, guided by the Sumitomo Spirit and the Group's Business Philosophy, namely contributing to establishment of sustainable society through achieving sustainable growth of business.

Principle 1: Creating economic value which helps create social value (Promoting our credo "Our businesses must benefit society at large, not just our own interests (*Jiri-Rita Koushi-Ichinyo*)")

We are committed to promote creating economic value (*jiri\**) which helps to create social value (*rita\**) through offering technological or other innovation so that we can continue to grow as a business group that earns the trust and confidence of society.

Principle 2: Contribution to solving globally vital issues

We are committed to contribute to solving a variety of issues that are globally vital, such as establishing diverse and inclusive society and achieving the Sustainable Development Goals (SDGs), as well as doing business in compliance with accepted universal standards and principles, including those concerning human rights, labor, safety, the environment and anti-corruption.

Principle 3: Active participation in global initiatives

We are committed to play a leadership role in multilateral initiatives through actively participating in various partnerships domestically and overseas with international organizations, national or local governments, business corporations, industrial associations, universities, academic circles, civic communities, etc.

Principle 4: Collaboration with stakeholders

We are committed to work closely with various stakeholders through promoting spontaneous disclosure of information and open dialogue on the targets of our sustainability promotion initiatives and the progress of their implementation.

Principle 5: Top management commitment and participation by all

We are committed to carry out initiatives toward promoting sustainability, led by our top management having taken firm pledges to this end and advanced by all officers and employees, across the Sumitomo Chemical Group with a shared strong sense of mission and great enthusiasm.

Principle 6: Enhancing Corporate Governance

We are committed to assess and improve our activities continually and proactively for promoting sustainability by reviewing the progress of the activities periodically and from holistic viewpoints

The Sumitomo Chemical Group aims to realize sustainable growth and a sustainable society through value creation based on the above management philosophy system. JCR assesses that the initiatives aimed at mitigating climate change through the use of this framework are consistent with the Sumitomo Chemical Group's Management Philosophy, Basic Principles for Sustainability Promotion, etc.

## **b. Selection criteria**

The eligibility criteria for the use of funds in this framework formulated by the Sumitomo Chemical Group are as follows.

- Consistency with the Sumitomo Chemical Group's Transition Strategy
- In addition, the status of compliance with the code of conduct and policies and guidelines established by Sumitomo Joint Electric Power, which is the business entity, and us, respectively
- Compliance with environment-related laws and regulations required of local governments where projects are implemented and implementation of environmental assessments as necessary (planned)
- Compliance with the eligibility criteria for each of the basic guidelines, principles and guidelines covered

JCR evaluates that the above selection criteria are appropriate.

## **c. Process**

Sumitomo Chemical discusses the selection and evaluation of projects subject to this framework in the Finance Department, Responsible Care Department, and Production Technology, and evaluates and selects projects after confirming the matters stipulated as selection criteria. The results of the selection are ultimately reported to the relevant officer of Sumitomo Chemical.

JCR considers the selection process is appropriate as relevant departments and management within Sumitomo Chemical are involved in the process.

As the selection criteria and process of this framework are scheduled to be published in this Evaluation Report, etc., JCR evaluates them as transparent.

## 2. Appropriateness and transparency of cash management

### 2-1. JCR's Key Consideration in this factor

It is generally assumed that the management method of the proceeds varies by the borrower. JCR assesses whether proceeds procured through the Loans are appropriated to the Green/Transition projects and whether a mechanism and internal system are in place to enable easy tracking and management of the appropriation of proceeds.

JCR also attaches importance to evaluating the management and operation of the unallocated proceeds as well as to confirming that the proceeds procured from the Loan will be allocated to the Green/Transition projects at early stage.

### 2-2. Current Situation of Evaluation Targets and JCR Evaluation

Sumitomo Chemical plans to manage the funds raised by this framework as follows.

(1) LNG-Fired Power Generation Facilities Construction Project in Niihama City, Ehime Prefecture

Actual expenditure and appropriation status are managed by electronic file or accounting system in the Accounting Department of the Corporate Planning Department of Sumitomo Joint Electric Power.

The proceeds were used on the same day of loan disbursement to repay a bridge loan from a financial institution that was raised in March 2021 for the expenditure of the project in full.

(2) LNG-Fired Power Generation Facilities Construction Project in Sodegaura City, Chiba Prefecture

Sumitomo Chemical's Finance Department plans to manage actual expenditures and appropriations through electronic files or an accounting system.

JCR confirms that, in addition to the above, Sumitomo Chemical maintains the related documents until they become due, and that external and internal audits are planned to be conducted appropriately.

JCR evaluates that Sumitomo Chemical's cash management is reasonable and transparent because the tracking management system for fund procurement under this framework has been properly established, and the tracking management of the appropriated status and the internal control thereof have been properly planned, and the method for managing the unallocated funds has been properly planned.

### 3. Reporting System

#### 3-1. JCR's Key Consideration in this factor

This section evaluated whether the disclosure system for lenders, etc. before and after the procurement of the Loan is planned in detail and in an effective manner.

#### 3-2. Current Situation of Evaluation Targets and JCR Evaluation

##### a. Reporting on the status of appropriation of funds

After disbursement of the loan, until the appropriation is completed, at least annually, the appropriation is disclosed to the lender in either a report or on the website, in the Synthesis Report, or in other disclosure materials, until the full amount of the proceeds has been appropriated for financing eligible projects. Sumitomo Chemical also reports to the lender, as appropriate, any significant changes in circumstances after all funding has been appropriated. The proceeds will be appropriated after the loan is disbursed until the target project's generating facility is put into operation. Unappropriated amounts will be managed in cash or cash equivalents until appropriated for the target project.

JCR confirmed that the above funding appropriation reporting is scheduled to occur once a year.

##### b. Reporting on the Effectiveness of Environmental Improvements

By promoting energy conversion centered on the target projects at two sites in Ehime and Chiba, the effect of 890,000 tons/year (650,000 tons/year in Ehime and 240,000 tons/year in Chiba) is expected regarding the GHG emissions of Scope1+2 for the entire Sumitomo Chemical Group compared to the pre-operation of the power generation facilities of the target projects. To identify GHG reductions in each fiscal year, it plans to disclose at least annually its group-wide GHG emissions by Scope on the website, integrated reports, sustainability data books or other disclosures to the extent practicable.

In addition, whenever there is a significant change in the status of construction progress (planned start-up period) prior to the operation of the generating facility of the subject project, Sumitomo Chemical will disclose to the lender any of the reports or its website, integrated reports, or other disclosure materials.

JCR assesses the appropriation of funds and the content of Sumitomo Chemical's assumptions regarding the reporting of environmental improvement effects as appropriate.

## 4. Organizational Efforts for the Environment

### 4-1. JCR's Key Consideration in this Factors

This section assesses whether the borrower's management considers environmental issues to be of high priority in management, whether the transition finance procurement policy and process, criteria for selecting Green/Transition Projects, etc. are clearly positioned by establishing a department that specializes in the environmental field or through collaboration with external organizations, etc.

### 4-2. Current Situation of Evaluation Targets and JCR Evaluation

Sumitomo Chemical's Corporate Business Plan for FY2019 to FY2021 states that it aims to "achieve sustained growth for Sumitomo Chemical and build a sustainable society by creating both economic and social value." In order to steadily advance initiatives aimed at realizing this goal, Sumitomo Chemical has identified four fields directly related to its business, such as contribution to reducing environmental impact, including mitigating climate change and contribution to the recycling plastic resources, and contribution to solving food issues, as Material Issues (materiality) for sustainable value creation. It also identified three issues (materiality) for future value creation, namely, promotion of technology innovation and research and development, initiatives for digital innovation, and promotion of diversity and inclusion. The Sumitomo Chemical Group will continue to implement the measures outlined in the Corporate Business Plan for FY2019 to FY2021, aiming to create both economic value and social value to realize its sustainable growth while contributing to the realization of a sustainable society.

The Sumitomo Chemical Group has established the following sustainability promotion system.

Figure 12. Sustainability Promotion Committee



(Source: Sumitomo chemical web site)

As an organization's approach to climate change issues, Sumitomo Chemical established the Energy & Climate Change Office in 2010, an early stage when compared at the industry and national level. In 2017, the Company announced its endorsement of TCFD recommendations, which were only two Japanese companies at the time. In 2018, the Company was certified as the world's first SBT2.0 target as a diversified chemical company at the time. In 2021, the goal for 2030 was raised, and it received an even more ambitious WB2.0°C target certification. In order to steadily realize the long-term goals, the Carbon Neutral Strategy Council, the Carbon Neutral Strategy Cross-Functional Team, and the Business Development Office for a Circular System for Plastics were established in the same year.

The Sumitomo Chemical Group considers the opinions of its various stakeholders, including shareholders, investors, customers, business partners, and employees, in the establishment of its sustainability strategy, and JCR confirmed that the Group is advancing initiatives to resolve social issues that should be contributed by the Group throughout the value chain.

Based on the above, JCR confirmed that the management of the Sumitomo Chemical Group has positioned global environmental issues, including the prevention of global warming, as a high priority issue for management, that important management issues are identified and incorporated into the Corporate Business Plan for FY2019 to FY2021, and that the entire Group has established a sustainability promotion system and is working to resolve issues. In addition, JCR confirmed that it had established a cross-organizational structure for its own carbon neutrality, that it is working to cooperate with external institutions, experts, universities, and other industries in various measures for carbon neutrality in 2050, and that it had an investment plan for realizing its vision for long-term carbon neutrality.

■ Result of evaluation

Based on the JCR Green Finance Evaluation Methodology, JCR assigned "gt1(F)" for the "Green/Transition Evaluation" and "m1(F)" for the "Management, Operation, and Transparency Evaluation." Consequently, JCR assigned "Green 1(T)(F)" for the "JCR Climate Transition Finance Evaluation" to the Framework. The Framework is considered to meet the standards for items required by "Green Loan Principles," "CTFH," "Basic Guidelines for Climate Transition Finance," and "Green Loan and Sustainability Linked Loan Guidelines."

[JCR Climate Transition Finance Evaluation Matrix]

		Management, Operation, and Transparency Evaluation				
		m1 (F)	m2 (F)	m3 (F)	m4 (F)	m5 (F)
Green/Transition Evaluation	gt1 (F)	Green 1 (T) (F)	Green 2 (T) (F)	Green 3 (T) (F)	Green 4 (T) (F)	Green 5 (T) (F)
	gt2 (F)	Green 2 (T) (F)	Green 2 (T) (F)	Green 3 (T) (F)	Green 4 (T) (F)	Green 5 (T) (F)
	gt3 (F)	Green 3 (T) (F)	Green 3 (T) (F)	Green 4 (T) (F)	Green 5 (T) (F)	Not qualified
	gt4 (F)	Green 4 (T) (F)	Green 4 (T) (F)	Green 5 (T) (F)	Not qualified	Not qualified
	gt5 (F)	Green 5 (T) (F)	Green 5 (T) (F)	Not qualified	Not qualified	Not qualified

(Responsible analysts for this evaluation) Atsuko Kajiwara and Takahiro Yamauchi

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## Important explanation of the Climate Transition Finance evaluation

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

JCR Climate Transition Finance Evaluation, which is assigned and provided by the Japan Credit Rating Agency (JCR), represents JCR's overall opinion at the present time as to the extent to which funds procured from the Transition Financing, which are subject to evaluation, are appropriated for the Green/Transition Projects as defined by JCR, and the extent to which JCR's efforts to manage, operate and ensure transparency of such Transition Financing, etc., and does not fully represent the extent of management, operations and transparency efforts related to the appropriation of funds procured from the Transition Financing and the use of funds, etc.

JCR Climate Transition Finance evaluation evaluates plans or circumstances, such as the appropriation of funds at the time of funding plans or at the time of funding of the Transition Financing, and there is no guarantee that funds will be appropriated or otherwise in the future. In addition, JCR Climate Transition Finance Evaluation does not demonstrate the effect of Transition Finance on the environment and is not responsible for its effect on the environment. JCR confirms that the effects of the funds procured from transition Finance on the environment are measured quantitatively and qualitatively by the borrower or by a third party requested by the borrower, but in principle it does not directly measure the effects.

### 2. Methods used in the conduct of this evaluation

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

### 3. Relationship with Acts Related to Credit Rating Business

JCR Climate Transition Finance Evaluation is determined and provided by JCR as an ancillary business, which is different from the activities related to the credit rating business.

### 4. Relationship with Credit Ratings

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

### 5. Third Party character of JCR

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

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## Disclaimers

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### ■Glossary

JCR Climate Transition Finance Evaluation: The evaluation assesses the extent to which funds raised through transition financing will be allocated to green/transition projects as defined by JCR, as well as the degree of management, operations, and transparency initiatives related to the use of such transition financing, etc. The evaluation is on a five-point scale, from top to top, and is displayed using the rating symbols Green1 (T), Green2 (T), Green3 (T), Green4 (T), and Green5 (T).

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

- Ministry of the Environment's external green bond reviewer registration
- ICMA (registered as an observer with the International Capital Markets Association)
- Members of UNEP FI Positive Impact Financial Principles Working Groups
- Climate Bonds Initiative Approved Verifier (Climate Change Initiative Accreditation Verification Organization)

### ■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 Securities and Exchange Commission's NRSRO(Nationally Recognized Statistical Rating Organization. (1)Financial institutions, broker dealers, (2) insurance companies, (3) general business corporations, and (4) government and local governments. 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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<Reference>

Check Sheet for Consistency with Basic Guidelines on Climate Transition Finance

February 07, 2022

Japan Credit Rating Agency, Ltd.

Company to be evaluated: SUMITOMO CHEMICAL COMPANY, LIMITED.

The following are the check results of the consistency of the Finance with respect to the items recommended in the Basic Guidelines on Climate Transition Finance (the "Guidelines") published by the Financial Services Agency, the Ministry of Economy, Trade and Industry, and the Ministry of the Environment.

The Guidelines use three expressions: "should," "recommended," and "be considered/possible." These expressions are used in the following context:

- Items described with the word "should" are basic elements that financial instruments labeled as transition finance are expected to have.
- Items described with the word "recommended" are elements that financial instruments labeled as transition finance are optimally recommended to have under the Guidelines although instruments which do not have these items can also be labeled as transition finance.
- Items described with the word "be considered" or "possible" are elements that they are not considered problematic even if financial instruments labeled as transition finance do not have them.

#### **Element 1: Fundraiser's Climate Transition Strategy and Governance**

a) Financing through transition finance **should** aim to implement or incentivize the achievement of transition strategies. Such strategies **should** incorporate a long-term target to align with the goals of the Paris Agreement, relevant interim targets on the trajectory towards the long-term goal, disclosure on the levers towards decarbonization, and fundraiser's strategic planning.

Consistency: ✓

In the Grand design toward achieving carbon neutrality formulated by SUMITOMO CHEICAL COMPANY, LIMITED. (Sumitomo Chemical), the Company aims to realize carbon neutrality by 2050 and promotes it from both "obligations" and "contributions" perspectives. The "obligations" goal is to reduce total GHG emissions by 50% from fiscal 2013 levels by 2030 and to achieve net zero by 2050. The use of funds in the Transition Loan Framework (this Framework) is positioned as a major measure formulated by Sumitomo Chemical to reduce GHG emissions by 50% by 2030. Sumitomo Chemical conducts scenario-based analyses based on scenarios published by IPCC<sup>1</sup> in order to examine the impact on its business and management. In addition, Sumitomo Chemical's

<sup>1</sup> Intergovernmental Panel on Climate Change

medium-term target has been certified as Well-Below2°C (WB2°C, which is well below 2°C from SBTi<sup>2</sup>, and is also positioned as a major measure in the chemical field roadmap of the Ministry of Economy, Trade and Industry's "Transition Finance."

b) A transition strategy **should** serve to explicitly communicate the implementation of an issuer's strategy to transform the business model in a way which effectively addresses climate-related risks and contributes to achieving the goals of the Paris Agreement. Transformation of a business model is not limited to initiatives as an extension of existing businesses but **can** also be transformation based on various other perspectives. It includes fuel conversion that achieves significant carbon and GHG reduction benefits, introduction of innovative technologies, improvement of / changes in manufacturing processes and products, and development and provision of products and services in new fields.

Consistency: ✓

In 2017, Sumitomo Chemical announced its endorsement to TCFD and has identified potential climate-related risks and opportunities. The mid-term target for 2030 has been certified from SBTi at WB2°C.

The Sumitomo Chemical Group's carbon neutral initiative policy is to promote both "obligations" and "contributions" as shown below.

(1) "Obligations" to approach zero GHG emissions for the Sumitomo Chemical Group

- Aim to reduce its total GHG emissions (Scope1+2) by 50% (compared to fiscal 2013) by fiscal 2030

- Aim to achieve carbon neutrality (net zero GHG emissions for its group) by 2050

(2) "Contributions" to reduce global GHG emissions through the group's products and technologies.

- Perspective 1. Provide products and solutions that contribute to carbon neutrality (CN)

- Perspective 2. Drive the development of technologies that contribute to CN and their rapid deployment into society

- Perspective 3. Take on long-term challenges including the development of carbon negative technologies

The internal carbon pricing system has been introduced into the Sumitomo Chemical's investment plan, which considers climate-related risks and opportunities. As a result, medium-term management plans and investment plans have been formulated with the intention of business transformation in a manner that contributes to the realization of the Paris Agreement.

c) The implementation of a transition strategy assumes cases where it affects society and

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<sup>2</sup> Science Based Target Initiative

environment other than climate change, such as employment or stable provision of products and services, through transformation of a business model. In such cases, it is **recommended** that the fundraiser also takes into consideration the impact of business innovations to society and environment other than climate change.

Consistency: ✓

There are no serious environmental or social impacts other than climate change, such as the impact on employment or the stable supply of goods and services by the implementation of the Transition Loan.

d) Climate change-related scenarios **should** be referenced in developing transition strategies. The pathway to transition **should** be planned for respective sector and regions of individual fundraiser, who may generally be placed in a different starting point and pathway to transition.

Consistency: ✓

Sumitomo Chemical has identified possible climate-related risks and opportunities. Based on the assumptions made in the IPCC1.5°C Special Report, the scenario in which various measures are taken to curb the increase in the average temperature of the world to 1.5°C above the pre-Industrial levels, and the scenario in which measures are not taken and the increase by 4°C is analyzed from the aspects of "risks" and "opportunities," and the impact on its business and consideration of future actions are conducted as scenario analysis.

e) Transition strategies and plans must be highly credible in terms of their effectiveness. Therefore, it is **recommended** that a transition strategy and plan are linked to management strategy and business plan, including Medium-term Business Plans.

Consistency: ✓

In the next corporate business plan for FY 2022-2024, in addition to advancing the business portfolio centered on the Green Transformation, the Company has announced an investment plan of 200 billion yen by 2030 toward carbon neutrality.

f) However, because such strategies and plans run for a long period of time, it is **possible** that the content may be modified or adjusted in the event of a major change in the assumed external environment and so on.

Consistency: ✓

Sumitomo Chemical had obtained SBT certification at the 2°C target level with a medium-term target up to 2030, which was formulated in 2018. However, in 2021, Sumitomo Chemical revised its medium-term target in light of changes in the Japanese government's GHG emission reduction target, and obtained SBT certification at WB2°C. In the future, the Company will pursue further

increases in GHG reductions with a view to reacquiring certification at the 1.5°C goal, and the Company expects to change and revise the contents of its efforts to achieve carbon neutrality in line with changes in the external environment.

g) In the initial phase of developing a transition strategy by the fundraiser, it is **considered** as an option for the fundraiser to indicate a plan for future implementation of items described with the words "recommended" and "be considered/possible" in these Guidelines.

Consistency: ✓

All matters that are considered "should" in the Basic Guidelines satisfy their requirements. In addition, almost all items identified as "recommended" and "considered/possible" have met their requirements or are expected to be implemented in the future.

h) In order to secure the effectiveness of the transition strategy, the fundraiser **should** establish an organizational structure for the board of directors and/or other such committee to oversee the activities addressing climate change and for management to play a role in assessing and managing such climate-related activities.

Consistency: ✓

Sumitomo Chemical has established the Sustainability Promotion Committee, chaired by the president and CEO, directly under the Board of Directors, to accelerate comprehensive efforts to resolve social issues, including a comprehensive understanding of sustainability promotion activities, a comprehensive review of contributions to sustainability, and SDGs. In addition, in February 2021, the Carbon Neutral Strategy Council and the Carbon Neutral Strategy Cross-Functional Team were established to formulate and promote the Group's strategy for realizing 2050 Carbon Neutral, and the Company plans to establish milestones and promote initiatives from a long-term and comprehensive perspective.

i) While a transition strategy shall be basically developed by a company in need of finance, it is **possible** for entities to utilize the strategy of companies that are wholly or partially responsible for the initiatives to establish or explain their own strategy, given that the finance supports GHG emissions reduction initiatives of not just a single company but its supply chain.

Consistency: Not applicable

Since this finance is not a financing for the supply chain's greenhouse gas reduction initiatives, and Sumitomo Chemical is building a transition strategy for the group, it is not subject to evaluation.

j) Transition strategies **should** be disclosed in advance in a company's integrated report, sustainability report, statutory documents and other materials for investors (including such

disclosures on the website). This also applies to the other three elements.

Consistency: ✓

The Grand design toward achieving carbon neutrality, Sumitomo Chemical's transition strategy, was announced at the ESG meeting in December 2021 and is also published on its website.

k) It is **possible** to disclose transition strategies and elements concerning the governance guaranteeing that the execution of transition strategies is in alignment with the reporting frameworks such as the Recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD; Final Report).

Consistency: ✓

Sumitomo Chemical has conducted scenario-based analyses consistent with TCFD Framework Disclosure Requirements and expressed support.

l) If the implementation of a transition strategy assumes impacts on society and environment other than climate change, it is **recommended** that the fundraiser explain the view underlying its approaches, etc. to address such impacts and disclose how the strategy on the whole contributes to achieving the Sustainable Development Goals (SDGs) so that the effects can be appropriately evaluated by the financier.

Consistency: ✓

Sumitomo Chemical discloses to lenders through its framework the non-climate-change environmental and social impacts of implementing its Transition Strategy, its responses to them, and its contribution to SDGs achievement. It is also scheduled to be released to the public through JCR's evaluation report.

m) Considering the length of application and other factors, there may be instances when a transition strategy and plan will need to be modified due to major changes in the external environment and relevant conditions that were assumed at a planning phase. In this case, the contents of the modification **should** be disclosed together with the underlying reason in a timely manner.

Consistency: ✓

Sumitomo Chemical revised its medium-term targets for the period up to 2030, which it formulated in 2018, in 2021 in light of changes in the Japanese government's GHG emission reduction targets, and obtained SBT WB2°C certification. The Company will continue to pursue further increases in GHG reductions, with a view to obtaining certification at the 1.5°C target level, and is considering changing and modifying the content of its efforts to achieve carbon neutrality in line with changes in the external environment and other factors. Sumitomo Chemical plans to disclose future strategy and plan changes in a timely manner.

n) In terms of governance, it is **recommended** that disclosures include an organizational structure for overseeing the implementation of a transition strategy and for assessing and managing related initiatives. It is also **recommended** that disclosures include the specific roles of the constituent organizations and the management and the process by which the content of deliberations is reflected in management.

Consistency: ✓

The organizational structure, specific roles, and the process by which the deliberations on the transition strategy of the Sumitomo Chemical Group are reflected in management are disclosed in the Annual Report and ESG meeting materials.

o) In cases where the fundraiser determines the need for an objective assessment regarding the transition strategy, it is **recommended** that a review, assurance and verification by an external organization for its transition strategy.

Consistency: ✓

For the purpose of objective evaluation, Sumitomo Chemical has obtained reviews by Japan Credit Rating Agency, Ltd. (JCR), etc. for this framework. Regarding the medium-term target for reducing GHGs by 2030, the Company has obtained WB2°C certification from SBTi.

p) It is **recognized** useful to obtain a review particularly concerning the following in connection with the transition strategy:

- Alignment of short-term, mid-term and long-term targets (for targets, refer to Element 3) with the overall scenario
- Credibility of the fundraiser's strategy to reach the targets
- Appropriateness of the management process and governance for the transition strategy

Consistency: ✓

JCR confirms the above three items and provides this evaluation report.

## **Element 2: Environmental Materiality (Priority) in Business Models**

a) Initiatives for achieving the transition strategy **should** be such that contribute to transforming core business activities that are environmentally material parts today and in the future.

Consistency: ✓

Since coal and petroleum coke-derived GHG emissions in the Sumitomo Chemical Group account for more than half of the total GHG emissions in Scope 1+2, energy conversion is the most effective measure for carbon neutral initiatives. Fuel conversion to LNG with a lower CO<sub>2</sub> emission factor has a core position in the transition strategy by 2030.

b) When identifying business activities that are environmentally material parts, it is **recommended** that the fundraiser consider multiple climate change-related scenarios that may possibly impact its judgment on the identification.

Consistency: ✓  
Identified possible climate-related risks and opportunities. Based on the assumptions made in the IPCC1.5°C Special Report, the scenario in which various measures are taken to curb the increase in the average temperature of the world to 1.5°C above pre-industrial levels, and the scenario in which measures are not taken and the increase by 4°C is analyzed from the aspects of "risks" and "opportunities," and the impact on its business and consideration of future actions are conducted as scenario analysis.

c) In terms of considering materiality, it is **possible** to apply existing guidance provided by an organization that creates standard criteria concerning sustainability reporting.

Consistency: ✓  
Sumitomo Chemical was the first in the industry to implement disclosures based on TCFD recommendations, and at the same time as TCFD recommendations were publicized, it expressed its support for them.

d) The fundraiser **should** indicate that climate change is an environmentally material part of business activities.

Consistency: ✓  
Sumitomo Chemical has made it clear that it considers climate change to be an important theme when identifying its materiality and that it considers it one of its most important management issues through disclosures in its integrated reports, on its website, and by other media.

e) It is **recommended** that disclosures include the contents of climate change-related scenarios used in identifying business activities that are environmentally material parts along with the underlying reasons (e.g., regional and industrial characteristics) for selecting such scenarios.

Consistency: ✓  
Sumitomo Chemical has identified possible climate change-related risks and opportunities. The content of the scenario analysis, including the reasons for selection, is published in the Annual Report and on the website.

**Element 3: Scientifically Rationalized Climate Transition Strategies (Including Targets and Channels)**

a) The fundraiser **should** reference science-based targets in developing its transition strategies.

Consistency: ✓

Sumitomo Chemical has identified possible climate change-related risks and opportunities. Scenario analysis is conducted based on the assumptions made in the IPCC 1.5°C Special Report. In addition, it has obtained WB2°C certification from SBTi. It is also consistent with the Ministry of Economy, Trade and Industry's technology roadmap for the chemical sector.

b) This **should** include mid-term targets (short- to mid-term targets) in addition to long-term targets for 2050 and be quantitatively measurable based on a measurement methodology which is consistent over a long period of time.

Consistency: ✓

Sumitomo Chemical's target setting includes medium-and long-term goals as follows and can be measured quantitatively with a consistent measurement method over time.

- By fiscal 2030, reduce total GHG emissions of Scope1+2 by 36% compared to fiscal 2020 (equivalent to a 50% reduction compared to fiscal 2013)
- By fiscal 2030, reduce GHG emissions of Scope3 from the Group's purchased products/services (Category 1) and fuel/energy-related activities (Category 3) by 14% compared to fiscal 2020
- Aim to achieve carbon neutrality (net zero GHG emissions for group) by 2050

c) In addition, it is recommended that GHG reduction targets, which could be formulated either in intensity and absolute terms, **should** consider environmental materiality and cover Scopes 1 through 3 of GHG Protocol, the international standard on supply-chain emissions.

It is **recommended** that targets covering Scope 3 be set using a practical calculation method when it could be subject to significant reduction in the fundraiser's business model.

It is also **possible** to disclose the avoided emissions as necessary.

Consistency: ✓

Sumitomo Chemical calculates emissions of Scope1+2 and some of its Scope3 and determines the targets for reduction. While the supply chain is wide-ranging and difficult to ascertain, the Company strives to identify Scope 3 and actively encourages its business partners to set reduction targets. Emissions from Scope1 through 3 are published on its website, in Annual Report, and the Sustainability Data Book.

d) Science-based targets are GHG reduction targets required for achieving the goals of the Paris Agreement and **should** be set while taking into account differences in regional characteristics and industries. In so doing, it is **possible** to refer to the following trajectories.

- Scenarios widely recognized in the international community (Examples include the Sustainable

Development Scenario (SDS) outlined by the International Energy Agency (IEA))

- Objectives verified under the Science Based Targets Initiative (SBTi) and such like
- Nationally Determined Contributions (NDC) of countries aligned with the goals of the Paris Agreement, roadmaps by industry sector, industries set out plans that are science-based achieving the Paris Agreement and so on.

Consistency: ✓

Sumitomo Chemical refers to the trajectory of transition with the following scientific grounds.

- Science Based Target
- Ministry of Economy, Trade and Industry's technology roadmap for the chemical sector

e) Short- to mid-term targets (with a term of three to fifteen years) **should** be set by referencing the aforesaid trajectories or on the pathway toward the long-term targets planned as benchmarks.

Consistency: ✓

Sumitomo Chemical has set the medium-term targets for 2030. In addition, the setting of short-and medium-term targets as milestones for the long-term goal of 2050 Carbon Neutral is consistent with the measures and pathways listed in the roadmap for the chemical sector established by the Ministry of Economy, Trade and Industry.

f) In doing so, since short- to mid-term targets will likely be set in consideration of various factors (including the starting point and track records of the issuer, timing of capital investments, economic rationality, cost-benefit analysis, and availability of technology necessary to achieve the targets), it is **possible** that the pathway may not necessarily be linear with the same slope at all times but may be nonlinear.

Consistency: ✓

Sumitomo Chemical has formulated measures divided into technologies that can be realized by 2030 and technologies that can be realized beyond 2030 till 2050, and as a result, it is assumed that the pathway is not necessarily a linear path with the same slope.

g) The fundraiser **should** disclose the short- to mid-term and long-term targets they have set, including the base years, etc.

Consistency: ✓

Sumitomo Chemical discloses its medium-term targets for the period up to 2030, using fiscal 2013 as the base year.

h) In order to show that long-term targets are science-based, disclosures **should** explain the methodology or trajectory used to define target, including the underlying reasons (e.g.,

characteristics specific to a region or industry). In particular, when reference is made to plans and industry roadmaps established by an industry, etc., the explanation **should** include that they are grounded in scientific basis.

Consistency: ✓

Scenario analyses are conducted based on the assumptions made in the IPCC1.5°C Special Report, and mid-term targets up to 2030 and strategies for carbon neutrality in 2050 are formulated. Sumitomo Chemical discloses in its ESG presentation materials, etc. that WB2°C of SBTi has been acquired. It also explains in the framework formulated for investors that it is consistent with the pathway toward reducing CO<sub>2</sub> in METI's technology roadmap for transition finance in the chemical sector.

i) It is **possible** that disclosures explain the pathway toward a long-term target and the alignment between the short- to mid-term targets on the pathway and the transition strategy, based on the investment plan (refer to Element 4) and other plans.

Consistency: ✓

As an investment plan, the investment plan for carbon neutrality is disclosed in the ESG meeting and the Sustainability Data Book, with a period set to the period of the medium-term management plan, up to 2030. A summary of the use of the investment and the method of internal carbon pricing consideration when making investment decisions are also disclosed.

j) Concerning targets and trajectories, obtaining expert reviews on the following is **considered** to be particularly useful:

- Whether the long-term target is aligned with science-based targets
  - > Whether the disclosed information explains the alignment with the Paris Agreement
- Whether the short- to mid-term targets are determined using a GHG emissions forecast calculated based on a climate change scenario analysis
  - > Whether scenarios, etc. widely recognized in the international community are used or referenced
- Whether the actual values of the indicators used for the targets are quantitatively measured using consistent measurement methods
  - > Whether a specific GHG emissions reduction measure has been developed to achieve short- to mid-term targets aligned with long-term goals

Consistency: ✓

JCR has confirmed that all of the above items have been met in this assessment report.

#### Element 4: Transparency of Implementation

a) In implementing transition strategies, the fundraiser **should** provide transparency of the basic investment plan to the extent practicable.

Consistency: ✓

As an investment plan, the investment plan for carbon neutrality is disclosed in the ESG meeting and the Sustainability Data Book, with a period set to the period of the corporate business plan for FY 2022-2024, up to 2030. A summary of the use of the investment and the method of internal carbon pricing consideration when making investment decisions are also disclosed.

b) The investment plan includes not only capital expenditure (Capex) but also capital and operational expenditure (Opex). Therefore, costs related to research and development, M&A, and dismantling and removal of facilities are also subject to the investment plan. In other words, it is **recommended** that the investment plan incorporate, to the extent possible, expenditure and investment necessary for implementing the transition strategy.

Consistency: ✓

The investment plan includes not only capital investment but also research and development expenses, etc.

c) It is **recommended** that the investment plan outline the assumed climate-related outcomes and impacts in a quantitative fashion where possible, along with the calculation methods and prerequisites. If quantification is difficult, the use of external certification systems **can** be considered as a substitute for qualitative assessment.

Consistency: ✓

The expected outcomes and impact of the investment are shown in the ESG meeting and the Sustainability Data Book. In addition, all investment plans are positioned as measures that contribute to the achievement of medium-to long-term goals, and the calculation methods and assumptions for medium-to long-term targets are disclosed in these documents.

d) In particular, when outlining the assumed climate-related outcomes and impacts, it is **recommended** that the disclosure include not only GHG emission reduction and other initiatives to ease climate change but also report how consideration of a "just transition" is incorporated into the transition strategy.

Consistency: Not applicable

With the implementation of Sumitomo Chemical's Transition Strategy, which is to be used as a fund under this financing, there is no point that consideration is required for a just transition.

e) If implementing the transition strategy has the potential of having a negative impact on employment or the environment and communities other than climate change, it is **recommended** that any expenditures to mitigate such negative impacts be added to the plan.

Consistency: ✓

The implementation of Sumitomo Chemical's transition strategy has no negative employment or other social impact. With regard to the environmental aspect, the Company is striving to reduce environmental impact by conducting environmental assessments or implementing voluntary reduction measures, etc.

f) Moreover, the outcomes arising from investments included in the investment plan **should** align with the targets.

Consistency: ✓

The results of Sumitomo Chemical's investment plan are all positioned as initiatives that ultimately contribute to carbon neutral goals, and results and objectives are consistent.

g) Transition finance is a means to financially support the implementation of a transition strategy, and it is **recommended** that financing be provided for new initiatives. However, in the case of transition finance in the format of Use of Proceeds instruments, refinancing for a reasonably set lookback period (the period during which refinancing is to be applied for projects that have already started) is **considered** to be eligible.

Consistency: ✓

The loans procured through this framework will be used in part to refinance the LNG-fired power plant that SUMITOMO JOINT ELECTRIC POWER CO., LTD. will construct on the site of its plant in Niihama City, Ehime Prefecture. However, it can be said to be funding support for new initiatives as it is a new project prior to its operation. It will also be used for new investment in funds for the construction of an LNG-fired power plant to be constructed by Sumitomo Chemical in the Chiba Works.

h) It is **recommended** that investment plans be disclosed by linking the outcomes and impacts with the expenditures to the extent practicable.

Consistency:

Amounts, results and impacts of investments under this financing are linked and disclosed in this evaluation report. For the entire transition strategy, each investment target and the total investment amount are disclosed, but it is difficult at this point to link the results and impact individually, and it is not disclosed. In the future, it is assumed that it will be disclosed as soon as specific individual plans are finalized.

i) It is **recommended** that the fundraiser, after securing financing, reports any deviations between the initial plan and the actual expenditure, outcomes and impacts. For any deviations, it is **recommended** that the underlying reasons be explained.

Consistency: ✓

The differences between the original plan and actual expenditures, results and impacts of this financing will be disclosed in the Impact Reporting, which is scheduled to be implemented on a regular basis after borrowing.

j) In cases where the Use of Proceeds loans include refinancing, the fundraiser **should** provide an explanation on the lookback period set under the framework or other relevant methods along with the underlying reasons and factors.

Consistency: ✓

For the projects, for which the funds are to be used in this framework, the period for refinancing and the reasons for the refinancing are explained in the framework.

k) While there are differences in business practices, such as the fact that loans are traditionally made based on the bilateral relationship between a borrower and a lender, it is **recommended** that disclosure on the above be made to the extent possible in order to ensure transparency and credibility of transition finance. However, if it is difficult to disclose such information to the public from the standpoint of confidentiality and competition, it is **possible** to report such information only to lenders or external evaluation organizations without disclosing it to the public.

Consistency: ✓

This is a loan, but the appropriation is disclosed in this evaluation report. Also, at least annually until the appropriation is completed, the appropriation is disclosed to the lender in a report or on its website, in the Annual Report, or in other disclosure materials, until the full amount of the proceeds has been appropriated for financing eligible projects.

The state of appropriation of funds and the effects of environmental improvement will be disclosed to the extent practicable until repayment.

l) Similarly, in cases where the fundraiser is a small-to-medium-sized enterprise and it is difficult to disclose to the public the same content as that reported to the financier or an external evaluation institution, it is **possible** for the fundraiser to simplify the content of disclosure, for example, by limiting disclosure to a summary of h) to j) of this section.

Consistency: Not applicable

Sumitomo Chemical does not fall under the category of SMEs, and therefore is not subject to this compliance confirmation item.