Daigas Group
Green/Transition Finance Framework

1. Introduction
1.1 Outline of this framework

Osaka Gas Co., Ltd. (hereinafter, the “Company”) has established a Green/Transition Finance Framework (hereinafter, the “Framework”) as follows.

This Framework is aimed at organizing the transition strategy of the Company and the Daigas Group for the achievement of carbon neutrality by 2050 and the financing approach therefor and guaranteeing all stakeholders the alignment of the strategy and approach with various principles concerning green/transition finance.

The Daigas Group will make a full commitment to solving social issues, including climate change, by utilizing green/transition finance based on this Framework.

1.2 About Osaka Gas (the Daigas Group)

Since its founding in 1897, the Daigas Group has continued to expand its businesses while supplying city gas mainly in the Kansai region, Japan. It is currently a corporate group that comprises three major business segments: the Domestic Energy Business (gas manufacture, sale and supply and power generation and sale in Japan); the International Energy Business (energy supply and natural gas development outside Japan); and the Life & Business Solutions (LBS) Business (real estate, information processing services, and the sale of fine materials and carbon materials).

1.3 Corporate principles and ESG management

The Daigas Group aims to become a corporate group that powers continuous advancement in customers’ lives and businesses. To accomplish this aim through business activities, the Group is committed to creating value primarily for customers, as well as for society, shareholders, and employees. We believe that we must fulfill our Group’s social responsibility by creating these four types of value through fair and transparent business activities, and promote efforts based on our corporate principles.

In addition, under the Medium-term Management Plan 2023 titled “Creating Value for a Sustainable Future,” we aim to build up momentum for the further growth of our business as a corporate group that provides solutions to achieving a sustainable society, focusing on creating value for a sustainable future with our stakeholders.

Furthermore, we have formulated and announced the Daigas Group Carbon Neutral Vision with a view to achieving carbon neutrality by 2050. In response to growing social demand for corporate measures against global warming, we not only continue our sustained efforts to achieve more widespread use of natural gas but also decarbonize our gas and electricity by introducing methanation[*1] to generate gas with renewable energy and hydrogen, and by increasing the share of renewables in our power generation portfolio. We therefore aim to become carbon neutral by 2050.

As a corporate group with a history of efforts to research and develop various technologies, including an innovative methanation technology[*2] and a new technology for hydrogen production,[*3] the Daigas Group will strive to become carbon neutral in its businesses through these innovations. We will continue to work to further accelerate our research and development efforts by building and cementing our alliances with various partners in industry, government and academia.

The Daigas Group will make a sustained effort to develop technologies and services that help achieve carbon neutrality and to contribute to solutions to social issues, including climate change, with the aim of becoming a corporate group that powers continuous advancement in customers’ lives and businesses.

＊1　Technology for synthesizing methane, which is the main component of the raw materials for city gas, from hydrogen and CO_2

＊2　Technology for producing hydrogen and synthesizing methane at the same time, which is more efficient than conventional methane synthesis methods

＊3　Hydrogen production technology based on chemical looping combustion

2. Disclosures based on the Climate Transition Finance Handbook and the Basic Guidelines on Climate Transition Finance
2.1 Climate transition strategy and governance
2.1-1 Roles of the gas industry in realizing a carbon neutral society

The Japanese government has announced its policy of achieving net-zero greenhouse gas (GHG) emissions overall by 2050, that is, making Japanese society a carbon neutral society by 2050. Accordingly, the role of the gas industry, one of the major energy industries in Japan, is becoming more important in implementing the government policy.

The government’s 6th Strategic Energy Plan mentions that natural gas generates the lowest amount of GHG emissions among fossil fuels and plays a central role as a resource for regulating the power supply in combination with renewables in power generation systems, including cogeneration systems, and that a shift to natural gas through fuel conversion or other measures will contribute to reducing environmental impacts in the long term. The plan also states that the practical use of synthesized methane is predicted to help decarbonize gas itself in the future. In addition, the Japanese government’s Green Growth Strategy through Achieving Carbon Neutrality in 2050 includes “next-generation heat energy” in its list of 14 growth sectors and mentions making city gas carbon neutral by 2050 as a focus of main future efforts.

Against the backdrop of such expectations of the roles of the gas industry, the Japan Gas Association has announced

the Carbon Neutral Challenge 2050 Action Plan, which offers the following three scenarios for efforts during the transition period:

(1) Thorough shift to natural gas and advanced use of natural gas (demand side)
Fuel conversion from oil and coal, widespread use of cogeneration and fuel cells, higher efficiency of equipment, etc.

(2) Decarbonization of gas itself (supply side)
Methanation, hydrogen utilization, etc.

(3) Initiatives such as CCU / CCS and overseas contribution
Carbon capture and use (CCU) / carbon capture and storage (CCS), overseas expansion of innovative gas appliances and engineering capabilities developed in Japan, utilization of carbon neutral LNG, etc.

The Daigas Group has announced the Daigas Group Carbon Neutral Vision to further accelerate its ongoing low-carbonization and decarbonization initiatives in coordination with the relevant policies of the Japanese government and the direction of the Japanese gas industry.

2.1-2 Initiatives under the Daigas Group Carbon Neutral Vision

The Daigas Group Carbon Neutral Vision, announced in January 2021, declares that the Group will strive to achieve the long-term target aligned with the Paris Agreement of becoming carbon neutral by 2050 through decarbonization of its gas and electricity by introducing methanation to generate gas with renewable energy and hydrogen, and by increasing the share of renewables in its power generation portfolio.

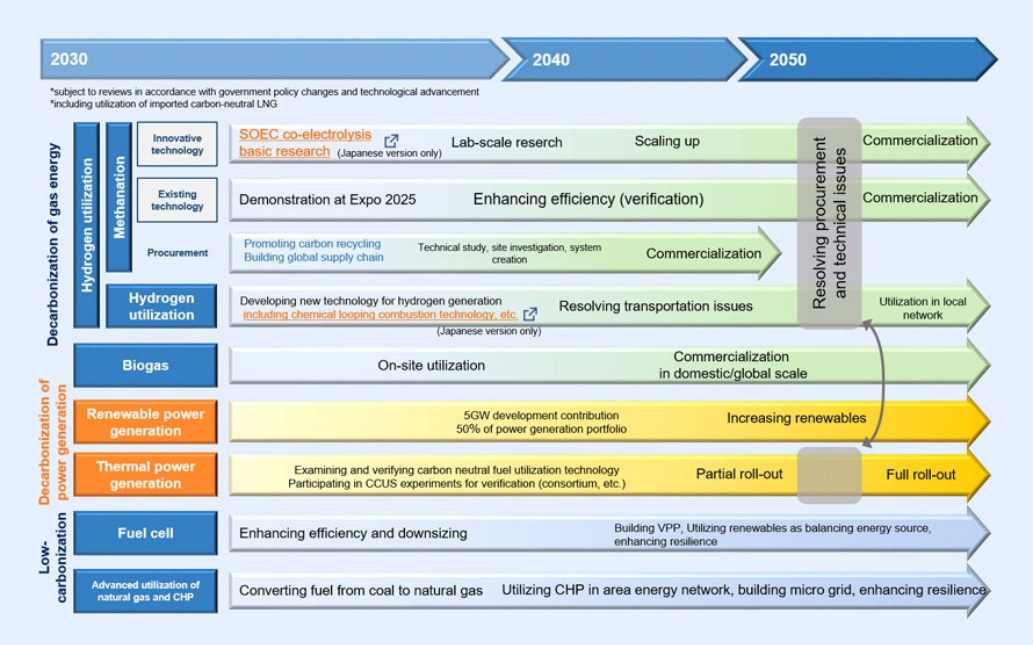
We believe that the key to realizing a carbon neutral society is to reduce CO_2 emissions as much as possible before decarbonization technologies are established and to expand the foundation for low-carbon and carbon-neutral power sources as far as possible before those technologies become available for practical use. Therefore, we will accelerate our CO_2 emission reduction initiatives, such as energy saving, advanced use of natural gas, and more widespread and increased use of renewables.

As a transition strategy toward 2050, the Daigas Group has set the following targets:

- 2050: Achievement of carbon neutrality in terms of Scope 1 to 3 emissions in the Group's businesses
- FY2031.3: 5 GW of renewables development contribution on a global basis*1
- FY2031.3: Nearly 50% of the Group's power portfolio in Japan consisting of renewables*1
- FY2031.3: 10 million tons/year*2 of CO_2 emissions reduction contribution from the FY2017.3 level

*1 Including solar, wind, and biomass power projects, which are eligible for the feed-in tariff (FIT) scheme
*2 Equivalent to one-third of the CO_2 emissions currently produced in the Group's business and by its customers (33 million tons/year)

To achieve these targets, the Group will implement the following specific initiatives:



1. Decarbonization of gas energy

(1) Hydrogen utilization: Methanation

Renewable hydrogen is synthesized with CO_2 to produce methane. This method helps make heat sources carbon neutral more efficiently in area energy networks using existing gas supply facilities. In addition, we pursue R&D on innovative technology for solid oxide electrolysis cell (SOEC) co-electrolysis, as well as on other existing methanation technologies that we have been exploring, including solid oxide fuel cell (SOFC) and catalytic core technologies. We have submitted a proposal for demonstrating existing methanation technologies at Expo 2025 Osaka, Kansai, Japan.

(2) Hydrogen utilization: Direct use

Chemical looping combustion is a novel combustion technology that can simultaneously produce hydrogen, power, and CO_2 from hydrocarbon fuels. As a party selected for the New Energy and Industrial Technology Development

Organization (NEDO)'s project to develop this technology, we will work with Japan Coal Frontier Organization (JCOAL) to verify this process by the end of March 2025 (planned).

(3) Biogas

We strive to put biogas into practical use by commercializing small-scale biogasification devices and implementing overseas verification projects with the aim of facilitating the use of biogas mainly by customers.

2. Decarbonization of power sources

(1) Renewable power generation

We not only contribute directly to current efforts to reduce CO_2 emissions but also promote the more widespread use of renewable power generation, including solar, wind, and biomass power generation, which is indispensable for the practical use of methanation and hydrogen production technologies in the future (through in-house development, investment, support for customers' introduction of renewable power, etc.)

(2) Thermal power generation

We adopt economical and optimal state-of-the-art high-CO_2-efficiency power generation technologies, including gas turbine combined cycle (GTCC) power generation, to reduce CO_2 emissions from thermal power generation.

3. Low-carbonization

(1) Fuel cells

We aim to promote the more widespread use of fuel cell systems, including Ene-Farm, by enhancing their efficiency and downsizing them, and to contribute to energy conservation. We also aim to establish a highly resilient energy supply network by building a system for distributed power supplies.

(2) Advanced utilization of natural gas and combined heat and power (CHP)

We contribute to reducing CO_2 emissions throughout society by helping customers to carry out fuel conversion from coal and oil to natural gas or to introduce CHP systems. At the same time, we aim to achieve carbon neutrality by decarbonizing gas energy in the future.

The Daigas Group will review its transition strategy in a timely and appropriate manner based on progress in the abovementioned specific technological initiatives and trends in relevant government policies, including the Strategic Energy Plan and the Green Growth Strategy. It will also disclose the review results to stakeholders.

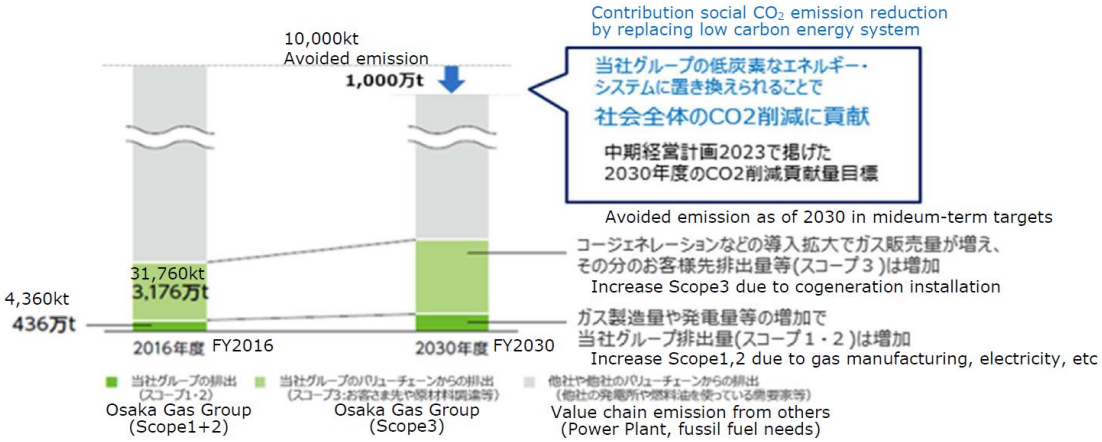
2.1-3 Principles for the Group's contribution to CO_2 emissions reduction in its businesses

As mentioned in the 6th Strategic Energy Plan, natural gas generates the lowest amount of GHG emissions among fossil fuels, and a fuel shift from oil, coal, etc. to natural gas through fuel conversion or other measures will help reduce environmental impacts in the medium term. Moreover, it is expected that the decarbonization of gas energy itself by 2050 will contribute significantly to Japan's decarbonization strategy in the long term.

This means that a medium-term increase in the usage and sales volume of natural gas will cause an increase in gas suppliers' value chain emissions and a decrease in GHG emissions from society as a whole.

The Daigas Group is committed to GHG emissions reduction not only from its own business activities but also from customers' activities by encouraging both household and industrial customers to introduce highly efficient gas equipment and carry out fuel conversion to gas. For FY2031.3, we have set the target of contributing to a reduction of 10 million tons of CO_2 emissions from throughout society, including a reduction (avoided increase) of 0.7 million tons in part of Scope 3 emissions through the introduction of highly efficient gas equipment and other means.

Furthermore, we predict that we will achieve zero value chain emissions by 2050 by decarbonizing gas energy itself through such measures as putting methanation technology into practical use.



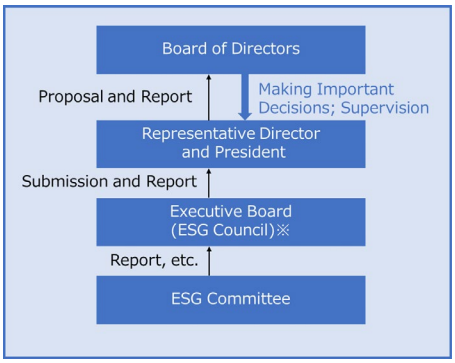
2.1-4 Governance in climate-change and transition strategies

The Daigas Group regards tackling climate change as a key management issue. Just as with other important business activities across the Daigas Group, the Board of Directors is responsible for making decisions on and supervising activities aimed at tackling climate change and other environmental issues. The ESG Council (Executive Board), chaired by the

President and comprising executives and other members, meets three times a year to deliberate on action plans and reports concerning ESG issues, including climate change.

The Group also has the ESG Committee, chaired by the Executive in Charge of ESG Promotion (Vice President), who supervises the Group's ESG activities, and consisting of the heads of related organizations. The ESG Committee meets four times a year for the cross-organizational deliberation, coordination, and supervision of climate-change-related issues, including the planning and promotion of related business activities, progress in achieving relevant targets, and risk management. The committee submits to the Board of Directors deliberation proposals and reports on important agenda items, such as the status of achievement of ESG management targets and business projects expected to sustain major financial impacts due to climate change.

System for climate change-related governance



- Board of Directors
  10 directors (6 Internal directors and 4 Outside directors)
- Executive Board (ESG Promotion Council)
  - 1 President and Executive Officer
  - 3 Vice Presidents (Executive Officers)
  - 6 Managing Officers

  ※In principle, it is held three times per year as "ESG Council".
- ESG Committee
  - Vice President (Head of ESG Promotion)
  - Heads of related business units, etc.

2.2 Business model environmental materiality

The Daigas Group has identified material issues for both itself and its stakeholders by assessing the importance of various issues from the Group's own and its stakeholders' perspectives while consulting 33 material topics shown in the Global Reporting Initiative (GRI) Standards and then positioning those issues according to their level of importance. As a result, climate change has been identified as one of those material issues, and initiatives to reduce GHG emissions have been positioned as a crucial mission of the Group.

In addition, as mentioned in "2.1-4 Governance in climate-change and transition strategies" above, we regard tackling climate change as a key management issue. Therefore, we are working on climate change scenario analysis based on the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD). Under a 2°C scenario based on a scenario offered by the International Energy Agency (IEA), an original 2°C scenario and a 4°C scenario, we have assessed the impact of climate change on the performance of each of our energy businesses (including domestic and international gas and electricity businesses), which are expected to sustain a massive impact from climate change. We have thus conducted multifaceted scenario analysis while taking into account the progress of energy conservation, changes in the power portfolio, and other factors.

The Daigas Group's climate-change and transition strategies have been formulated in consideration of the material issues based on such analysis. Amid the likelihood that progress in global efforts to combat climate change will change the preconditions for the scenarios, we will update our climate-change and transition strategies while consulting scenarios offered by outside organizations.

2.3 Climate transition strategy to be science-based including targets and pathways

The medium- to long-term targets and specific initiatives that the Daigas Group has set as transition pathways toward its achievement of carbon neutrality by 2050 are aligned with the Technology Roadmap for "Transition Finance" in the Gas Sector and the Technology Roadmap for "Transition Finance" in the Electric Power Sector (both produced by the Japanese Ministry of Economy, Trade and Industry; hereinafter collectively referred to as the "sector-specific roadmap documents").

The specific initiatives described in "2.1-2 Initiatives under the Daigas Group Carbon Neutral Vision" above are all included in the technology roadmaps shown in the sector-specific roadmap documents. Those technology roadmaps in turn are aligned with Japan's nationally determined contributions (NDCs) (national GHG emissions reduction targets) based on the Paris Agreement, the Green Growth Strategy, and the R&D and social implementation plan in the Green Innovation Fund. Each sector-specific roadmap document also shows pathways toward the achievement of carbon neutrality by 2050 through an accumulation of these initiatives. Accordingly, the Daigas Group's transition strategy has been proven capable of contributing to carbon neutrality in alignment with the Paris Agreement.

2.4 Implementation transparency

The Group's Long-Term Management Vision 2030 includes a total investment of 2 trillion yen in quality improvement and growth through M&A and other measures from FY2018.3 to FY2031.3. The total investment planned includes an investment of 773.9 billion yen to be made by FY2021.3 (213.8 billion yen in quality improvement and 560.1 billion yen in growth) and a FY2022.3–2024.3 investment of 737.0 billion yen (237.0 billion yen in quality improvement and 500.0 billion yen in growth). Of the growth investment, 120.0 billion yen is planned to be allocated to investment in renewables.

Both quality improvement investment and growth investment include investment in the Daigas Group's transition to a carbon neutral corporate group. We will devote Group-wide efforts to succeeding in this transition in combination with our business strategies.

To achieve its CO_2 emissions reduction and other targets for FY2031.3 and to become carbon neutral by 2050, the Daigas Group will continue to make investment with the maintenance of its own financial health as a prerequisite.

3. Alignment with the Four Core Components of the Green Bond Principles (GBP)

3.1 Use of proceeds

We will use the proceeds from green/transition finance to invest in new projects that meet the following eligibility criteria and/or to refinance investment in existing projects. If we use the proceeds for existing projects, we will do so only for projects in which previous investments were made up to about three years after the provision of green/transition finance.

Eligible Criteria		Project Overview
1.Decarbonization of gas energy		
Hydrogen utilization	Methanation	Expenditure on research and development and capital expenditure to establish methanation technology (e.g. SOEC coelectrolysis).
	Direct use	Expenditure on research and development investment in a process for simultaneous production of hydrogen, electricity and CO2 using chemical looping combustion technology.
Biogas		Expenditure on capital expenditure to expand the use of biogas for domestic and international on-site utilization.
2.Decarbonization of power generation		
Renewable power generation		Expenditure on the development, construction, operation and refurbishment of renewable energy, such as biomass, solar, onshore wind and offshore wind.
Thermal power generation	Carbon-neutral Fuel utilisation	Expenditure on investment, research and development in the procurement, supply and use of synthetic methane, hydrogen and ammonia.
	CO2 capture and storage (CCUS)	Expenditure on participation in CCUS demonstrations (e.g. consortia).
3.Lowcarbonization		
Fuel Cells	The fuel cell High efficiency and miniaturisation	Expenditure on research, development and capital investment in small SOFCs with high power generation efficiency.
Advanced utilization of natural gas and CHP	converting fuel from oil and coal to natural gas	Expenditure on capital expenditure (e.g. on the construction of LNG satellite terminals and the provision of related equipment) to support customers' fuel conversion.
	Micro grid	Expenditure on the construction and demonstration of microgrids.
	Carbon-neutral LNG	Expenditure on the procurement and supply of carbon neutral LNG*. *LNG with GHG emissions offset by credits
Advanced energy utilization	VPP and smart energy systems	Expenditure on research and development and capital investment in projects to demonstrate the establishment of VPPs and smart energy systems using consumer-side energy resources.
Other (Reduction of CO2 emission associated with own activities)	Reduce CO2 emissions from activities other than the above, such as manufacturing, power generation, and office operations.	Expenditure on cold power generation equipment and cold heat utilization equipment in the city gas production process, and on energy-saving renovation work in buildings.

In assessing the eligibility of each candidate project, we confirm whether due consideration is paid to its potentially negative environmental and/or social impacts. We also check whether the required approval, permission or license in the relevant countries, regions and local governments has been obtained for each relevant facility or project and whether it has undergone appropriate procedures, including that for environmental impact assessment.

3.2 Process for project evaluation and selection

Our Finance Department selects eligible candidate projects to be funded with proceeds from green/transition finance according to the eligibility criteria defined in “3.1. Use of proceeds” above. The final decisions are made by the Finance Director after deliberating with the relevant business units and the Corporate Strategy Department.

3.3 Management of proceeds

Our Finance Department manages the annual allocation of proceeds from green/transition finance by keeping dedicated account books until the full amount thereof is allocated. If there is any amount of money remaining after allocation, we will manage it in cash or cash equivalents and use it within 24 months after the proceeds are obtained.

3.4 Reporting

3.4-1 Reporting on proceeds allocation

The Company will disclose the following items on the allocation of proceeds on an annual basis on its website until the full amount thereof is allocated to eligible projects.

- Amount allocated to each eligible Criteria
- Amount remaining after allocation
- Estimated amount of proceeds allocated to refinancing

We will also disclose any significant change in the allocation of proceeds until they are amortized or repaid. We will also review our initiatives to achieve carbon neutrality by 2050 based on policy and technological trends as needed and disclose the review results.

3.4-2 Impact reporting

The Company will make annual disclosures on all or some of the following indicators within the scope of confidentiality and to the extent practicable until the total amount of financed proceeds are amortized or repaid.

Eligible Criteria		Impact Reporting Example
Hydrogen utilization	Methanation	・Overview of the projects ・Status of R&D and demonstration
	Direct use	
Biogas		・Overview of biogas utilization project ・Annual CO2 emission reductions（t-CO_2）
Renewable power generation		・Overview of Renewable Energy Projects ・Equipment capacity（MW） ・Annual electric power generation（kWh） ・Annual CO2 emission reductions（t-CO_2）
Thermal power generation	Carbon-neutral Fuel utilisation	・Annual CO2 emission reductions（t-CO_2） ・Overview of Investment and R&D
	CO2 capture and storage (CCUS)	・Overview of the projects
Fuel Cells	The fuel cell High efficiency and miniaturisation	・Overview of R&D and capital investment related to small SOFC ・Efficiency indicators (e.g., DC generation end efficiency) ・Energy Saving Effects ・Annual CO2 emission reductions（t-CO_2）
Advanced utilization of natural gas and CHP	converting fuel from oil and coal to natural gas	・Overview of the projects ・Annual CO2 emission reductions（t-CO_2）
	Micro grid	・Overview of the projects
	Carbon-neutral LNG	・Annual CO2 emission reductions（t-CO_2）
Advanced energy utilization	VPP and smart energy systems	・Overview of the projects ・Energy Saving Effects ・Annual CO2 emission reductions（t-CO_2）
Other (Reduction of CO2 emission associated with own activities)	Reduce CO2 emissions from activities other than the above, such as manufacturing, power generation, and office operations.	・Overview of the projects ・Annual CO2 emission reductions（t-CO_2）

3.5 External reviews

3.5-1 Second Party Opinion (pre-issuance external review)

The Company has obtained a Second Party Opinion from DNV Business Assurance Japan K.K., a third-party reviewer, regarding this Framework's compliance with the following principles and guidelines:

- Green Bond Principles 2021 (International Capital Market Association [ICMA])
- Green Loan Principles 2020 (Loan Market Association [LMA] et al.)
- Green Bond Guidelines 2020 (Ministry of the Environment, Japan)
- Green Loan and Sustainability Linked Loan Guidelines 2020 (Ministry of the Environment, Japan)
- Climate Transition Finance Handbook (ICMA)
- Basic Guidelines on Climate Transition Finance (Financial Services Agency; Ministry of Economy, Trade and Industry; and Ministry of the Environment, Japan)

3.5-2 Annual review (post-issuance external review)

The Company will seek an external review from DNV Business Assurance Japan K.K., a third-party reviewer, regarding the appropriateness of the process and results of calculation in reporting on proceeds allocation and impact reporting. This review will be conducted every year until the full amount of proceeds from green/transition finance is allocated.

If there are any discrepancies between the original (Japanese) and the English translation, the original (Japanese) takes precedence.