Second Opinion

Mie Prefecture
Mie Green Bond Framework

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Rating and Investment Information, Inc. (R&I) has confirmed the alignment of the Mie Green Bond Framework of Mie Prefecture dated November 19, 2021 with the “Green Bond Principles 2021"and the Ministry of the Environment's “Green Bond Guidelines 2020." This opinion is based on the following views.

■ Overview of the Opinion

(1) Use of Proceeds

The proceeds will be used for climate change mitigation and adaptation measures and measures related to the mitigation in Mie Prefecture. This project falls under the following four categories: “clean transportation,” “energy efficiency,” “environmentally sustainable management of living natural resources and land use,” and “climate change adaptation.” Mie Prefecture is one of municipalities which have evaluated impacts of climate change and taken mitigation and adaptation measures since the early stage. Eligible projects of this bond will be implemented as part of such efforts. R&I has confirmed that the impact that the eligible projects are assumed to have on the environment and society is appropriately taken into account through environmental impact assessments, and that the projects have environmental benefits.

(2) Process for Project Evaluation and Selection

The eligible projects are explicitly positioned as part of the “Mie Prefecture Comprehensive Plan for Global Warming Countermeasures.” Candidate projects are selected according to the Mie Prefecture’s project selection process. Projects eligible to be covered by the proceeds were selected through an appropriate process from projects under the plan by the Finance Section of the Department of General Affairs and the Global Warming Countermeasures Section of the Department of Environmental and Social Affairs based on the eligible green project categories, and finally determined by the prefectural governor. The process for project evaluation and selection is good.

(3) Management of Proceeds

The Finance Section of the Department of General Affairs and the Section in charge of budget and settlement of each department work collaboratively to monitor and manage the allocation of proceeds so that the amount issued will not exceed the amount allocated. To manage the allocation of proceeds to eligible projects, the use of proceeds and the amount of expenditures will be clearly recorded on the books. Proceeds should be allocated within the fiscal year in line with the principle called the independence of the fiscal year. Unallocated funds, if any, are managed in cash or highly secure financial assets until the proceeds are fully allocated. At the end of the fiscal year, execution records and financial settlement documents will be audited by the prefectural audit committee and approved by the prefectural assembly.

(4) Reporting

Until the proceeds are fully allocated, information on the allocation of proceeds and environmental benefits will be disclosed on the Mie Prefecture website. When a significant change is made to the proceed allocation plan or when a significant change occurs in the allocation status after the proceeds are allocated, it will be disclosed promptly. Both the frequency and content of disclosure are appropriate.

Outline of the Issuer

[Emblem of Mie Prefecture]

- Mie Prefecture is a prefecture facing the Pacific Ocean in the Chubu and Kinki regions, its land extends from north to south, and is divided into the northern inner area and the southern outer area by the Median Tectonic Line along the Kushida River running through the center of the prefecture. The eastern part of the inner area is facing Ise Bay, and in the northwest part, there are mountain ranges and mountain chains. The outer area consists of the Shima Peninsula with rias coast in the east, the eastern part of the Kii Peninsula in the south, and the Kii Mountain Range in the west. About 60% of the prefectural land is forested, about 10% is farmland, and about 7% is residential land. It is rich in nature and flourishes in agriculture and fisheries, and also thrives in tourism with abundant tourist resources such as Ise-jingu Shrine and Kumano Kodo. Furthermore, with the Chukyo Industrial Area in its north, the industry of the prefecture flourishes as well.

- The climate of the coastal zone of the inner area is relatively warm and comfortable, while the climate of the western part of the inner area with mountain ranges and basins is an inland type where the temperature difference between summer and winter and morning and evening is large. The coastal zone in the east of the outer area has a warm climate due to the Kuroshio Current, while the southern part has an oceanic climate where the temperature is warm throughout the year, making the area one of the most pluvial areas in Japan.

- Mie Prefecture has a long history of working for the protection of the environment. It has taken various measures throughout the prefecture to conserve natural and social environment, including measures to cope with the air pollution in Yokkaichi City, which was caused during the rapid economic growth after World War II. The prefecture has been leading the rest of the prefectures in Japan by introducing total emission control over sulfur and nitrogen oxides, environmental impact assessments, industrial waste tax, etc. particularly in the process of its effort of coping with the pollution in Yokkaichi. Through these efforts, all of the residents in the prefecture share high environmental awareness. In recent years, Mie Prefecture has been making collaborative efforts to address environmental issues involving wider areas, such as the restoration of Ise Bay, which is being promoted together with Aichi Prefecture, Gifu Prefecture, and Nagoya City.

- As a measure to address climate change, the prefecture launched and has pushed forward with the “Mie Prefecture Action Plan for Global Warming Countermeasures” since March 2012. The plan mentions not only the confirmation of the progress of “mitigation measures” but also the confirmation of awareness of all residents of the prefecture, and “adaptation measures” to mitigate the impact of climate change as well. In this way, the prefecture has been taking initiative measures since the early stage.

- As the situation surrounding the climate change changes, the prefecture declared, in December 2019, the "Mission Zero 2050 Mie: Toward the Realization of a Decarbonized Society," indicating its determination to take the lead in achieving net-zero emissions of greenhouse gasses throughout the prefecture by 2050. Based on this declaration, it launched the "Mie Prefecture Comprehensive Plan for Global Warming Countermeasures" in March 2021. The plan presents a long-term vision toward the achievement of the 2050 target, summarizes mitigation measures and adaptation measures respectively to promote global warming countermeasures.

- The "Mie Green Bond" is issued so that Mie Prefecture can stably procure funds to ensure steady implementation of measures addressing global warming, demonstrate its commitment to measures against global warming, and thereby build a momentum for local governments and businesses to promote ESG investments.

1. Use of Proceeds

(1) Eligible Projects

- The proceeds will be allocated to projects satisfying the eligibility criteria of the following eligible green project categories.

Eligible green project category	Examples of eligible projects	Purposes and effects
Clean transportation	Purchasing electric vehicles, hybrid vehicles, etc.	・Reduce CO_2 emissions by introducing energy-efficient vehicles.
Energy efficiency	New installation and improvement of traffic lights (LED, etc.)	・Reduce power consumption by installing LED traffic lights, etc.
Environmentally sustainable management of living natural resources and land use	Developing seaweed beds in shallow coastal waters	・Develop seaweed beds to absorb CO_2 and remove nitrogen compounds.
	Paving forest roads	・Pave forest roads for appropriate maintenance and conservation of forests and increase forests that can exert multifaceted functions in a sustainable manner as sinks to absorb CO_2 in the air.
	Establishing platforms for the development of human resources who will shoulder responsibilities for forests and forestry	・Develop forest practitioners and increase the number of forest workers who shoulder responsibilities for the maintenance of forests with the aim of ensuring more stable maintenance of forests, which have various functions for the public benefit such as sinks to absorb CO_2, and promoting appropriate development, maintenance and augmentation of forest resources.
Climate change adaptation	Measures for the agriculture and forestry : Development of agricultural product varieties and agricultural products production technologies, pest control measures, etc. (strawberries, citrus fruits, paddy rice, wheat, soybeans, etc.)	・Develop new varieties that can reduce the incidence of damages due to high temperatures, etc. ・Develop production technologies that enables production under high temperature conditions.
	Measures for the fishery : Expenses for the development of equipment for fisheries research facilities (pearl oyster, etc.), the design and construction of research vessels, and the development of facilities for the production of seeds and seedlings of aquatic animals and plants.	・Develop equipment for research facilities, and create varieties resistant to high water temperatures. ・Prepare research vessels to assess climate changes affecting the fisheries industry of the prefecture, including the rise in the sea temperature. ・Develop seeds and seedling production facilities, and develop cultivation technologies adaptable to environmental changes.
	Flood control : Construction of flood control dams, improvement of rivers (improvement of embankments, river channel excavation, etc.), removal of sediment from rivers, etc.	・Construct flood control dams to protect houses and public facilities from flooding. ・Reduce the incidence of floods by implementing bank protection works, excavating river channels and removing sediment.
	Measures against storm surges and high waves : Renovation of seashore protection facilities and fishing port facilities	・Mitigate inundation damages to hinterlands in case of flooding due to storm surges and high waves by developing seashore facilities, such as making levees higher. ・Mitigate damages to fishing port facilities, fishing vessels, etc. in case of a storm surge or high wave by making breakwaters higher.
	Measures against landslides : Development of erosion control facilities, forest conservation measures (development and renovation of forest conservation facilities, maintenance of protection forests)	・Develop erosion control dams, retaining walls, etc. to protect houses from landslides. ・Develop forest conservation facilities to protest houses from landslides.

- Eligible projects are classified based on two axes: Based on the first axis, projects are divided into (i) prefecture-wide initiatives, or (ii) initiatives for the government office of Mie Prefecture. Projects in (i) are prefecture-wide initiatives to address impacts of climate change, which include the control of greenhouse gasses emitted from businesses and residents in the prefecture, CO_2 absorption by forests, and activities to protect the lives and properties of businesses and residents in Mie Prefecture. Projects in (ii) are initiatives to address impacts of climate change through administrative activities of the prefectural government. On the other axis, projects are grouped into mitigation measures to slow the progression of climate change or adaptation measures to reduce the impacts of climate change. The former measures focuses on the reduction of greenhouse gas emissions, including CO_2, while the latter measures include flood control and crop breeding for creating variations adapting to the rise in average temperatures.

- As a local government, Mie Prefecture has pushed ahead with prefecture-wide measures to address climate change. In addition to that, it has been working on the reduction of greenhouse gas emissions from its own government offices. The projects for which the proceeds will be used are selected from among a wide range of activities to address climate change in Mie Prefecture. Prefecture-wide initiatives make up a major proportion of the environmental benefits and the amount of investment. Therefore, the section (2) Environmental Benefits describes the projects in the order of project scale.

(2) Environmental Benefits

Prefecture-wide initiatives: Environmentally sustainable management of living natural resources and land use

- Eligible projects under this category are (1) developing seaweed beds in shallow coastal waters, (2) paving forest roads, and (3) establishing platforms for the development of human resources who will shoulder responsibilities for forests and forestry.

- (1) is an initiative for blue carbon, while (2) and (3) are for green carbon.

- Blue carbon refers to CO_2 absorbed, sequestered and fixed in marine vegetation. When CO_2 in the air dissolves in seawater, marine vegetation absorbs and converts it into organic compounds. When refractory organic carbon is discharged into the ocean, it will be transferred to sea floor through the sedimentation process, and CO_2 will be stored in the ocean. The United Nations Environment Programme (UNEP) has reported the potential for CO_2 absorption by the oceans, and the Intergovernmental Panel on Climate Change (IPCC) states that "approximately 0.5% of total annual emissions can be absorbed and sequestered as blue carbon" and that "2.5% of emission reduction required to limit global warming to 1.5°C can be achieved through measurement for blue carbon ecosystems as carbon sinks." The blue carbon ecosystem is said to have a CO_2 storage capacity that is equal to the amount of carbon stored in all of vegetation on land, and is considered to be an important CO_2 storage function. On the other hand, seaweed beds, which are a blue carbon ecosystem, are said to be disappearing by 2 to 7% per year. As a result, it becomes impossible to absorb CO_2, and to make matters worse, CO_2 stored by them might be released. Seaweed beds function not only as a blue carbon ecosystem but also as a “place to produce food,” “place to lay eggs and foster juvenile fish,” and “feeding place.”

- In Mie Prefecture, seaweed beds are decreasing due to changes in the environment and development in the coastal areas. Development of seaweed beds addresses this issue and expected to have an environmental benefit of absorbing and storing CO_2. The benefit will be assessed based on the area developed, and the CO_2 absorption rate is calculated by multiplying the absorption coefficient (t-CO_2/ha/year) by the area developed.

- Green carbon refers to CO_2 absorbed, sequestered and fixed in land vegetation. Forests absorb and fix CO_2 in the air as they grow. Through proper thinning and by utilizing the thinned timber as housing materials, they can store and fix CO_2. Especially, artificial forests need forest management to keep them in proper conditions. The function of forests to absorb and fix CO_2 is considered to be a key to achieve carbon neutrality, and initiatives have been promoted. Sustainable forest management is a requisite to secure the CO_2 absorption and fixation function of forests. Forest management contributes to CO_2 absorption and fixation not only by increasing forests but also by maintaining forests. As regards carbon offset, a means to achieve carbon neutrality, the Kyoto Protocol sets rules for forest management and for

the calculation of products using thinned timber. In addition to the CO_2 absorption and storage, properly managed forests function as the catchment of water and prevent mountain disasters as well.

- Initiatives (2) and (3) of Mie Prefecture will contribute to sustainable forest management. Problems with the forestry structure in Japan include decrease in the use of domestic timber and decrease in people involved in forestry, and Mie Prefecture is also facing the same problems. Initiative (2) promotes the paving of forest roads necessary for the maintenance and management of forests, and initiative (3) develops and secures people who will shoulder forestry. Both of the two initiatives will ensure sustainable forest management and can be assessed as initiatives to promote carbon offset. Although it is difficult to calculate CO_2 absorption rate to be achieved directly by the initiatives, since they are initiatives to secure forest management, the environmental benefits of them can be assessed.

Prefecture-wide initiatives: Climate change adaptation

- Eligible projects under this category are classified into (1) climate change adaptation in the agriculture, forestry and fisheries and (2) adaptation through measures against natural disasters.

- It is essential to assess the impact of climate change in taking climate change adaptation measures. Internationally, the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) indicates that human activities are very likely to be the dominant cause of global warming observed since the 20th century (confidence of 95% or more), and that concentrations in the air of CO_2, methane, and N_2O, which are greenhouse gasses, have increased to unprecedented levels over the past 800,000 years. According to the projection of the report, global mean surface temperature change for the end of the 21st century will likely to be in the range from 0.3 to 4.8°C, and the global mean sea level rise in the range from 0.26 to 0.82 m, stating that cumulative CO_2 emissions is proportional to the global mean surface temperature change. Based on the projection, the report sets four RCP scenarios for the greenhouse gas emissions and assesses emissions and change in the temperature. In addition, measures to reduce greenhouse gas emissions and to absorb them are referred to as "mitigation," while measures to prevent or alleviate impacts of climate change that are unavoidable even with maximum mitigation efforts are referred to as “adaptation,” and both of them have to be incorporated into local plans for the future.

- The Ministry of the Environment projected impacts to Japan using the RCP scenarios and has released a report[1] showing the efficiency of adaptation measures in reducing risks. In addition to measures such as the Kyoto Protocol Target Achievement Plan, the Act on Promotion of Global Warming Countermeasures was revised in March 2016 and the Climate Change Adaptation Act was promulgated in June 2018. In response to that, the "Climate Change Adaptation Plan" was approved by the Cabinet in November 2018.

- The Climate Change Adaptation Plan describes the basic policies for climate change adaptation measures (targets, planning periods, basic roles of parties involved, basic strategies, progress management, etc.), sector-by-sector measures, and basic measures. The adaptation measures involve a wide range of fields including agriculture, forestry and fisheries; water environment and resources; natural ecosystems; health; industrial and economic activities; and people's and urban lives. Since many people from each field are involved, their roles are clarified in detail.

- Mie Prefecture has been performed surveys and assessments regarding climate change ahead of other many local governments, and in fiscal 2012, it conducted a fundamental survey on adaptation. After that, in response to the IPCC’s Fifth Assessment Report and comprehensive research report by the Ministry of the Environment, the Prefecture issued the Report on “Impact of Climate Change in Mie Prefecture and Ideal Adaptation” in March 2016, and “Mie Prefecture Climate Change Impact Report 2018” in March 2019. The latest information is summarized in the “Mie Prefecture Comprehensive Plan for Global

[1]Report of the Environment Research and Technology Development Fund S-8 2014, the Ministry of the Environment: Global Warming "Impact on Japan" - Comprehensive Impact Projection and Adaptation Measures Based on New Scenarios -

Warming Countermeasures" issued in March 2021.

- To explain the climate characteristics of Mie Prefecture, the Prefecture is divided into four regions, namely Ise Plain, Kumanonada Coast, Ueno Basin and mountain ranges. The Ise Plain has a relatively mild climate with an annual average temperature of about 15°C and annual precipitation of 1,800 to 2,000 mm. In winter, the northwesterly monsoon, which brought snowfall to the foot of mountains, blows across the plain as dry wind called *Karakkaze*. The average temperature in the Kumanonada Coast is about 16°C, which is a warm climate. Since it is located on the southeast slope of the Kii Mountain Range and the Kuroshio Current flows along the south coast, the warm moist air from Kumanonada causes the area to have the highest precipitation in the Prefecture. In particular, the area extending from Owase to Mt. Odaigahara is a high-rainfall area, and the annual precipitation there is about 4,000 mm. The Ueno Basin is characterized by an inland climate with an annual average temperature of about 14°C. The temperature difference between summer and winter is large. The rainfall is about 1,400 mm, the lowest in the Prefecture. The mountain ranges extend from the Suzuka Mountain Range to the Kii Mountain Range, and the snow sometimes accumulates more than 2 meters near the top of mountains. The Kii Mountain Range is an area with a lot of precipitation.

- According to the long-term survey, the temperature in Tsu City has been rising at a rate of about 1.6°C per 100 years. Due to the rise in temperature, the number of extremely hot days and sultry nights is on the increase. In Tsu City, the number of extremely hot days has been increasing at a rate of about 5 days per 50 years and that of sultry nights at about 20 days per 50 years. Precipitation has decreased by 181 mm per 100 years. The annual incidence of rainfall of 50 mm or more per hour fluctuates greatly from year to year, and there is no notable trend over the long period of time, but nationwide incidence has been increasing at a rate of about 29 times per 10 years. According to the projection of future climate, if stringent GHG emission reduction efforts were not taken (RCP8.5), the temperature would rise by 3.5 to 6.4°C over 2081 to 2100 relative to the temperature over 1981 to 2000. Even in the scenario of RCP2.6, the rise is projected to be 1.0 to 2.8°C. As regards annual precipitation, RCP8.5 scenario expects that it will increase by 7 to 15%, and RCP2.6 by 6 to 14%.

- Impacts of climate change on (2) are considered as follows. Regarding flood disasters, torrential rains and heavy rains with a total rainfall of several hundred to more than 1000 mm have occurred, and severe flood disasters hit many places of the country. There are concerns that flood disasters beyond the capacity of levees and flood control facilities will occur frequently and that large-scale flood disasters far beyond the capacity of facilities will take place. In particular, along with typhoons passing the vicinity of Mie Prefecture, annual incidence of rainfall with hourly precipitation of 50 mm is on the increase. In recent years, large-scale landslide disasters caused by heavy rain have frequently occurred. As the frequency of torrential heavy rain and heavy rain increases, the incidence of landslides is expected to increase, landslides with shorter lead time for warning and evacuation are more likely to occur due to sudden and local heavy rain, and the incidence of deep-seated landslides following record high rainfall such as at the time of typhoons is predicted to grow. The risk of the collapse of slopes due to rainfall is expected to increase especially in mountainous areas. Regarding storm surges and high waves, the global mean sea level is predicted to rise by 30 to 110 cm over 2081 to 2100 relative to the average over 1986 to 2005, which will increase the risk of storm surges. Furthermore, as the incidence of strong typhoons grows, the risk of high waves will also increase. Considering the projections, it is expected that flooding due to storm surges will damage wider areas, and that port, harbors and fishing port breakwaters will be damaged as the sea-level departure at the time of a storm surge or high wave increases. Some reports even expect that all of sandy beaches in Mie Prefecture might be lost as a result of the rise in the sea level.

- Under such assumptions, Mie Prefecture will make efforts to enhance the flood control function to address flood disasters. Such efforts include construction of flood control dams, river conservation work, removal of sediment from rivers (dredging). Generally speaking, flood control dams contribute to climate change adaptation not with its function to reserve water but with the function to control water at the time of droughts and floods. Their environmental benefits will come to the surface when their functions are properly exerted after completion. The Toba Kochi Dam, which is currently being planned to be constructed, is a stream type dam which functions at the time of floods. Therefore, during normal time, the dam makes little changes to the river flow conditions from those before construction, having little impact on the environment. River conservation works and the removal of sediment (dredging) will be

implemented in accordance with plans. River conservation works include works to widen river channels (including the removal of bottlenecks in flood control such as bridges) and are carried out according to the scale of the plan laid out for individual river, while the removal of sediment (dredging) is performed to restore the flow capacity. Both of them are measures to mitigate flood damages and have environmental benefits.

- Measures against storm surges and high waves include renovation of seashore protection facilities and fishing port facilities. Specifically, breakwaters and coastal levees will be made higher, and artificial reefs will be constructed to prepare for storm surges and high waves. These measures are expected to have environmental benefits such as reducing inundation damage to hinterlands and mitigating damage to fishing port facilities and fishing vessels.

- Measures against landslides are development and renovation of erosion control and forest control facilities, maintenance of protection forests, etc. These facilities are expected to have environmental benefits that can lead to prevention of or damage mitigation from disasters, such as debris floods, landslides, land creep, and mountain disasters.

- Impacts of climate change on (1) are considered as follows. Rice and fruit trees are products which are considered to be affected by the rise in temperature. Impacts on rice, such as deteriorated quality and decrease in yield due to high temperature, have already been reported. When the temperature increases by 3°C from the current value, nationwide yield of rice is expected to decrease except in northern areas in Japan. In Mie Prefecture, deterioration in quality has been reported. Although the yield can be maintained by changing the timing of planting, it is conjectured that drop in quality is inevitable. Regarding fruit trees, following impacts have been reported in Japan: poor coloring and delayed coloring of apples and grapes in the ripening stage, puffed skin of mandarin oranges due to high temperature and heavy rain in the fruit growing stage, sunburn of fruit due to high temperature and strong solar radiation, and poor germination of peers due to high temperature from autumn to winter. Impacts that have been reported in Mie Prefecture are poor germination of peers, poor coloring of persimmons, poor coloring, puffed skin and sunburn of mandarin oranges. In addition, adverse effects on wheat, soybeans, tea, and vegetables due to high temperature, warm winter, and heavy rain have also been reported. Especially, the harvesting timing of vegetables has been aberrantly moving forward, and strawberries are experiencing poor growth and deterioration in fruit quality due to anthrax disease, etc. As for pests and diseases, the distribution area of southern green stink bugs, a pest which damages crops, has expanded, and the rise in temperature has been pointed out as a cause. Widespread damage from other pests and diseases is expected. In the fisheries industry, fish catches are decreasing due to changes in migration areas and the rise in seawater temperature, and seaweed beds is reducing as the feeding behavior of phytophagous fish becomes active and the distribution area of them expands. As a result, catches of spiny lobsters and abalone that live in seaweed beds have been decreasing. In the field of aquaculture too, the culturing period of black seaweed has been shortened due to the rise in surface water temperature in Ise Bay, and pearl oysters and oysters die during high water temperature period.

- Considering these current conditions and future projections, development of facilities and equipment for the cultivation of new agricultural product varieties and production technologies adapting to climate change and measures against pests and diseases will be promoted. In the fisheries industry too, development of fisheries research facilities and equipment, design and construction of survey vessels, and development of facilities for the production of seeds and seedings of aquatic animals and plants will be promoted. Final environmental benefits of these measures are ensuring stable production and supply of agricultural products and protecting lives of farmers and consumers by disseminating the improved product varieties and production technologies. Plant breeding and improvement of technologies through these efforts are the start of the process leading to the environmental benefits. In the fisheries industry, the effort starts with understanding the actual status under the water, and the final benefits are securing sustainable fishery resources and protecting the lives of fishermen and consumers by taking appropriate measures.

- Both (1) and (2) are projects that should be led by the local government, and they are adaptation measures to address impacts of climate change that not only Mie Prefecture but also all prefectures throughout Japan are facing with.

Initiatives for the Mie Prefectural government office: Clean transportation and energy efficiency

- The Mie Prefectural government office had been working to reduce greenhouse gas emissions by 20% by fiscal 2020, relative to the emissions in fiscal 2005. The project started in fiscal 2012, and includes the renewal of facilities and equipment such as air conditioning facilities, LED lighting, and electric official vehicles. Now they are aiming to achieve a reduction of 40% by fiscal 2030 compared to the emissions in fiscal 2013.

- As measures to reach the goal, electric and hybrid official vehicles will be introduced to reduce consumption of fossil fuel, and traffic signals will be replaced with LED lights when installing new signals or making improvements. The former falls under the clean transportation, and the latter under energy efficiency.

- It is obvious that both of them have environmental benefits, and CO_2 emission reductions and reductions in power consumption will be disclosed along with the number of vehicles and lights introduced.

(3) Consideration for Negative Environmental and Social Impacts

- Although other environmental and social impacts are expected as the eligible projects progress, Mie Prefecture has established the Mie Prefecture Environmental Impact Assessment Ordinance, which requires the implementation of sufficient survey, projection and assessment. In addition, regarding public works, the Prefecture has established Mie Prefecture Environmental Control System Promotion Guideline so that due consideration will be given to the environment as necessary. Therefore, due consideration has been given to the environment.

The proceeds will be used for climate change mitigation and adaptation measures and measures related to the mitigation in Mie Prefecture. This project falls under the following four categories: “clean transportation,” “energy efficiency,” “environmentally sustainable management of living natural resources and land use,” and “climate change adaptation.” Mie Prefecture is one of municipalities which have evaluated impacts of climate change and taken mitigation and adaptation measures since the early stage. Eligible projects of this bond will be implemented as part of such efforts. R&I has confirmed that the impact that the eligible projects are assumed to have on the environment and society is appropriately taken into account through environmental impact assessments, and that the projects have environmental benefits.

2. Process for Project Evaluation and Selection

(1) Incorporation into Comprehensive Objectives, Strategies and so on

- In the “Mie Prefecture Action Plan for Global Warming Countermeasures” in fiscal 2012, Mie Prefecture first showed its commitment to the promotion of mitigation measures and consideration of adaptation measures. Since then, the Prefecture has offered environmental information and analyzed and assessed the impacts of climate change in Mie Prefecture. Then in March 2021, it established “Mie Prefecture Comprehensive Plan for Global Warming Countermeasures.”

- The plan summarizes the current situation and future projection of greenhouse gas emissions and climate in Mie Prefecture and impacts on each sector, while referring to international and domestic trends regarding climate change. It also presents mitigation and adaptation measures to be taken throughout Mie Prefecture. At the same time, the plan shows mitigation measures to be taken for the Mie Prefectural government office.

- The eligible projects are part of this plan and incorporated into the targets and strategies of Mie Prefecture.

(2) Criteria for Project Evaluation and Selection

- Project evaluations are performed when each project is adopted. The evaluation criteria are shown in the "Mie Prefecture Comprehensive Plan for Global Warming Countermeasures," and projects that fall under the eligible green projects categories were selected.

(3) Process for Project Evaluation and Selection

- The Finance Section of the Department of General Affairs and the Global Warming Countermeasures Section of the Department of Environmental and Social Affairs conducted a survey with each department, examined the eligibility by considering if it is possible or not to quantitatively assess the environmental benefits, and selected projects. The final decision was made by the prefectural governor.

- The Global Warming Countermeasures Section of the Department of Environmental and Social Affairs functions as a dedicated division, and there are no problems with the process for project evaluation.

The eligible projects are explicitly positioned as part of the “Mie Prefecture Comprehensive Plan for Global Warming Countermeasures.” Candidate projects are selected according to the Mie Prefecture’s project selection process. Projects eligible to be covered by the proceeds were selected through an appropriate process from projects under the plan by the Finance Section of the Department of General Affairs and the Global Warming Countermeasures Section of the Department of Environmental and Social Affairs based on the eligible green project categories, and finally determined by the prefectural governor. The process for project evaluation and selection is good.

3. Management of Proceeds

- In line with the principle of the independence of the fiscal year described in Article 208 of the Local Autonomy Act, the proceeds must be used to finance expenses in the fiscal year when they are raised as a revenue. Therefore, in principle, the proceeds will be fully allocated by the end of the fiscal year.

- The Finance Section of the Department of General Affairs and the Section in charge of budget and settlement of each department work collaboratively to monitor and manage the allocation of proceeds to individual projects so that the amount issued will not exceed the amount allocated. The allocation of proceeds to eligible projects will be classified according to the accounting category of the revenue budget and will be managed by clearly recording the use of proceeds and the amount of expenditures on the books.

- Unallocated funds, if any, are managed in cash or highly secure financial assets until the proceeds are fully allocated in line with the Mie Prefecture Fund Management Policy.

- At the end of the fiscal year, execution report for all revenues and expenditures, including eligible projects, and settlement-related documents will be prepared and audited by the prefectural audit committee. After that, the settlement-related documents will be submitted to the prefectural assembly together with auditors' comments to obtain approval.

The Finance Section of the Department of General Affairs and the Section in charge of budget and settlement of each department work collaboratively to monitor and manage the allocation of proceeds so that the amount issued will not exceed the amount allocated. To manage the allocation of proceeds to eligible projects, the use of proceeds and the amount of expenditures will be clearly recorded on the books. Proceeds should be allocated within the fiscal year in line with the principle called the independence of the fiscal year. Unallocated funds, if any, are managed in cash or highly secure financial assets until the proceeds are fully allocated. At the end of the fiscal year, execution records and financial settlement documents will be audited by the prefectural audit committee and approved by the prefectural assembly.

4. Reporting

(1) Overview of Disclosure

- Reporting will be made as follows:

	Items	Timing	Method
Allocation of proceeds	Project name and amount allocated	Every year (until completion of allocation)	Website
Environmental Benefits	Indicators to show environmental benefits of each project	Every year (until completion of allocation)	Website

- Disclosures should be made promptly when a significant change is made to the proceeds allocation status or when a significant change occurs in the allocation status after proceeds are allocated.

(2) Indicators to Show Environmental Benefits and Calculation Method, etc.

- Items to be reported as environmental benefits of each eligible project are as follows.

Eligible green project category	Eligible project	Purposes and effects	Impact index	Relevant SDGs
Clean transportation	Purchasing electric vehicles, hybrid vehicles, etc.	・Reduce CO_2 emissions by introducing energy-efficient vehicles.	Number of vehicles introduced Reduction in CO_2 emissions (t-CO_2)	12. Responsible Consumption and Production 13. Climate Action
Energy efficiency	New installation and improvement of traffic lights (LED, etc.)	・Reduce power consumption by installing LED traffic lights, etc.	Number of lights introduced Reduction in power consumption (W)	12. Responsible Consumption and Production 13. Climate Action
Environmentally sustainable management of living natural resources and land use	Developing seaweed beds in shallow coastal waters	・Develop seaweed beds to absorb CO_2 and remove nitrogen compounds.	Seaweed bed area developed (ha), CO_2 absorption rate (t/ha/year), nitrogen compound removal rate (t/ha/year)	13. Climate Action 14. Life Below Water
	Paving forest roads	・Pave forest roads for appropriate maintenance and conservation of forests and increase forests that can exert multifaceted functions in a sustainable manner as sinks to absorb CO_2 in the air.	Actual distance of forest roads paved (km)	13. Climate Action 15. Life On Land
	Establishing platforms for the development of human resources who will shoulder responsibilities for forests and forestry	・Develop forest practitioners and increase the number of forest workers who shoulder responsibilities for the maintenance of forests with the aim of ensuring more stable maintenance of forests, which have various functions for the public	Number of persons trained to shoulder responsibilities for forests and forestry	12. Responsible Consumption and Production 13. Climate Action

		benefit such as sinks to absorb CO_2, and promoting appropriate development, maintenance and augmentation of forest resources.		
Climate change adaptation	Measures for the agriculture and forestry : Development of agricultural product varieties and agricultural products production technologies, pest control measures, etc. (strawberries, citrus fruits, paddy rice, wheat, soybeans, etc.)	・Develop new varieties that can reduce the incidence of damages due to high temperatures, etc. ・ Develop production technologies that enables production under high temperature conditions.	Number of facilities, equipment, and product varieties developed; Number of R&Ds of agricultural product production technologies	13. Climate Action 15. Life On Land
	Measures for the fishery : Expenses for the development of equipment for fisheries research facilities (pearl oyster, etc.), the design and construction of research vessels, and the development of facilities for the production of seeds and seedlings of aquatic animals and plants.	・ Develop equipment for research facilities, and create varieties resistant to high water temperatures. ・Prepare research vessels to assess climate changes affecting the fisheries industry of the prefecture, including the rise in the sea temperature. ・Develop seeds and seedling production facilities, and develop cultivation technologies adaptable to environmental changes.	Number of facilities and equipment developed; number of species of aquatic animals and plants whose seeds and seedlings have been put into continuous production; etc.	13. Climate Action 14. Life Below Water
	Flood control : Construction of flood control dams, improvement of rivers (improvement of embankments, river channel excavation, etc.), removal of sediment from rivers, etc.	・Construct flood control dams to protect houses and public facilities from flooding. ・ Reduce the incidence of floods by implementing bank protection works, excavating river channels and removing sediment.	Names and number of sites where the project was implemented; number of areas and households protected against flood damages.	11. Sustainable Cities and Communities 13. Climate Action
	Measures against storm surges and high waves : Renovation of seashore protection facilities and fishing port facilities	・Mitigate inundation damages to hinterlands in case of flooding due to storm surges and high waves by developing seashore facilities, such as making levees higher. ・Mitigate damages to fishing port facilities, fishing vessels, etc. in case of a storm surge or high wave by making breakwaters higher.	Names and number of sites where the project was implemented; distance developed (km); increase in protected area and population; etc.	11. Sustainable Cities and Communities 13. Climate Action
	Measures against landslides : Development of erosion control facilities, forest conservation measures (development and renovation of forest conservation facilities, maintenance of protection forests)	・ Develop erosion control dams, retaining walls, etc. to protect houses from landslides. ・Develop forest conservation facilities to protest houses from landslides.	Names and number of sites where the project was implemented; number of households protected against landslides	11. Sustainable Cities and Communities 13. Climate Action

- KPIs that can determine environmental benefits will be reported for each project. For measures to control flooding, landslides, and storm surges and high waves, the number of sites which have been improved through the project is probably set as the KPI, and repairs, etc. that will not impact on hazard maps are likely to be counted. When these projects are carried out properly, they will exert statutory expected effects as environmental benefits. The extended life of facilities can also be an expected benefit, but maintenance and management are carried out through regular inspections, etc. Therefore, the number of projects implemented is considered to be the indicator that directly shows the environmental benefits.

Until the proceeds are fully allocated, information on the allocation of proceeds and environmental benefits will be disclosed on the Mie Prefecture website. When a significant change is made to the proceed allocation plan or when a significant change occurs in the allocation status after the proceeds are allocated, it will be disclosed promptly. Both the frequency and content of disclosure are appropriate.

[Disclaimer]
Second Opinion is not the Credit Rating Business, but one of the Ancillary Businesses (businesses excluding Credit Rating Service but are ancillary to Credit Rating Activities) as set forth in Article 299, paragraph (1), item (xxviii) of the Cabinet Office Ordinance on Financial Instruments Business, etc. With respect to such business, relevant laws and regulations require measures to be implemented so that activities pertaining to such business would not unreasonably affect the Credit Rating Activities, as well as measures to prevent such business from being misperceived as the Credit Rating Business.

Second Opinions are R&I's opinions on the alignment of a framework, formulated by companies etc. to raise funds for the purpose of environmental conservation and social contribution, with the principles etc. compiled by public organizations or private organizations related to the relevant financing as of the date of assessment. Second Opinions do not address any matters other than the alignment (including but not limited to the alignment of a bond issue with the framework and the implementation status of the project subject to financing). Second Opinions do not certify the outcomes and other qualities of the projects subject to the financing. Hence, R&I will not be held responsible for the effectiveness of the projects, including their outcomes. Second Opinions are not, in any sense, statements of current, future, or historical fact and should not be interpreted as such, and Second Opinions are not a recommendation to purchase, sell, or hold any particular securities and do not constitute any form of advice regarding investment decisions or financial matters. Second Opinions do not address the suitability of an investment for any particular investor. R&I issues Second Opinions based on the assumption that each investor will investigate and evaluate the securities which they plan to purchase, sell, or hold for themselves. All investment decisions shall be made at the responsibility of the individual investor.

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R&I is not responsible or liable in any way to any party, for all or any damage, loss, or expenses arising out of or in relation to errors, omissions, inappropriateness of, or insufficiencies in the information used when issuing Second Opinions, or opinions in Second Opinions, or arising out of or in relation to the use of such information or Second Opinions (regardless of the nature of the damage, including direct, indirect, ordinary, special, consequential, compensatory, or incidental damage, lost profits, non-monetary damage, and any other damage, and including expenses for attorneys and other specialists), whether in contract, tort, for unreasonable profit or otherwise, irrespective of negligence or fault of R&I.

As a general rule, R&I issues a Second Opinion for a fee paid by the issuer.

Japanese is the official language of this material and if there are any inconsistencies or discrepancies between the information written in Japanese and the information written in languages other than Japanese the information written in Japanese will take precedence.

[Expertise and Third-Party Characteristics]
R&I has launched the R&I Green Bond Assessment business in 2016, and since then, R&I has accumulated knowledge through numerous evaluations. Since 2017, R&I has been participating as an observer in the Green Bond Principles and Social Bond Principles, which have their own secretariat at the International Capital Market Association (ICMA). It also has been registered since 2018 as an Issuance Supporter (external review entity) of the Financial Support Programme for Green Bond Issuance, a project by the Ministry of the Environment.

The R&I assessment method and results can be found on the R&I website (https://www.r-i.co.jp/en/rating/esg/index.html).

There is no capital or personal relationship between R&I and the fundraiser that could create a conflict of interest.

Green Bond / Green Bond Programme

Independent External Review Form

Section 1. Basic Information

Issuer name: Mie Prefecture

Green Bond ISIN or Issuer Green Bond Framework Name, if applicable: Mie Green Bond Framework

Independent External Review provider's name: Rating and Investment Information, Inc. (R&I)

Completion date of this form: November 19, 2021

Publication date of review publication: November 19, 2021

Section 2. Review overview

SCOPE OF REVIEW

The following may be used or adapted, where appropriate, to summarise the scope of the review.

The review assessed the following elements and confirmed their alignment with the GBPs:

- ☒ Use of Proceeds
- ☒ Management of Proceeds
- ☒ Process for Project Evaluation and Selection
- ☒ Reporting

ROLE(S) OF INDEPENDENT EXTERNAL REVIEW PROVIDER

- ☒ Second Party Opinion
- ☐ Verification
- ☐ Other *(please specify)*:
- ☐ Certification
- ☐ Scoring/Rating

Note: In case of multiple reviews / different providers, please provide separate forms for each review.

EXECUTIVE SUMMARY OF REVIEW and/or LINK TO FULL REVIEW *(if applicable)*

<Second Party Opinion: Second Opinion>
R&I has provided a second opinion that the green bond framework is aligned with the Green Bond Principles 2021 and the Green Bond Guidelines 2020 by Ministry of the Environment of Japan.

For details, please refer to the report above.

Section 3. Detailed review

Reviewers are encouraged to provide the information below to the extent possible and use the comment section to explain the scope of their review.

1. USE OF PROCEEDS

Overall comment on section *(if applicable)*:

For details, please refer to "1. Use of Proceeds" in the report above.

Use of proceeds categories as per GBP:

☐	Renewable energy	☒	Energy efficiency
☐	Pollution prevention and control	☒	Environmentally sustainable management of living natural resources and land use
☐	Terrestrial and aquatic biodiversity conservation	☒	Clean transportation
☐	Sustainable water and wastewater management	☒	Climate change adaptation
☐	Eco-efficient and/or circular economy adapted products, production technologies and processes	☐	Green buildings (Environmentally Responsible Building)
☐	Unknown at issuance but currently expected to conform with GBP categories, or other eligible areas not yet stated in GBPs	☐	Other *(please specify)*:

If applicable please specify the environmental taxonomy, if other than GBPs:

2. PROCESS FOR PROJECT EVALUATION AND SELECTION

Overall comment on section *(if applicable)*:

For details, please refer to "2. Process for Project Evaluation and Selection" in the report above.

Evaluation and selection

- ☒ Credentials on the issuer's environmental sustainability objectives
- ☒ Defined and transparent criteria for projects eligible for Green Bond proceeds
- ☒ Summary criteria for project evaluation and selection publicly available
- ☐ Documented process to determine that projects fit within defined categories
- ☐ Documented process to identify and manage potential ESG risks associated with the project
- ☐ Other *(please specify):*

Information on Responsibilities and Accountability

- ☐ Evaluation / Selection criteria subject to external advice or verification
- ☐ Other *(please specify)*:
- ☒ In-house assessment

3. MANAGEMENT OF PROCEEDS

Overall comment on section *(if applicable)*:

For details, please refer to "3. Management of Proceeds" in the report above.

Tracking of proceeds:

- ☒ Green Bond proceeds segregated or tracked by the issuer in an appropriate manner
- ☒ Disclosure of intended types of temporary investment instruments for unallocated proceeds
- ☐ Other *(please specify)*:

Additional disclosure:

- ☒ Allocations to future investments only
- ☐ Allocations to both existing and future investments
- ☐ Allocation to individual disbursements
- ☐ Allocation to a portfolio of disbursements
- ☐ Disclosure of portfolio balance of unallocated proceeds
- ☐ Other *(please specify)*:

4. REPORTING

Overall comment on section *(if applicable)*:

For details, please refer to "4. Reporting" in the report above.

Use of proceeds reporting:

- ☒ Project-by-project
- ☐ On a project portfolio basis
- ☐ Linkage to individual bond(s)
- ☐ Other *(please specify):*

Information reported:

- ☒ Allocated amounts
- ☐ Green Bond financed share of total investment
- ☐ Other *(please specify):*

Frequency:

- ☒ Annual
- ☐ Semi-annual
- ☐ Other *(please specify):*

Impact reporting:

- ☒ Project-by-project
- ☐ On a project portfolio basis
- ☐ Linkage to individual bond(s)
- ☐ Other *(please specify):*

Frequency:

- ☒ Annual
- ☐ Semi-annual
- ☐ Other *(please specify):*

Information reported (expected or ex-post):

- ☒ GHG Emissions / Savings
- ☐ Energy Savings
- ☐ Decrease in water use
- ☐ Other ESG indicators *(please specify):*

Means of Disclosure

- ☐ Information published in financial report
- ☐ Information published in sustainability report
- ☐ Information published in ad hoc documents
- ☒ Other *(please specify):* Issuer's website
- ☐ Reporting reviewed *(if yes, please specify which parts of the reporting are subject to external review):*

Where appropriate, please specify name and date of publication in the useful links section.

USEFUL LINKS *(e.g. to review provider methodology or credentials, to issuer's documentation, etc.)*

1. The evaluation methodology and services
   https://www.r-i.co.jp/en/rating/products/esg/index.html

2. Evaluation performance
(1) Green Finance
   https://www.r-i.co.jp/en/rating/esg/greenfinance/index.html

(2) Sustainability Finance
   https://www.r-i.co.jp/en/rating/esg/sustainabilityfinance/index.html

(3) Social Finance
   https://www.r-i.co.jp/en/rating/esg/socialfinance/index.html

SPECIFY OTHER EXTERNAL REVIEWS AVAILABLE, IF APPROPRIATE
Type(s) of Review provided:

☐ Second Party Opinion
☐ Certification
☐ Verification
☐ Scoring/Rating
☐ Other *(please specify):*

Review provider(s):

Date of publication:

ABOUT ROLE(S) OF INDEPENDENT REVIEW PROVIDERS AS DEFINED BY THE GBP

1. **Second Party Opinion**: An institution with environmental expertise, that is independent from the issuer may issue a Second Party Opinion. The institution should be independent from the issuer's adviser for its Green Bond framework, or appropriate procedures, such as information barriers, will have been implemented within the institution to ensure the independence of the Second Party Opinion. It normally entails an assessment of the alignment with the Green Bond Principles. In particular, it can include an assessment of the issuer's overarching objectives, strategy, policy and/or processes relating to environmental sustainability, and an evaluation of the environmental features of the type of projects intended for the Use of Proceeds.

2. **Verification:** An issuer can obtain independent verification against a designated set of criteria, typically pertaining to business processes and/or environmental criteria. Verification may focus on alignment with internal or external standards or claims made by the issuer. Also, evaluation of the environmentally sustainable features of underlying assets may be termed verification and may reference external criteria. Assurance or attestation regarding an issuer's internal tracking method for use of proceeds, allocation of funds from Green Bond proceeds, statement of environmental impact or alignment of reporting with the GBP, may also be termed verification.

3. **Certification**: An issuer can have its Green Bond or associated Green Bond framework or Use of Proceeds certified against a recognised external green standard or label. A standard or label defines specific criteria, and alignment with such criteria is normally tested by qualified, accredited third parties, which may verify consistency with the certification criteria.

4. **Green Bond Scoring/Rating**: An issuer can have its Green Bond, associated Green Bond framework or a key feature such as Use of Proceeds evaluated or assessed by qualified third parties, such as specialised research providers or rating agencies, according to an established scoring/rating methodology. The output may include a focus on environmental performance data, the process relative to the GBP, or another benchmark, such as a 2-degree climate change scenario. Such scoring/rating is distinct from credit ratings, which may nonetheless reflect material environmental risks.