Green Bond Guidelines, 2017

March 2017

Ministry of the Environment

Disclaimer

The Green Bond Guidelines (hereinafter “the Guidelines”) are legally non-binding and no legal penalties will be imposed even if a certain action does not comply with the elements (including elements described with the word “should”) described in the Guidelines. However, it is necessary to note that if a certain action infringes upon any laws or regulations, legal penalties may be imposed based on these laws or regulations, even though the action complies with the elements described in the Guidelines.

The Guidelines do not constitute advice on decisions regarding investments in individuals, other securities, or financial matters, or recommendations to purchase, sell, or hold specific Green Bonds or other securities.

The Guidelines do not guarantee that the projects to which proceeds from specific Green Bonds are allocated will produce the intended environmental benefits, and assume no responsibility whether the projects realize their environmental benefits or not.

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Foreword

Currently, the world faces various environmental issues that threaten the survival of the human race and the sustainability of economic activities. According to the fifth *Assessment Report of the Intergovernmental Panel on Climate Change*(IPCC) for the period 2013–2014, there is no doubt that global warming exists and that society is expected to face the extensive, serious consequences of temperature rises, such as the concomitant negative impact on food and water availability and abnormal weather. All human activities are based on a favorable global environment and economic activities, including finance, cannot exist without it. However, economic activities could damage the favorable global environment, for example, by the discharge of CO_2.

In light of these conditions, the Paris Agreement, the first legally binding consensus on climate change in 18 years since the Kyoto Protocol, was adopted at the 21st Conference of the Parties (COP 21) held in Paris, France on December 12, 2015. The Paris Agreement is the first international agreement to clearly state that the world should adopt a decarbonization policy. It specifies ambitious efforts to combat climate change by setting targets for maintaining the increase in the global average temperature to well under 2°C above pre-industrial levels, pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, and making financial flows consistent with a policy geared toward low greenhouse gas emissions and climate-resilient development.

Since the favorable global environment is a limited resource, it must not be exhausted by the current generation. Our responsibility is to pass on the favorable global environment to future generations wherein they can achieve prosperity equal to the current level. The 2°C target of the Paris Agreement embodies our efforts to fulfill this responsibility.

However, the achievement of the 2°C target requires substantial capital. According to estimates by the International Energy Agency (IEA), an additional investment of US$ 9 trillion is required for the period 2016–2050 to decarbonize the power sector. Moreover, in order to achieve the energy efficiency targets in the building, manufacturing, and transportation sectors, an additional investment of US$ 3 trillion is required for the period 2016–2050. However, financing all these investment needs with public funds is not realistic. A more efficient way of securing capital is to draw on market dynamics and introduce private funds. Therefore, laying out a scheme for domestic and overseas private funds, including Japan's household financial assets of over 1,700 trillion yen, is critical for such investment opportunities.

Finance, as the lifeblood of the economy, has great influence over the direction of the economy and

society. Financial market participants have the basic responsibility to contribute to the maintenance of the favorable global environment by creating such financial flows. Furthermore, the funds in the financial market are directly or indirectly entrusted to market participants by citizens originally. Therefore, the essential role of fiduciaries is not only executing their legal fiduciary duty but also using the funds for the creation of a safe and secure future society for the citizens. Moreover, in a situation where the finite nature of the global environment has become a realistic issue, protecting the favorable global environment means protecting the foundation of economic activities, which has medium and long-term implications on the survival of finance itself. Along with global decarbonization efforts, the technologies, products, and services required for decarbonization are to be considered when creating various business opportunities. Therefore, accommodating investment demand in markets with potential growth is important for the financial market participants and the potentially huge investment opportunities available.

Green Bonds are bonds wherein the proceeds are invested exclusively in projects that offer environmental benefits (Green Projects). These bonds explicitly create a flow of funds toward Green Projects by combining the efforts of issuers and investors, and are expected to become a pathway by which financial market participants can fulfill their basic responsibilities toward the maintenance of a favorable global environment while simultaneously pursuing investment opportunities. In fact, after the publication of the Green Bond Principles in 2014, Green Bond issuances and investments increased significantly overseas. While paying our highest respect to people who developed and supported the Green Bond market, it is expected that a wide range of financial market participants will continue to actively promote the issuance of and investment in Green Bonds in the future.

Additionally, Green Bonds may help to attract people who have not been interested in investing in conventional bonds. For example, if a local government or a local company issues a Green Bond for Green Projects in the local community, it may create a new flow of funds that circulate within the community. Investing local funds in projects to conserve the natural environment of the community will contribute to regional revitalization by creating employment in renewable energy projects, regional activation by the maintenance and development of tourism, and the creation of disaster-resistant communities.

We developed the Guidelines to raise the visibility of Green Bonds and expand Green Bond issuance and investment within Japan in line with the global development of the Green Bond market. When developing the Guidelines, we considered consistency with the GBP, which is widely accepted globally. With various market participants issuing and investing in Green Bonds under the Guidelines, it is expected that private funds will be appropriately invested in the projects that contribute to the

conservation of the global environment. We sincerely hope that such efforts will ensure that the environmental will be consideration in every decision-making process related to not only bonds but also all financial activities to achieve a sustainable society through market mechanisms.

Background to the Development of the Guidelines

From October 2016 to March 2017, the Green Bond Review Committee (hereinafter "the Review Committee") met four times, during which Green Bond scholars and practitioners discussed the details of the Guidelines based on the following three basic approaches:

(i) Due consideration should be given to ensuring consistency with the globally-accepted GBP;

(ii) The Guidelines should reflect Japan's immature market, wherein Green Bond issuances and investments have not been actively implemented (including lowering costs and the clerical load);

(iii) To ensure the safety of domestic and overseas Green Bond investments, the Guidelines should prevent "green wash" bonds (bonds labeled as "green" despite having exaggerated or no environmental benefits, or whose proceeds have not been appropriately allocated to Green Projects) from being issued and invested in.

In December 2016, a Green Bond opinion exchange meeting was held with the Review Committee members and European and American financial market participants well-versed in the GBP to discuss the Guidelines.

In February 2017, a Third-Party Committee for the Green Bond Guidelines (provisional name) met to allow the Guidelines to be examined by independent third parties who had no direct stake in the Guidelines. From January 26 to February 14, 2017, public comments regarding the Guidelines were invited, which were later reviewed and discussed (as needed) by the Review Commission. Based on these discussions, the Guidelines were developed by the Ministry of the Environment of Japan.

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Chapter 1 Introduction

1. Purpose of the Guidelines

In December 2015, the Paris Agreement, an international agreement regarding climate change, was adopted at the COP 21[1] held in Paris, France. In this agreement, global long-term targets were set to maintain any increase in the global average temperature to well below 2°C and to pursue efforts to limit the global average temperature to 1.5°C above pre-industrial levels. To address the long-term substantial reduction in greenhouse gas emissions in Japan and to achieve this 2°C target, it is necessary to mobilize large amounts of private investments in Green Projects such as renewable energy projects.

Furthermore, the "2030 Agenda for Sustainable Development" adopted at the United Nations Sustainable Development Summit held in September 2015 in New York, lays out the Sustainable Development Goals, which include the conservation of oceanic and terrestrial ecosystems. This has led to increased expectations for the role of private investments in projects that prevent the deterioration of natural resources and support other environmental causes.

In recent years, the issuance of Green Bonds, bonds issued by organizations including corporations and local governments to raise funds for Green Projects[2], and investments in these bonds have significantly increased at an international level. Green Bonds are becoming an effective tool to raise funds for Green Projects that contribute to the reduction of greenhouse gas (GHG) emissions and the prevention of natural capital deterioration. These trends have been observed since the establishment of the "Green Bond Principles" (hereinafter referred to as "the GBP") in January 2014. Although Green Bond issuances and investments have begun to appear in Japan, they are not as sufficiently widespread as in other countries and large amounts of private funds should be introduced to achieve these international goals.

In light of the above, these "Green Bond Guidelines" (hereinafter "the Guidelines") have been developed to increase Green Bond issuances and investments in Japan. To maintain the credibility of the green characteristics of Green Bonds, the Guidelines seek to prevent "green wash" bonds (bonds labeled as "green" despite having no environmental benefits or whose proceeds[3] have not been appropriately allocated to Green Projects) from being issued and invested in.

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1 The 21st Conference of the Parties to the United Nations Framework Convention on Climate Change

2 "Green Bonds" not only includes bonds but also securitized bonds described on page 13 in this Guidelines

3 "Proceeds" in the Guidelines means the "net proceeds" after issuance fees have been deducted.

The Guidelines, in accordance with the GBP, which are widely accepted in international Green Bond markets, provide issuers, investors, and other market participants with illustrative examples of specific approaches and interpretations tailored to Japan's bond market to aid with decision-making regarding Green Bonds. The Guidelines will both establish the credibility of the green characteristics of Green Bonds and alleviate the costs and administrative burdens for issuers, thereby spurring Green Bond issuances and investments in Japan.

2. Basic Concepts of the Guidelines

The Green Bond market is to be developed through interactions based on sufficient information between issuers who want to raise funds, clearly declaring that they will allocate the proceeds only to Green Projects, and investors who want to invest in Green Projects of their choice. The final decision on how to evaluate the appropriateness of the issuers' approaches to Green Bonds and whether Green Bonds are invested in, would be left to the market participants.

If the expected elements of Green Bonds are clarified in the Guidelines, it will form the foundation for interactions between the issuers and investors as well as the tool for assuring stakeholders that the Green Bond proceeds will be used for Green Projects.

Additionally, it is important for issuers and investors that the credibility of the green characteristics of Green Bonds is maintained within the market and society. In particular, preventing green wash bonds from being issued and invested in is imperative for the protection of Green Bond investors.

Based on the above, the Guidelines have been developed according to the internationally accepted GBP (as of June 2016). The Guidelines recognize that a Green Bond is expected to be aligned with four components: (1) Use of proceeds, (2) Process for Project Evaluation and Selection, (3) Management of Proceeds, and (4) Reporting, and believe that bonds that have all elements described with the word "should" in the Guidelines concerning these four components can be internationally accepted as Green Bonds[4].

However, the Guidelines do not adopt an "all or nothing" position, which means that the Guidelines do not insist that "the issuer should not describe any environmental benefits of the bond unless the bond possesses all elements associated with the word "should" in the Guidelines." Considering the current immaturity of Japan's Green Bond market, it is beneficial for issuers to

[4] However, it is necessary to keep in mind that an individual Green Bond is to be evaluated and selected by each investors and other related participants based on their own ways of thinking.

issue “trial” bonds, based on the Guidelines, as long as their proceeds are allocated with certainty to Green Projects, even if the evaluation of the environmental benefits of the issued trial bonds is imperfect or the reporting of the evaluation results is inadequate. These trial issuances are effective according to the Guideline’s aim to promote Green Bonds and will help issuers to accumulate knowledge for future Green Bond issuances.

Issuers, investors, and other market participants may have different perspectives regarding certain matters; hence, it is important to establish a mechanism in which 1) issuers disclose information relevant to their Green Bonds in an easily understandable way, 2) investors or other market participants evaluate the appropriateness of the issuers’ approaches to Green Bonds using the information disclosed by the issuers, and 3) all participants, including the issuers and the investors, can take advantage of the knowledge accumulated through these interactions between participants, rather than filter out specific Green Bond approaches from the market, unless these approaches are obviously inappropriate. By establishing this mechanism, market discipline can be exercised to avoid greenwashing while securing the diversity of issuers’ approaches.

The Guidelines focus on the green characteristics of bonds and therefore do not cover the inherent risks associated with bonds. It is important to note that Green Bonds, even if aligned with the Guidelines, have credit risks, price fluctuation risks, liquidity risks, and other risks, like ordinary bonds.

3. Structure of the Guidelines

In Chapter 2, the Guidelines explain the overview and the current situation of Green Bonds. The benefits of Green Bond issuances and investments are also explained, as a reference for issuers who are considering to issue Green Bonds and for investors who are considering to invest in them.

Chapter 3 is the core of the Guidelines. In this chapter, the Guidelines describe the elements that Green Bonds are expected to possess and examples of the possible approaches that could ensure that a bond has these elements. The descriptions in this chapter have the following meaning:

① Sentences described with the word “should” are basic elements that bonds labelled as “green” are expected to have.
② Sentences described with the word “recommend” are elements that bonds labelled as “green” are optimally expected to have, although a bond which does not have these elements can also be labeled as “green.”

③ Sentences described with the word “to be considered” are examples of the possible approaches and interpretations related to Green Bonds.

It should be noted that the Guidelines are legally non-binding. No legal penalties will be imposed if a certain action does not comply with the elements described in the Guidelines (including elements described with the word “should”). However, it is necessary to note that, if a certain action infringes upon any laws and regulations, legal penalties may be imposed based on these laws and regulations, even if the action complies with the elements described in the Guidelines.

Depending on the characteristics of the issuers and the Green Projects in which Green Bond proceeds will be invested, the practical application of the Guidelines could vary significantly. Thus, in order to facilitate the understanding of readers, several patterns of Green Bond issuances are provided as model cases in Chapter 4.

Chapter 2 Overview of Green Bonds

1. What are Green Bonds?

Green Bonds are bonds issued by companies, local governments, or other organizations to raise funds for domestic and overseas Green Projects. Specifically, these bonds have the following features: (i) proceeds are allocated exclusively to Green Projects, (ii) proceeds are tracked and managed in a reliable manner, and (iii) transparency is ensured by reporting after the issuance of the bonds.

The issuers of Green Bonds include: (i) corporations that raise funds for Green Projects (including SPCs that only handle Green Projects), (ii) financial institutions that raise investment funds and loans for Green Projects, and (iii) local governments that raise funds for Green Projects. Investors in Green Bonds include: (i) institutional investors, such as pension funds and insurance companies that commit to ESG (environmental, social, and governance) investments; (ii) investment managers entrusted with the management of ESG investments, and (iii) individual investors who focus on the use of the proceeds.

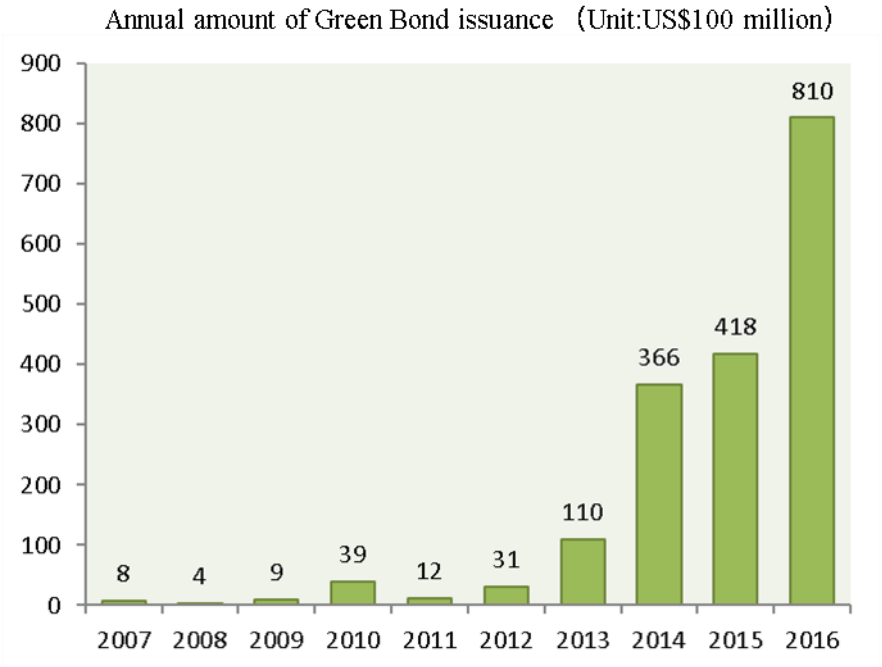
Currently, the GBP list the following four types of Green Bonds, which vary by redemption resources and other characteristics.

Green Use of Proceeds Bond	This bond is issued to raise funds for Green Projects. It constitutes recourse-to-the-issuer debt and its redemption does not depend on the cash flows of specific Green Projects.
Green Use of Proceeds Revenue Bond	This bond is issued to raise funds for Green Projects. It is a non-recourse-to-the-issuer debt and its redemption depends on the cash flows of public Green Projects such as use fees and special taxes on public facilities linked to Green Projects. For example, bonds whose proceeds are allocated to the development and operation of waste treatment sites by extra-governmental organizations and whose redemption is only possible via the revenue from the projects.
Green Use of Proceeds Project Bond	This bond is issued to raise funds for Green Projects. It is a project bond and its redemption depends on the cash flows of a single or multiple Green Projects. For example, the bonds in this category are issued by SPCs that exclusively engage in renewable energy generation projects whose proceeds are allocated to develop and operate facilities, and so on, and can be redeemed only by the revenue from the projects.

Green Use of Proceeds Securitized Bond	The bonds in this category usually have more than one asset linked to Green Projects (including loan claims, lease claims, and trust beneficiary rights) that are used as collateral and are redeemed using the cash flows from these assets. For example, ABS (Asset Backed Securities), backed by assets like loan claims linked to solar panels, energy efficient appliances, equipment, houses, and low-emissions vehicles, such as electric vehicles and hydrogen vehicles, belong to this category.

2. Current Situation of Green Bonds

An early example of a bond that formed the basis for Green Bonds is the Climate Awareness Bond (CAB) issued by the European Investment Bank(EIB) in 2007 to raise funds for renewable energy and energy efficiency projects. Later, multilateral development banks, such as the World Bank, the Asian Development Bank, and the African Development Bank, issued bonds for similar projects that were collectively called "Green Bonds." The annual issuance of Green Bonds worldwide has been rapidly increasing in the past several years and now total US$ 81 billion (twice as much as the previous year) as of 2016.



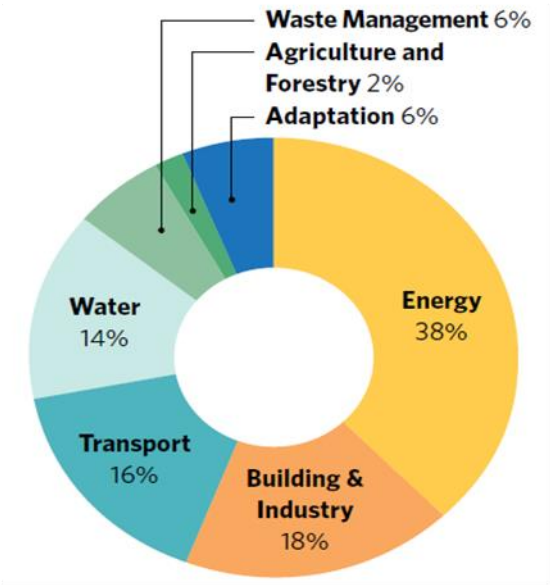
Source: Created by the Ministry of the Environment based on the website of Climate Bonds Initiative and "2015 Green Bond Market Roundup" published by the Climate Bonds Initiative.

The background of the significant increase in the issuances of Green Bonds includes the

establishment of the GBP in January 2014, which set the tone for Green Bonds, and the acceleration of issuers' diversification due to the increase in bonds issued by private companies, financial institutions, local governments, or other organizations. Additionally, the number of Green Bonds issued by the emerging countries of China and India has increased rapidly since 2015.

Regarding the issuance performance of Green Bonds issued by proceed allocation in 2016, renewable energy ranked at the top (38%), followed by building and industry (energy efficiency) (18%). transport (low-carbon), water resources (sustainable), waste management, agriculture and forestry, and (climate change) adaptation accounted for the remaining 44%.

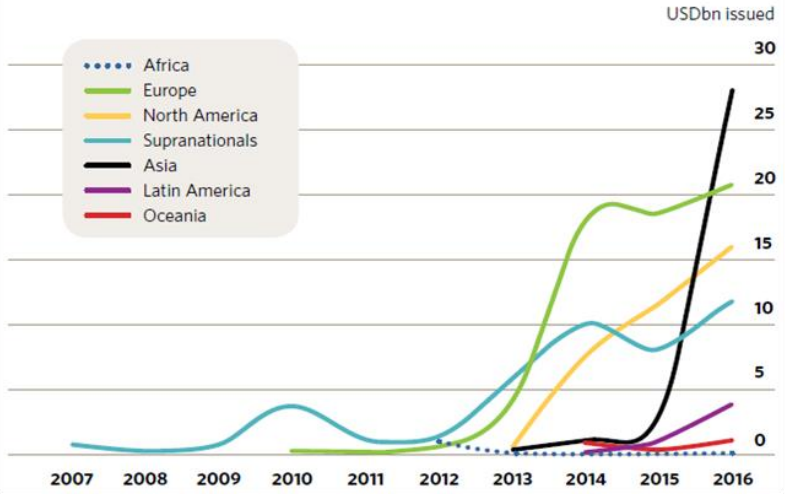
Green Bond issuance performance by proceed allocation (2016)



Source: An excerpt from Climate Bonds Initiative "Green Bonds Highlights 2016"

Initially, Green Bonds were mostly issued in the EMEA (Europe, Middle East, and Africa) region and North America. However, in recent years, the number of Green Bonds issued has rapidly increased in the Asia-Pacific region (in particular, China and India). In 2016, China accounted for approximately 30% of the total Green Bonds issued worldwide.

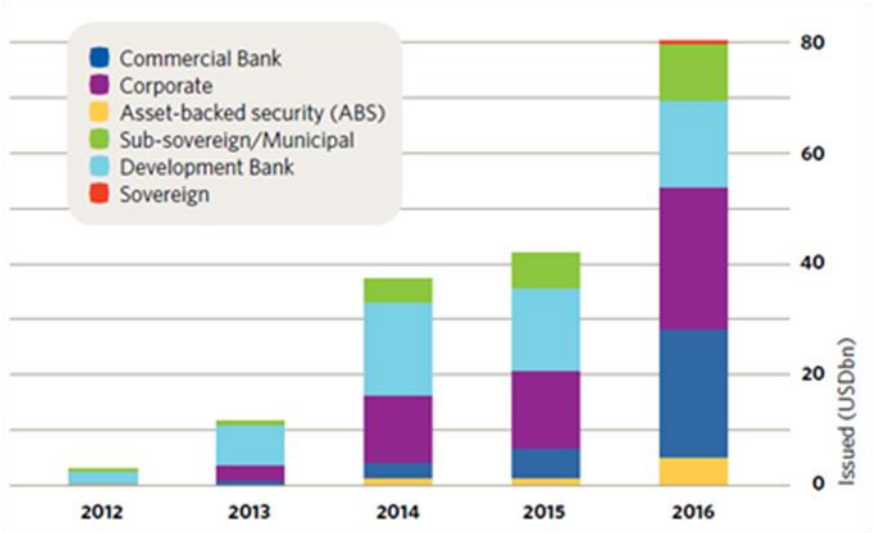
Green Bond issuance Performance by Country and Region (up to 2016))



Source: An excerpt from Climate Bonds Initiative "Green Bonds Highlights 2016"

While initially the issuers of Green Bonds were mostly multilateral development banks, such as the European Investment Bank (EIB) and the World Bank, private companies, private financial institutions, and local governments have increased their bond issuances in recent years. Currently, bonds issued by these organizations account for the majority.

Green Bond issuance Performance by Issuer (up to 2016))



Source: An excerpt from Climate Bonds Initiative "Green Bonds Highlights 2016"

3. Benefits of Green Bonds

(i) Benefits of Issuance

For issuers, the benefits of issuing Green Bonds include the following:

1) Acquisition of public acceptance by demonstrating willingness to promote Green Projects

Since the investment destination for Green Bond proceeds is limited to Green Projects, if issuers, such as companies or local governments, issue Green Bonds, the proceeds are allocated to Green Projects, thereby promoting them. Therefore, issuers can demonstrate that they are actively promoting Green Projects by issuing Green Bonds, which could possibly earn them public acceptance.

2) Reinforcement of the funding base by building relationships with new investors

The diversification of financing instruments is an effective means for issuers to reinforce their funding bases. Issuing a Green Bond offers issuers the opportunity to consolidate their funding base by building relationships with new investors, who value investment destinations that help to solve environmental problems such as global warming.

3) Possibility of raising funds on relatively favorable terms

For companies that have not built solid relationships with financial institutions, such as emerging renewable energy companies, it may not be possible to obtain loans with advantageous terms. In such cases, by issuing a Green Use of Proceeds Project Bond, companies may be able to raise funds on relatively favorable terms from investors who are well versed in evaluating the feasibility of the renewable energy projects.

(ii) Benefits of Investment

The benefits for investors investing in Green Bonds are as follows:

1) Serving as ESG investments

Some institutional investors are committed to a certain scale of ESG investment. For them, Green Bonds can clearly match this commitment and provide a stable cash flow unless issuers default on the debt. Moreover, other investors without such commitments can show that they actively invest in Green Bonds, support Green Projects, and thereby gain public acceptance while obtaining stable cash flows unless issuers default on the debt.

2) Gaining both return on investments and environmental benefits

By investing in Green Bonds, investors can support the realization of the environmental benefits

(listed below in (iii)) that contribute to creating a sustainable society while simultaneously gaining returns on their bond investments.

3) Direct investments in Green Projects

In light of the global quest for lower GHG emissions based on the Paris Agreement, it is expected that the demand for investment in Green Projects involving renewable energy and energy efficiency will increase substantially. Green Bonds offer investors the opportunity to invest directly in such projects.

4) Risk hedging via alternative investments

Green Bonds issued as project bonds can serve as alternative investments that are regarded as not closely correlated with traditional assets, such as stocks and bonds, in terms of price. Therefore, Green Bonds may serve as an effective asset class for investors who seek to hedge investment risks by diversifying investment destinations. Moreover, when renewable energy and energy efficiency projects, etc., are the investment destinations of Green Bond proceeds, Green Bonds serve as a possible means to hedge risks involving social and economic shifts that are expected to occur in the global efforts for the long-term substantial reduction in GHG emissions based on the Paris Agreement.

(iii) Environmental Benefits

Environmental benefits that can be obtained from the issuance of and investments in Green Bonds include the following:

1) Contribution to global environmental conservation

The dissemination of Green Bonds expands private investments in Green Projects, such as renewable energy and energy efficiency projects, to contribute to the long-term substantial reduction in GHG emissions in Japan and abroad. Moreover, other than those contributing to the reduction in GHG emissions, Green Bonds expand private investments in Green Projects and prevent the degradation of natural capital, which is the foundation of long-term profits for companies.

2) Raising individuals' awareness of green investments

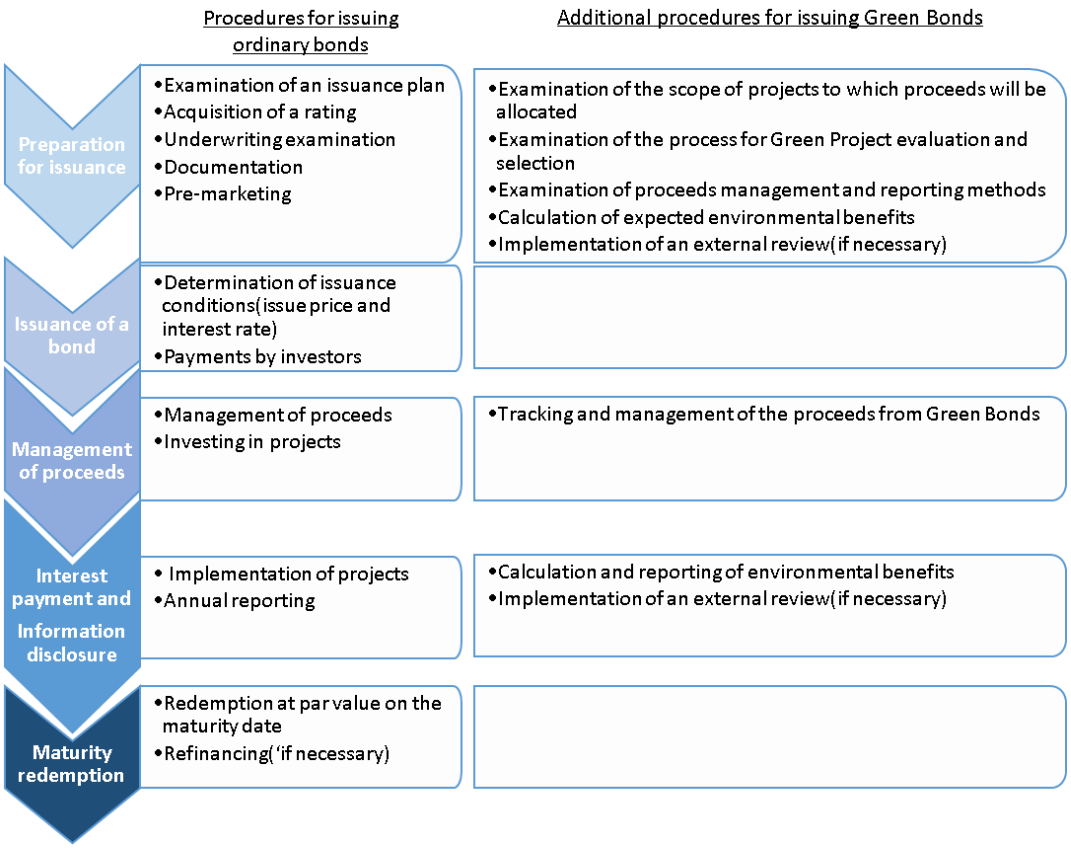
The dissemination of Green Bonds will enhance individual awareness of green investments, including Green Bonds, which will in turn motivate institutional investors, etc., who are the trustees of individuals' assets, to actively invest in green investments. Moreover, it will enhance individual interest in the use of savings and investments, contributing to the “greenization” of the economy as a whole.

3) Contribution to resolving social and economic issues through the promotion of Green Projects

The promotion of Green Projects through the dissemination of Green Bonds lowers energy costs, strengthens energy security, reactivates the regional economy, and enhances resilience in the event of disasters.

4. Green Bond Issuance Flow

Companies, local governments, or other organizations that issue Green Bonds need to follow extra procedures, in addition to the procedures required for issuing ordinary corporate bonds, municipal bonds, and securitized products, etc. These extra procedures are illustrated below:



Chapter 3 Expected Elements of Green Bonds and Examples of Possible Approaches

1. Use of Proceeds

【Use of Proceeds】

(i) Green Bond proceeds should be allocated to Green Projects that state the clear environmental benefits, which should be assessed by the issuer, and where feasible, quantification is recommended.

(ii) Possible examples of the use of proceeds include the following Green Projects (including loans and investments linked to the projects):

<Possible examples of the use of proceeds>

*Possible examples are not limited to the following:

1) Projects for renewable energy (including generation, transmission, appliances, and products)

・Renewable energy projects involving solar power, wind power, small and medium hydropower, biomass, and geothermal power

・Projects to install, manage, and maintain power lines that transmit electricity generated by renewable energy, and batteries that store the electricity, adjust to demand and supply, and store energy

・Projects to manufacture appliances and products used in the aforementioned projects, such as solar panels, power lines, and batteries

・Projects to use renewable heat sources such as solar thermal heat and geothermal heat

2) Projects for energy efficiency (such as in new and refurbished energy efficient buildings, energy storage, district heating, smart grids, appliances and products)

・Projects for the construction of highly energy efficient buildings, including the net zero energy house (ZEH) and net zero energy building (ZEB)

・Projects to renovate offices, plants, and houses for better energy efficiency to gain high-energy performance certifications such as the LEED (Leadership in Energy and Environmental Design), CASBEE (Comprehensive Assessment System for Built Environment Efficiency), or BELS (Building-Housing Energy-efficiency Labeling System) certifications

・Projects to introduce highly energy efficient equipment and facilities into offices, plants, and houses

・Projects to develop and introduce smart grid-related appliances

3) Projects for pollution prevention and control (including waste water treatment, GHG control, soil remediation, 3R-based [reduce, reuse, recycle] waste management and waste-to-energy, and associated environmental monitoring analysis)

・Projects that contribute to the realization of a circular economy (including resource saving, design and manufacture of long life products, inverse manufacturing, and advanced waste disposal

[including recycling and waste-to-energy])

・Projects to control the release of toxic chemicals into the environment by preventing leaks, volatilization, and infiltration of the chemicals .

・Projects to prevent the release of fluorocarbons into the atmosphere, to collect and to destroy fluorocarbons

・Projects to build facilities that contribute to the advanced treatment and recycling of wastewater from plants, etc.

・Projects for soil remediation

4) Projects for the sustainable management of living natural resources (including environmentally sustainable agriculture, fishery, aquaculture, and forestry, integrated pest management (IPM), weed management, and drip-irrigation)

・Projects to acquire sustainable fishery and aquaculture certifications such as the MSC (Marine Stewardship Council) and ASC (Aquaculture Stewardship Council) certifications

・Projects to acquire sustainable forestry certifications such as the FSC (Forest Stewardship Council) certification

・Afforestation projects

5) Projects for terrestrial and aquatic biodiversity conservation (including the protection of coastal, marine, and watershed environments)

・Projects for the conservation of wetlands and coral reefs

・Projects for the conservation and improvement of *satoyama* and *satoumi*

・Projects for the transformation of river walls into more natural forms

6) Projects for clean transportation (such as low-emission electric and hydrogen vehicles, public transportation, railways, bicycle, non-motorized, multi-modal transportation, infrastructure for clean energy vehicles and the reduction of harmful emissions)

・Projects for the development or manufacture of low-emission electric and hydrogen vehicles and the development and maintenance of infrastructure for the use of such vehicles

・Projects to enhance the efficiency of logistics systems by the systematic installation of logistics bases, aggregation of transportation networks, modal shifts, and coordinated transportation and delivery.

・Projects to introduce devices (such as digital tachographs) to support eco-driving

・Projects for the development of facilities for park-and-ride and car-sharing systems

7) Projects for sustainable water management (including sustainable infrastructure for clean and/or drinking water, sustainable urban drainage systems, and river training and other forms of flood mitigation)

・Projects to conserve the water circulation cycle, such as water source protection and penetration of rainwater into soils (including the development of green infrastructure)

・Projects to develop and improve flood prevention facilities

・Projects for seawater desalination

8) Projects for climate change adaptation (including information support systems, such as climate observation and early warning systems)

・Projects to reinforce the weather-related disaster prevention functions of logistics, railways, ports, airports, roads, water supply infrastructure, waste disposal facilities, and traffic safety facilities

9) Projects for the development of eco-efficient products, production technologies, and processes (such as the development and introduction of environmentally friendlier, eco-labeled, or certified products, and resource-efficient packaging and distribution)

・Projects to manufacture products that meet the requirements of environmental certifications

・Projects for the research, development, and introduction of technologies and products that reduce the amount of GHGs

(Reference) Environmental Certifications

(*Note that these certification systems do not guarantee that certified projects are genuinely green.)

■ Green Building Certifications

・LEED certification system (Certification body: U.S. Green Building Council)

LEED stands for *Leadership in Energy and Environmental Design* and is a certification program for green buildings that started in the U.S. It evaluates the energy efficiency and environmental load of buildings and the evaluation process covers everything from planning and design to construction, operation, and maintenance of the buildings. There are four certification levels—standard, silver, gold, and platinum—that are granted according to the points earned.

・CASBEE certification system (Certification body: Institute for Building Environment and Energy Conservation)

CASBEE stands for the *Comprehensive Assessment System for Built Environment Efficiency*. Buildings are evaluated and rated according to their environmental performance. This system evaluates building quality comprehensively, evaluating not only the use of energy efficient and environmentally-friendly materials, but also interior comfort and harmony with the surroundings. The evaluation results are rated on a scale of one to five levels ranging from S rank (excellent) to C rank (inferior).

・BELS certification system (Certification body: Association for Housing Performance Evaluation and Labeling)

BELS stands for *Building-Housing Energy-efficiency Labeling System*. This certification system is based on the Guidelines for Building Energy Efficiency Labeling (guidelines for the labeling the energy consumption of buildings) developed by the Ministry of Land, Infrastructure, Transport, and Tourism. Based on their primary energy consumption, a third-party organization objectively evaluates the energy efficiency of buildings and ranks their results on a five-star scale.

■ Certifications for Sustainable Forestry and Fishery

・FSC certification system (Certification body: Forest Stewardship Council)

This system comprises two types of certification: Forest Management (FM) certification, wherein business operators are certified to manage forests in a sustainable manner and Chain-of-Custody certification, wherein wood materials and products are certified as made of wood from forests managed by FM-certified business operators.

・MSC certification system (Certification body: Marine Stewardship Council)

This system comprises two types of certification: Fishery certification that certifies fishing operations as sustainable by using appropriately managed fishing methods and Chain-of-Custody certification that certifies that the marine products are provided by fishery-certified fisheries to clearly discriminate them from products provided by non-fishery-certified fisheries.

・ASC certification system (Certification body: Aquaculture Stewardship Council)

This system certifies that aqua farmers manage environmentally-friendly aqua farms with consideration for the local communities. An ASC label is attached to marine products produced by certified aqua farms. Currently, certification programs have been established for seven types of farmed seafood (abalone, clams, trout, whitefish, salmon, prawns, and perch). In the future, certification programs for three additional types of farmed seafood (yellowtail/cobia, seaweed, and marine fish) and a certification program based on core standards (applicable to every fish) and feed standards will be implemented.

(iii) Green Projects may have some incidental negative impacts on the environment, in addition to their intended environmental benefits. Green Projects that provide the clear environmental benefits described above are projects whose negative environmental impacts are evaluated by the issuers as limited compared to their environmental benefits.

The following are typical examples of negative impacts.

<Possible examples of negative environmental impacts>

* Since these are major examples of negative impacts on the environment and some projects may have other negative effects not only on the environment but also on society, it is important that each project is individually examined. Possible examples are not limited to the following.

1) Projects for renewable energy

Possible Projects	Possible negative impacts on the environment
Solar power generation projects	✓Ecological disruption or adverse effects on ecosystems caused by massive land development ✓Outflow of muddy water ✓Light pollution and adverse effects on scenery ✓Noise and vibration from facilities
Wind power generation projects	✓Adverse effects on ecosystems (such as bird strikes) ✓Low-frequency noise and vibration ✓Adverse effects on the scenery
Small and medium hydroelectric power generation projects	✓Adverse effects on ecosystems (disturbing the upstream migration of fish)
Biomass power generation projects	✓Air pollution caused by emissions from facilities and vehicles carrying biomass fuel ✓Water pollution due to drainage from facilities ✓Adverse effects on ecosystems due to waste heat generation ✓Noise
Geothermal power generation projects	✓Adverse effects on ecosystems due to large-scale land development

	✓Air pollution from toxic volatile substances ✓Adverse effects on the scenery
Projects to install, manage, and maintain power lines that transmit electricity generated by renewable energy and batteries that store the electricity, adjust to demand and supply, and store energy	✓Adverse effects on ecosystems (cases where power lines and batteries are installed in natural reserves, etc.)
Projects to manufacture equipment used in the aforementioned projects, such as solar panels, power lines, and batteries	✓Release of toxic chemicals produced in the production process of equipment into the environment
Projects that engage in renewable energy-derived heat utilization, such as solar heat and geothermal heat	✓Adverse effects on ecosystems due to changes in the temperature and quality of groundwater and soil

2) Projects for energy efficiency

Possible Projects	Possible negative impacts on the environment
Projects for the construction of new ZEH, ZEB, and other highly energy efficient buildings	✓Noise and vibration associated with construction ✓Adverse effects on the surrounding environment such as light pollution
Projects for the renovation of offices, plants, and houses for better energy efficiency to obtain an environmental certification	✓Noise and vibration associated with construction ✓Dispersal of hazardous wastes such as asbestos
Projects to introduce energy efficient equipment and facilities into offices, plants, and houses	✓Adverse effects arising from inappropriate disposal of old equipment and facilities
Projects for the development and introduction of smart grids	✓Noise and vibration associated with construction

3) Projects for pollution prevention and control

Possible Projects	Possible negative impacts on the environment
Projects that contribute to the realization of a circular economy	✓Adverse effects due to the dispersion and release of toxic chemicals ✓Air pollution resulting from waste disposal and water contamination due to wastewater

	✓Increased environmental load over lifecycle due to far-fetched recycling
Projects to control the release of toxic chemicals into the environment by preventing their leakage, volatilization, and infiltration	✓Adverse effects arising from the inappropriate disposal of toxic chemicals
Projects to prevent the release of fluorocarbons into the air and to collect and destroy fluorocarbons	(Take careful note of whether adverse environmental effects likely to occur depending on the projects)
Projects to build facilities that contribute to the advanced treatment and recycling of wastewater from plants	✓Adverse effects arising from the inappropriate disposal of sludge containing toxic chemicals such as heavy metals
Projects for the treatment of polluted soil	✓Adverse effects arising from the inappropriate disposal of polluted soil ✓Air pollution from emissions and water contamination from wastewater, which are associated with the disposal of polluted soil

4) Projects for the sustainable management of living natural resources

Possible Projects	Possible negative impacts on the environment
Projects to obtain sustainable fishery and aquaculture certifications such as MSC	(Take careful note of whether adverse environmental effects are likely to occur depending on the projects)
Projects to obtain sustainable forestry certifications such as FSC	(Take careful note of whether adverse environmental effects are likely to occur depending on the projects)

5) Projects for biodiversity conservation

Possible Projects	Possible negative impacts on the environment
Projects for the conservation of wetlands and coral reefs	✓Adverse effects on ecosystems by massive land development ✓Disturbance in the gene pool
Projects for the conservation and improvement of *satoyama* and *satoumi*	✓Adverse effects on ecosystems by massive land development ✓Disturbance in the gene pool
Projects for the transformation of river walls into more natural forms	✓Adverse effects on ecosystems by massive land development

6) Projects for clean transportation

Possible Projects	Possible negative impacts on the environment
Projects for the development and manufacture of low-emission electric and hydrogen vehicles, and the development and maintenance of infrastructure for using such vehicles	✓Adverse effects on ecosystems by massive land development
Projects to enhance efficiency of logistics systems via the systematic development of logistics bases, aggregation of transportation networks, modal shift, and coordinated transportation and delivery	✓Adverse effects on ecosystems by massive land development
Projects to introduce devices (such as digital tachographs) to support eco-driving	(Take careful note of whether adverse environmental effects are likely to occur depending on the projects)
Projects for the development of facilities for park-and-ride and car-sharing systems	✓Noise around project sites

7) Projects for sustainable water resources management

Possible Projects	Possible negative impacts on the environment
Projects to conserve the water circulation cycle such as water source protection and penetration of rainwater into soils	✓Adverse effects on ecosystems by massive land development
Projects to develop and improve flood prevention facilities	✓Adverse effects on ecosystems by massive land development
Projects for seawater desalination	✓Adverse effects on ecosystems due to the release of concentrated water

8) Projects for climate change adaptation

Possible Projects	Possible negative impacts on the environment
Projects to reinforce disaster prevention functions of logistics, railways, ports, airports, roads, water supply infrastructure, waste disposal facilities, and traffic safety facilities	✓Adverse effects on ecosystems by massive land development

9) Projects for eco-efficient products, manufacturing technologies, and processes

Possible Projects	Possible negative impacts on the environment
Projects to manufacture products that meet the requirements for environmental certification	✓Adverse effects on ecosystems by massive land development ✓Leakage of hazardous materials used in the production process
Projects for the research, development, and introduction of technology and products that contribute to reducing the amount of GHGs	✓Adverse effects on ecosystems by massive land development ✓Leakage of hazardous materials used in the production process

【Prior provision of information regarding the use of proceeds to investors】

(iv) In advance, issuers should provide investors with information regarding the use of Green Bond proceeds through legal documentation[5] (such as a prospectus) or other documents.

(v) The provision of the information regarding the use of proceeds should specify the Green Project categories, such as the construction of facilities for a wind power generation project or lending to projects related to biomass power generation, so that investors and other market participants can evaluate the appropriateness of the use of proceeds. In the cases where individual Green Projects have been specified, it is recommended that issuers clearly present the projects to investors.

(vi) In cases where Green Projects have incidental negative environmental impacts along with the alleged environmental benefits, the issuers should include information regarding these negative impacts (e.g., how they are assessed, what the issuers do to curb them) to investors so that the investors and market participants can appropriately evaluate these impacts.

【Measures when the proceeds are allocated to refinancing】

(vii) Green Bond proceeds can be allocated not only to new Green Projects but also to refinance existing Green Projects. While the proceeds allocated to refinancing can maintain existing Green Projects, their environmental significance differs from that of proceeds allocated to finance new Green Projects, since existing Green Projects have already started before refinancing. In cases where Green Bond proceeds are used to refinance existing Green Projects, it is recommended that the issuers provide information to the investors regarding (1) the amount (or the share) of the bond proceeds being allocated for refinancing, and (2) which Green Projects (or Green Project categories) may be refinanced. In cases where the percentage of proceeds allocated to new Green Projects is greater than that for refinancing, providing an

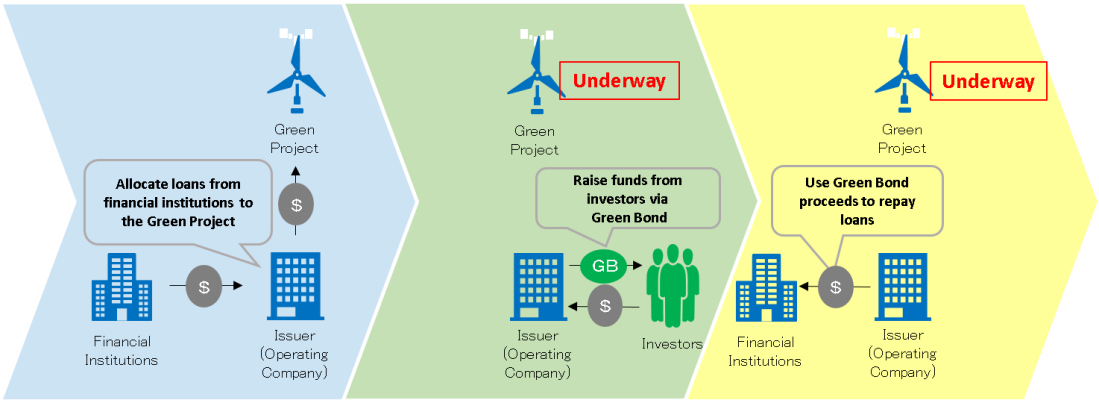
[5] Including agreements made among parties involved.

estimate (or percentage) of proceeds allocated to a new project may serve to enhance the reputation of the Green Bond.

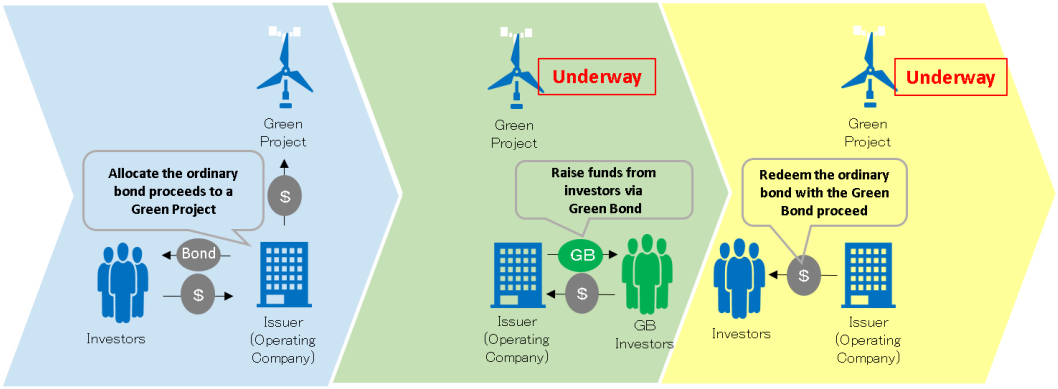
<**Possible refinancing examples**>

* Possible examples are not limited to the following:

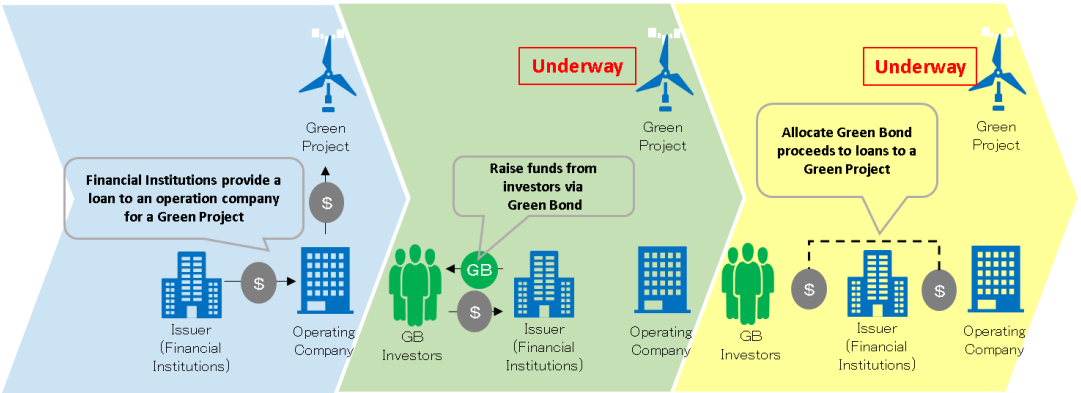
・Cases where the Green Bond proceeds are allocated to repay (refinance) loans related to Green Projects.



・Cases where new Green Bond proceeds are used to redeem a bond that has been issued to finance existing Green Projects at maturity.



・Cases where financial institutions allocate Green Bond proceeds as a resource for existing loans linked to Green Projects.



2. Process for Project Evaluation and Selection

【Prior provision of the information on the process for project evaluation and selection for investors】

(i) In advance, issuers should provide investors with information regarding the following:

- The environmental sustainability objectives that the issuers intend to achieve through the Green Bonds
- The criteria for determining the appropriateness of Green Projects based on the environmental sustainability objectives described above
- The process for determining how Green Projects fit the criteria for the achievement of the environmental sustainability objectives

(ii) When individual Green Projects to which Green Bond proceeds will be allocated have been determined (such as when an SPC that handles only one Green Project issues a Green Bond for the project), the projects to which the proceeds will be allocated are deemed to be already evaluated and selected, and it is considered that the establishment of the criteria described above is unnecessary. However, in advance, issuers should provide investors with information regarding (1) the environmental sustainability objectives that the issuers intend to achieve through Green Bonds and (2) the process for the determination (e.g., the reason why issuers determine that Green Projects can provide environmental benefits appropriately in light of the above objectives and criteria for the use of Green Bond proceeds, how and by whom are the above criteria applied and used to determine whether Green Projects are appropriate in light of the above objectives, etc.).

(iii) In contrast, when individual Green Projects to which Green Bond proceeds will be allocated have not been determined (e.g., (1) in cases where an ordinary business operator or local government issues a Green Bond to raise funds for the Green Projects in the relevant business and project category and (2) in cases where financial institutions raise funds for investments and loans for a large number of Green Projects, etc.), the issuers should establish criteria to determine the appropriateness of the Green Projects in light of the objectives, and establish the process for determination (e.g., the reason why issuers determine that Green Projects can provide environmental benefits appropriately in light of the above objectives and criteria for the use of Green Bond proceeds, how and by whom are the above criteria applied and used to determine whether Green Projects are appropriate in light of the above objectives, etc.), and provide investors with information.

【Environmental Objective】

(iv) Environmental sustainability objectives are the environmental benefits that issuers intend to achieve through the issuance of Green Bonds, such as the prevention of climate change and the conservation of biodiversity.

【Criteria】

(v) Criteria serve to provide the reasons for determining the appropriateness of specific Green Projects in light of the environmental sustainability objective. For example, when climate change prevention is the environmental objective, the targets for the allocation of Green Bond proceeds may include Green Projects for renewable energy that will reduce GHG emissions.

(vi) The following are examples of the criteria for the determination:

<Examples of "criteria" for the evaluation and selection of Green Projects>

* Examples are not limited to the following:

- Projects should fall under the business categories specified for the use of proceeds in the GBP or in the Guidelines.
- Projects for renewable energy should not fall under the category of projects with significant negative effects on the environment as specified in the Equator Principles.
- Projects should fall under the category of projects that build energy efficient buildings for certification by environmental certification systems such as LEED, CASBEE, and BELS.

(vii) Some advanced examples include requirements to eliminate potential negative effects as a criterion, in addition to the appropriateness of Green Project categories. (For example, hydropower generation facilities larger in scale than predetermined standards should not be included in the criteria since doing so might have a negative impact on the environment, such as land modification.)

【Process】

(viii) The process for the determination refers to the reason why issuers determine that Green Projects can provide environmental benefits appropriately in light of the objectives and criteria for the use of Green Bond proceeds, how and by whom are the criteria applied and used to determine whether Green Projects are appropriate in light of the objectives, and the like.

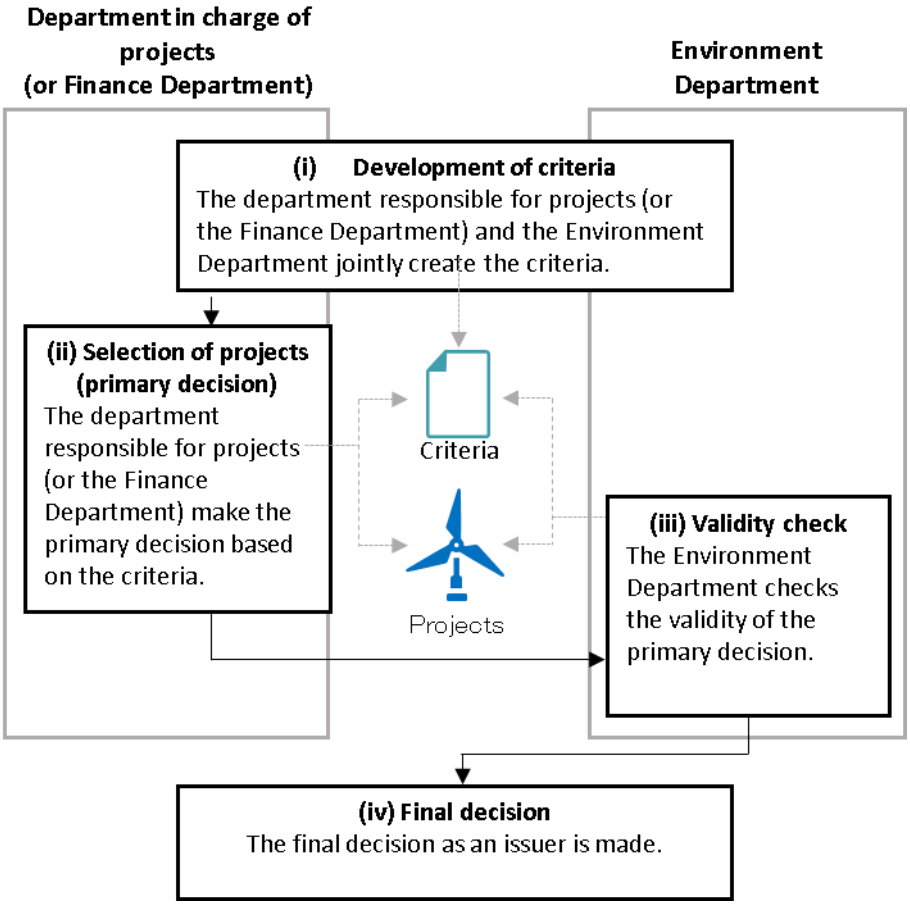
(ix) It is recommended that internal departments who have expertise, such as the environment related department, or external institutions check whether the determination process is suitable from an environmental point of view.

(x) The following is an example of the project evaluation and selection process:

<Example of a decision-making process>

* Examples are not limited the following:

- An internal department responsible for projects (or the Finance Department) and the Environment Department jointly develop the criteria. After the department responsible for projects (or the Finance Department) uses the criteria to make a primary decision regarding project eligibility and the Environment Department checks the validity of the primary decision, the company arrives at a final decision.



3. Management of Proceeds

(1) Management of proceeds

【General Information】

(i) Issuers should track and manage the net Green Bond proceeds in an appropriate manner. These tracking and managing activities should be controlled by the issuer's internal process.

(ii) As long as the Green Bonds are outstanding, issuers should periodically adjust to match the amount of the total Green Bond proceeds to the sum of the amount of the proceeds allocated to Green Projects and the amount of the unallocated proceeds.[6]

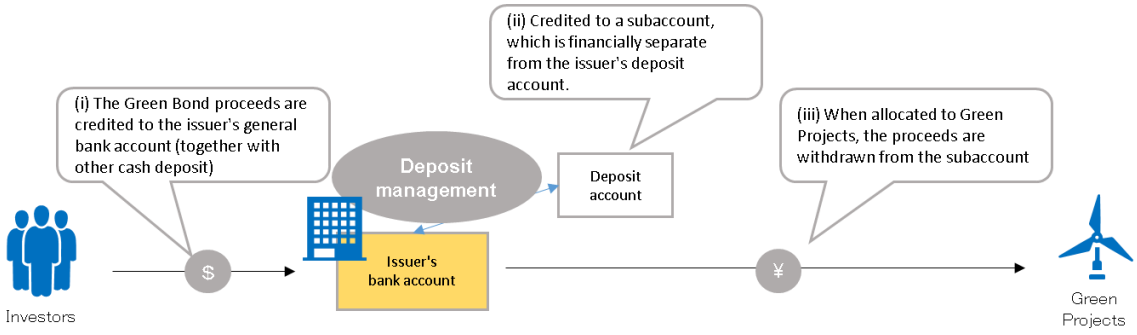
【Proceed tracking and management methods】

(iii) Possible proceed tracking and management methods include the following:

<Examples of possible proceed tracking and management methods>

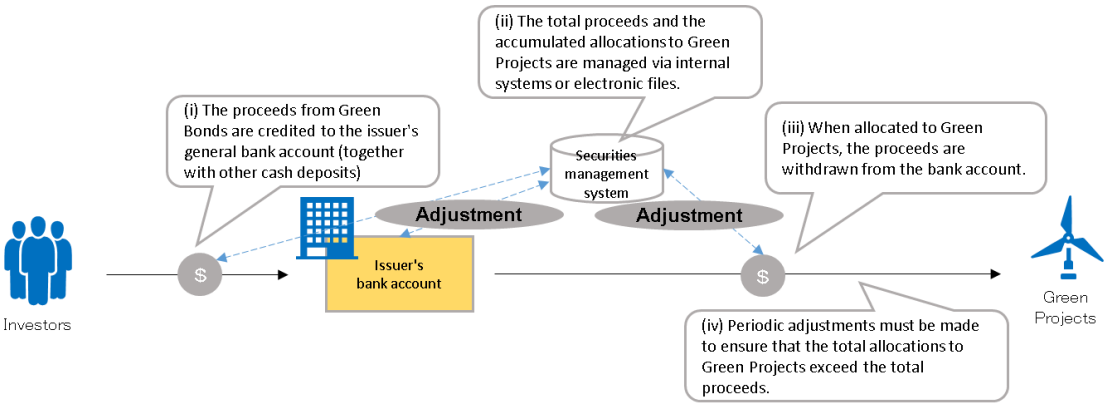
* Examples are not limited to the following:

• The Green Bond proceeds are credited to a subaccount that is financially separate from other accounts, and the proceeds are withdrawn from this account when allocated to Green Projects.

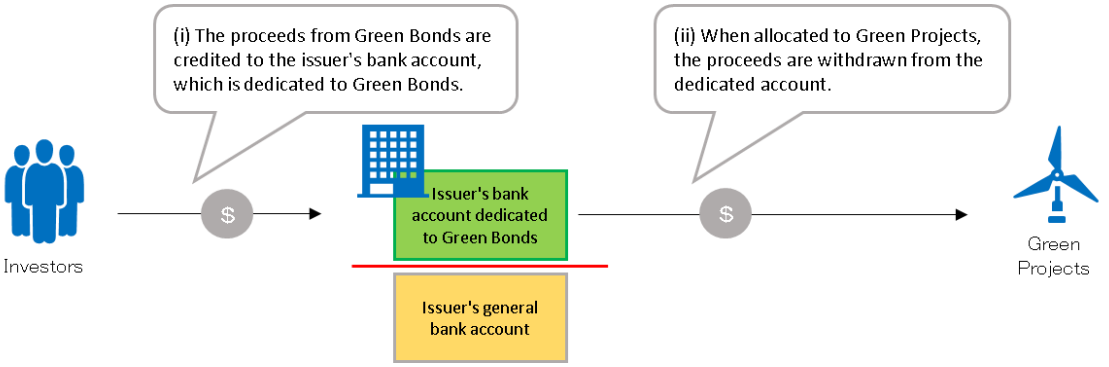


[6] For example, since financial institutions have more than one loan to Green Projects allocated the Green Bond proceeds, the amortization period for the loans does not coincide with that of the Green Bonds in many cases. Consequently, the balance of loans is less than the initial Green Bond proceeds after loan repayments are made. In such cases, adjustments, such as allocating the proceeds to a different Green Project, need to be made.

• Manage the total proceeds and the accumulated allocations to Green Projects via internal systems or electronic files and periodically adjust to ensure that the latter exceeds the former.



• The proceeds from Green Bonds are credited to a separate account and managed separately from other business funds. Allocations to Green Projects are made from this separate account.



(iv) Since it is evident that the total proceeds obtained by SPCs that handle only Green Projects will be allocated to Green Projects, when SPCs issue Green Bonds, the above mentioned special tracking and management of Green Bonds proceeds is considered not to be required.

【Prior provision of information on tracking and management methods to investors】

(v) In advance, issuers should provide investors with information on how Green Bond proceeds will be tracked and managed.

(vi) It is recommended that issuers keep evidenced documents appropriately that demonstrate how they tracked and managed Green Bond proceeds.

(2) Management of unallocated proceeds

【Early allocation of proceeds】

(vii) The recommendation is to allocate the Green Bond proceeds to Green Projects early and that issuers must not avoid allocating the proceeds to Green Projects unless there are reasonable grounds.

【Prior provision of information regarding the methods to manage unallocated proceeds】

(viii) In advance, issuers should provide investors with information on how unallocated Green Bond proceeds will be managed when the Green Projects that will receive the Green Bond proceeds have not been determined, or when such Green Projects have been determined but the proceeds have not been allocated because the allocation timing has not yet arrived.

【Methods to manage unallocated proceeds】

(ix) It is recommended that issuers manage unallocated Green Bond proceeds as an asset with high liquidity and safety such as cash, cash equivalents, or short-term financial assets. Since the investment yield from these assets is generally lower than that from Green Projects, the management of unallocated proceeds through such means can serve as an incentive for issuers to allocate the proceeds to Green Projects early.

(x) In some advanced cases, unallocated proceeds are deposited into a bank account with an appropriate environmental management policy with respect to the green attitude of investors.

4. Reporting

【Disclosure of the status of the use of proceeds after the issuance of Green Bonds】

(i) Investors invest in Green Bonds because they expect that their funds will be allocated to Green Projects that have environmental benefits. Moreover, if issuers want to gain public acceptance by expressing that the issued bonds are Green Bonds, they need to ensure transparency. Based on these conditions, issuers should publicly disclose the latest information on the use of Green Bond proceeds after issuance.[7] This disclosure is, for example, considered to be posting the information on the issuers' official websites.

【Timing of Disclosure】

(ii) Issuers should disclose the latest information at least once a year until full allocation of the proceeds and as necessary thereafter in the event of new developments.

【Contents and ways of disclosure】

(iii) Disclosed information should include the following contents:

<Contents>

- A list of the Green Projects to which Green Bond proceeds have been allocated
- A brief description of each Green Project (including up-to-date progress)
- The amount allocated to each Green Project
- The expected environmental benefits of each Green Project
- Information regarding unallocated Green Bond proceeds (the amount of the unallocated proceeds or the share of the unallocated proceeds to the total amount of the proceeds, when the unallocated proceeds are expected to be allocates to Green Projects, and how the unallocated proceeds are managed until allocation)

(iv) If Green Bond proceeds have been allocated to the refinancing of existing projects, it is recommended that disclosed information include: 1) the approximate amount (or the share) of the allocated proceeds used for refinancing, and 2) a list of the Green Projects (or the project categories) refinanced.

(v) While it is recommended to disclose (iii) and (iv) on a project-by-project basis, if there are confidentiality agreements, competitive considerations, or a large number of underlying projects that

[7] Information disclosure as specified in the Guidelines does not unconditionally ensure compliance with financial laws, rules of the stock exchange, or rules of self-regulatory organizations. Regardless of the disclosure specified in the Guidelines, information must be disclosed according to the requirements of the above mentioned laws or rules.

limit the disclosure of details, it is considered that information is presented in generic terms or in an aggregated portfolio. (For example, disclose information regarding the previously described items by project category, such as wind power generation projects, projects to introduce high-energy efficient equipment, or projects for the construction and management of waste recycling-related facilities.)

(vi) The following is a possible example of disclosure:

<**Examples of disclosure information**>

* Examples are not limited to the following:

1) Examples of information disclosure by Green Projects

Project category	Specific project	Outline	Progress	Amount of proceeds allocated	Environmental benefits
Renewable Energy	Wind power generation	Project to construct wind power facilities, generate power at the facilities, and sell electricity through feed-in tariffs (FIT)	Under construction (To start operations in MM/YYYY)	XXX million yen	Reduce CO_2 emissions: XX t-CO_2/year
Pollution Prevention & Control	Recycling of waste	Project to construct fuel manufacturing facilities and manufacture fuel via waste recycling	Construction to start in MM/YYYY	XXX million yen	Reduction in the waste incinerated: XX t/year
Sustainable management of natural resources	Planting	Project to plant trees to protect ecosystems in the XX region	Completed	XXX million yen	Area of forests regenerated by planting: X ha
			Total	XXX million yen	

*The currently unallocated proceeds (XXX million yen) will be allocated in MM and M'M'/YYYY along with the progress of the construction of the waste recycling facilities. Until then, the unallocated proceeds will be managed as cash or cash equivalents.

* The following are the details of each project (omitted).

2) Example of information disclosure (aggregated information) by category

Project category	Specific project	Number of projects	Amount allocated	Environmental benefits (Amount of CO_2 reduced)
Renewable Energy	Solar power generation	XX	YYY million yen	ZZ t-CO_2/year
	Wind power generation	XX	YYY million yen	ZZ t-CO_2/year
	Manufacture of batteries	XX	YYY million yen	ZZ t-CO_2/year
	Subtotal	XX (Refinancing: xx)	YYY million yen (Refinancing: yyy million yen)	ZZ t-CO_2/year
Energy Efficiency	Construction of new energy efficient buildings	XX	YYY million yen	ZZ t-CO_2/year
	Renovation of buildings for better energy efficiency	XX	YYY million yen	ZZ t-CO_2/year
	Subtotal	XX (Refinancing: xx)	YYY million yen (Refinancing: yyy million yen)	ZZ t-CO_2/year
Environmentally-friendly products, manufacturing technologies, and processes	Manufacture of products that can obtain environmental certification	XX	YYY million yen	ZZ t-CO_2/year
	Subtotal	XX (Refinancing:	YYY million yen	ZZ t-CO_2/year

		xx)	(Refinancing: yyy million yen)	
Total		XX (Refinancing: xx)	YYY million yen (Refinancing: yyy million yen)	ZZ t-CO_2/year
Unallocated proceeds (managed via short-term financial assets)			YYY million yen	

* The following are a few examples of typical projects (omitted).

【Indicators and methods for calculating environmental benefits】

(vii) When disclosing information regarding the expected environmental benefits of projects, issuers should use appropriate indicators while ensuring consistency with the "environmental sustainability objectives," the "criteria" for Green Projects specified in Section 2, "Process for Project Evaluation and Selection," and the characteristics of Green Projects.

(viii) When disclosing the expected environmental benefits of projects, it is recommended that issuers, where feasible, use quantitative indicators and disclose information on methodologies and/or assumptions as well as these indicators. When quantification is difficult, external certifications, such as LEED, CASBEE, BELS, FSC, MSC, or ASC, obtained through Green Projects are also considered to be used as qualitative indicators.

(ix) Possible indicators are not limited to the following:

<Examples of specific indicators>

* Examples are not limited to the following:

Project Category	Index Examples	Details
Renewable Energy	CO_2 emissions reduced (t-CO_2)	Calculate by comparing the estimated CO_2 emissions (t-CO_2) when the project is not implemented and after the project is implemented
	Amount of power generated by renewable energy (GWh)	Amount of power generated by renewable energy at facilities constructed through the project (GWh)
	Rate of use renewable energy in	Compare the rate of use of renewable energy in the manufacturing process (percentage of renewable

	the manufacturing process (%)	energy consumption in total energy consumption) before and after the implementation of the project
Energy Efficiency	CO_2 emissions reduced (t-CO_2)	Calculate by multiplying the amount of energy reduced by the project (kL) and CO_2 emission coefficient (t-CO_2/kL)
	Amount of energy consumption reduced (kL, t, m^3, MWh)	Calculate by comparing estimated energy consumption (kL) when a project is not implemented and after the project is implemented
	Number of environmental certifications obtained	The number of environmental certifications, such as LEED, CASBEE, and BELS, that were obtained for buildings involved in the project
	Number of energy efficient appliances introduced	The number of energy efficient appliances introduced (e.g., refrigerators and freezers, which were changed from hydrochlorofluorocarbons (HCFCs) to non-Freon)
Pollution Prevention and Control	Amount of air pollutants reduced	Amount of air pollutants (sulfur oxide (SOx), nitrogen oxide (NOx), and particulate matter) emissions in to the air reduced by the implementation of the project (t)
	Amount of water pollutants reduced	Amount of water pollutants (chemical oxygen demand and biochemical oxygen demand (BOD)) discharge into public waters reduced by the project implementation (t)
	Amount of landfill waste reduced (t)	Amount of landfill waste reduced by project implementation (t)
	Amount of waste recycled (t)	Amount of waste recycled (t)
Sustainable Management of Natural Resources	Area of a forest managed in a sustainable manner (ha)	Area of a forest managed in a sustainable manner (ha)
Conservation of Biodiversity	Area of a coral reef managed in a sustainable manner (ha)	Area of a coral reef managed in a sustainable manner (ha)
Clean Transportation	Reduction in CO_2	Calculate by comparing estimated CO_2 emissions (t-

	emissions (t-CO_2)	CO_2) when the project is not implemented and after the project is implemented
	Percentage of next-generation vehicles (%)	Percentage of next-generation vehicles in the total number of new vehicles sold (%)
Sustainable Water Resources Management	Area of wetted surface reduced (ha)	Reduction in the estimated area of wetted surface in the event of heavy rain from the implementation of the project (ha)
	Number of beneficiaries (persons/ households)	Number of persons/households that gain access to water through the project implementation
Climate Change Adaptation	Area of a forest or a watershed managed in a sustainable manner (ha)	Area of a forest or a watershed managed in a sustainable manner (ha)
	Area of wetted surface reduced (ha)	Reduction in the estimated area of wetted surface in the event of heavy rain from the project implementation (ha)
Environmentally-Friendly Products, Manufacturing Technologies, and Processes	Reduction in CO_2 emissions per ton of products (t-CO_2/t)	Calculate by comparing CO_2 emissions/ton of products (CO_2 emissions (t-CO_2) ÷ production volume (t)) before and after the implementation of the project
	Amount of raw materials reduced (t)	Calculate by comparing the raw materials used (t) before and after the implementation of the project

(x) The following are examples of how to calculate environmental benefits using quantitative indicators:

<Examples of how to calculate environmental benefits>

* Examples are not limited to the following. Since each method is simplified to facilitate easy understanding, it may not be appropriate to apply these methods directly to each project depending on individual businesses.

1. Cases where the reduction in CO_2 emissions serves as an indicator of environmental benefits from solar power generation projects	
Precondition	• Use the average CO_2 emissions coefficient from all power sources at a project site as the electricity-related CO_2 emissions coefficient. For example, if a project site is within the service area of Shikoku Electric Power Co., Inc., the emissions coefficient is 0.651 t-CO_2/MWh. ("Emissions coefficients by electric power suppliers - Performance in 2015" posted on the official website of the Ministry of the Environment) • Annual energy generation: 2,000 MWh/year • Annual power consumption by auxiliary equipment: 10 MWh/year
Calculation method referenced	Rules for the green-energy-based CO_2 Reductions Certification System (Posted on the official websites of the Agency for Natural Resources and Energy and the Ministry of the Environment)
Calculation formula	Reduction in CO_2 emissions = (annual energy generation - annual power consumption by auxiliary equipment) x electricity-related CO_2 emissions coefficient (2,000 MWh/year - 10 MWh/year) x 0.651 t-CO_2/MWh = 1,295 t-CO_2/year
2. Cases where the reduction in CO_2 emissions serves as the indicator of environmental benefits from wind power generation projects	
Precondition	• Use the average CO_2 emissions coefficient from all power sources at a project site as the electricity-related CO_2 emissions coefficient. For example, if a project site is within the service area of the Tokyo Electric Power Company, the emissions coefficient = 0.500 t-CO_2/MWh ("Emissions coefficients by electric power suppliers - Performance in 2015" posted on the official website of the Ministry of the Environment) • Annual energy generation: 3,000 MWh/year • Annual power consumption by auxiliary equipment: 10 MWh/year
Calculation method referenced	Rules for the green-energy-based CO_2 Reductions Certification System (Posted on the official websites of the Agency for Natural Resources and Energy and the Ministry of the Environment)
Calculation formula	Reduction in CO_2 emissions = (annual energy generation - annual power consumption by auxiliary equipment) x electricity-related CO_2 emissions coefficient (3,000 MWh/year - 10 MWh/year) x 0.500 t-CO_2/MWh = 1,495 t-CO_2/year

3. Cases where the reduction in CO_2 emissions serves as the indicator of environmental benefits from woody biomass power generation projects	
Precondition	• Use the average CO_2 emissions coefficient from all power sources at a project site as an electricity-related CO_2 emissions coefficient. For example, if a project site is within the service area of the Kyushu Electric Power Company, the emissions coefficient is 0.509 t-CO_2/MWh ("Emissions coefficients by electric power suppliers - Performance in 2015" posted on the official website of the Ministry of the Environment) • Annual energy generation: 20,000 MWh/year • Annual power consumption by auxiliary equipment: 300 MWh/year
Calculation method referenced	Rules for the green-energy-based CO_2 Reductions Certification System (Posted on the official websites of the Agency for Natural Resources and Energy and the Ministry of the Environment)
Calculation formula	Reduction in CO_2 emissions = (annual energy generation - annual power consumption by auxiliary equipment) x electricity-related CO_2 emissions coefficient (20,000 MWh/year - 300 MWh/year) x 0.509 t-CO_2/MWh = 10,027 t-CO_2/year
4. Cases where the reduction in CO_2 emissions serves as the indicator of environmental benefits from small and medium hydroelectric power generation projects	
Precondition	• Use the average CO_2 emissions coefficient from all power sources at a project site as an electricity-related CO_2 emissions coefficient. For example, if a project site is within the service area of the Hokkaido Electric Power Co., Inc., the emissions coefficient is 0.669 t-CO_2/MWh ("Emissions coefficients by electric power suppliers - Performance in 2015" posted on the official website of the Ministry of the Environment) • Annual energy generation: 10,000 MWh/year • Annual power consumption by auxiliary equipment: 100 MWh/year
Calculation method referenced	Rules for the green-energy-based CO_2 Reductions Certification System (Posted on the official websites of the Agency for Natural Resources and Energy and the Ministry of the Environment)
Calculation formula	Reduction in CO_2 emissions = (annual energy generation - annual power consumption by auxiliary equipment) x electricity-related CO_2 emissions coefficient (10,000 MWh/year - 100 MWh/year) x 0.669 t-CO_2/MWh = 6,623 t-CO_2/year
5. Cases where the reduction in CO_2 emissions serves as the indicator of environmental benefits from geothermal power generation projects	
Precondition	• Use the average CO_2 emissions coefficient from all power sources at a project site as an electricity-related CO_2 emissions coefficient. For example, if a project

	site is within the service area of the Tohoku Electric Power Co., Inc., the emissions coefficient is 0.556 t-CO_2/MWh ("Emissions coefficients by electric power suppliers - Performance in 2015" posted on the official website of the Ministry of the Environment) • Annual energy generation: 80,000 MWh/year • Annual power consumption by auxiliary equipment: 900 MWh/year
Calculation method referenced	Rules for the green-energy-based CO_2 Reductions Certification System (Posted on the official websites of the Agency for Natural Resources and Energy and the Ministry of the Environment)
Calculation formula	Reduction in CO_2 emissions = (annual energy generation - annual power consumption by auxiliary equipment) x electricity-related CO_2 emissions coefficient (80,000 MWh/year - 900 MWh/year) x 0.556 t-CO_2/MWh = 43,980 t-CO_2/year
6. Cases where the reduction in CO_2 emissions serves as the indicator of environmental benefits from projects to replace existing heavy oil boilers with city gas boilers (fuel conversion)	
Precondition	<Heavy oil boilers> • Annual A-type heavy oil consumption: 600 kL/year • Unit calorific value of A-type heavy oil: 39.1 GJ/kL • A-type heavy oil-related carbon emission coefficient: 0.0189 tC/GJ <City gas boiler> • Annual city gas consumption: 500,000 Nm^3/year • Unit calorific value of city gas: 44.8 GJ/1000 Nm^3 • City gas-related carbon emission coefficient: 0.0136 tC/GJ
Calculation method referenced	"Manual for the Calculation and Reporting of Greenhouse Gas Emissions (ver. 4.2), Second Edition: Methods to calculate greenhouse gas emissions" (Posted on the official website of the Ministry of the Environment)
Calculation formula	Reduction in CO_2 emissions = (annual A-type heavy oil consumption x unit calorific value of A-type heavy oil x A-type heavy oil-related carbon emission coefficient x 44/12)–(annual city gas consumption x unit calorific value of city gas x city gas-related carbon emission coefficient x 44/12) * 44/12 is a coefficient to convert the amount of carbon emissions to the amount of CO_2 emissions. 600 kL/year x 39.1 GJ/kL x 0.0189 tC/GJ x 44/12) - (500,000 m^3/year x 44.8 GJ/1000 Nm^3 x 0.0136 tC/GJ x 44/12) = 509 t-CO_2/year
7. Cases where the reduction in CO_2 emissions serves as the indicator of environmental benefits from projects to introduce cogeneration systems into manufacturing plants	
Precondition	<Before introduction>

	• Steam is produced by a city gas boiler while electricity is purchased • Boiler efficiency: 90% • Annual city gas consumption: 356,000 Nm^3/year • Annual steam production: 14,400 GJ/year <After introduction> • City gas boilers are removed and a city gas cogeneration system is introduced. All steam produced by boilers is now produced by the cogeneration system. Part of the electric power purchased is replaced by power generated by the cogeneration system. • Exhaust heat utilization efficiency of the cogeneration system: 40% • Power generation efficiency of the cogeneration system: 25% • Annual city gas consumption: 800,000 Nm^3/year • Annual steam production: 14,400 GJ/year • Unit city gas calorific value: 44.8 GJ/1000 Nm^3 • City gas carbon emission coefficient: 0.0136 tC/GJ • Annual power generation: 2,500 MWh/year • Use the average CO_2 emissions coefficient from all power sources at a project site as an electricity-related CO_2 emissions coefficient. For example, if a project site is within the service area of the Tokyo Electric Power Company, the emissions coefficient is 0.500 t-CO_2/MWh. ("Emissions coefficients by electric power suppliers - Performance in 2015" posted on the official website of the Ministry of the Environment))
Calculation method referenced	"Manual for the Calculation and Reporting of Greenhouse Gas Emissions (ver. 4.2), Second Edition: Methods to calculate greenhouse gas emissions" (Posted on the official website of the Ministry of the Environment)
Calculation formula	Reduction in CO_2 emissions = (annual city gas consumption for boilers x unit city gas calorific value x city gas carbon emission coefficient x 44/12 + power generation via cogeneration system x power drain coefficient) - (annual city gas consumption for the cogeneration system x unit city gas calorific value x city gas carbon emission coefficient x 44/12) * 44/12 is a coefficient to convert the amount of carbon emissions to the amount of CO_2 emissions. (356,000 Nm^3/year x 44.8 GJ/1000 Nm^3 x 0.0136 tC/GJ x 44/12 + 2,500 MWh/year x 0.500 t/MWh) - (800,000 Nm^3/year x 44.8 GJ/1000 Nm^3 x 0.0136 tC/GJ x 44/12) = 258 t-CO_2/year
8. Cases where the reduction in CO_2 emissions serves as the indicator of environmental benefits from	

projects to introduce energy efficient appliances into office buildings	
Precondition	• Use the average CO_2 emissions coefficient from all power sources at a project site as an electricity-related CO_2 emissions coefficient. For example, if a project site is within the service area of the Tokyo Electric Power Company, the emissions coefficient is 0.500 t-CO_2/MWh. ("Emissions coefficients by electric power suppliers - Performance in 2015" posted on the official website of the Ministry of the Environment) • Annual power consumption: 2,500 MWh/year (before renovation) → 2,200 MWh/year (after renovation) • Annual city gas consumption: 200,000 Nm^3/year (before renovation) → 160,000 Nm^3/year (after renovation) • Unit city gas calorific value: 44.8 GJ/1000 Nm^3 • City gas carbon emission coefficient: 0.0136 tC/GJ
Calculation method referenced	"Manual for the Calculation and Reporting of Greenhouse Gas Emissions (ver. 4.2), Second Edition: Methods to calculate greenhouse gas emissions" (Posted on the official website of the Ministry of the Environment)
Calculation formula	Reduction in CO_2 emissions = (annual power consumption before renovation x power drain coefficient + annual city gas consumption before renovation x unit city gas calorific value x city gas emissions coefficient x 44/12) - (annual power consumption after renovation x power drain coefficient + annual city gas consumption after renovation x unit city gas calorific value x city gas emissions coefficient x 44/12) * 44/12 is a coefficient to convert the amount of carbon emissions to the amount of CO_2 emissions. (2,500 MWh x 0.500 t-CO2/MWh + 200,000 Nm^3 x 44.8 GJ/1000 Nm^3 x 0.0136 tC/GJ x 44/12) - (2,200 MWh x 0.500 t-CO_2/MWh + 160,000 Nm^3 x 44.8 GJ/1000 Nm^3 x 0.0136 tC/GJ x 44/12) = 239 t-CO_2/year
9. Cases where the reduction in the BOD load serves as the indicator of environmental benefits from projects to renovate facilities to treat effluent discharged from plants into public water bodies	
Precondition	• Average volume of wastewater discharged per day: 1,000 m^3/day • Annual average BOD of effluent discharged from effluent treatment facilities: 20 mg/L (before project implementation) → 10 mg/L (after project implementation) • Number of days plants operated per year: 365 days
Calculation method referenced	Environmental Reporting Guidelines (2012) (Posted on the official website of the Ministry of the Environment)
Calculation	Reduction in BOD load = (annual average BOD of effluent before the renovation of

formula	effluent treatment facilities - annual average BOD of effluent after the renovation of effluent treatment facilities) x average amount of effluent per day x number of days plants operated per year (20 mg/L - 10 mg/L) x 1/1,000,000 (unit conversion mg → kg) x 1,000 (m^3/day) x 1,000 (unit conversion m^3 → L) x 365 (days/year) = 3,650 kg/year
10. Cases where the amount of carbon absorbed by trees serves as the indicator of environmental benefits from planting projects	
Precondition	• Target area: 200 ha • Final cutting area per year: 2 ha • Annual amount of growth: 2.9 m^3/ha/year • Target: Cedar (Magnification coefficient: 1.23, ratio of the above-ground part to the under-ground part: 0.25, bulk density: 0.3140 t/m^3, carbon content: 0.5) • The land use category before planting: agricultural land (common field), annual baseline amount of carbon absorbed: 0 t-CO_2/year ("National Greenhouse Gas Inventory Report of Japan (April 2016)" posted on the official website of the National Institute for Environmental Studies)
Calculation method referenced	"How to view the carbon absorbed by forests: Development of calculation and reporting systems for carbon absorption by forests as required by the Kyoto Protocol" (Posted on the official websites of the Ministry of Agriculture, Forestry and Fisheries and the Forestry and Forest Products Research Institute)
Calculation formula	[Annual carbon absorbed at a planting site = an increase in trunk volume x magnification coefficient x (1 + ratio of the above-ground part to the under-ground part) x bulk density x carbon content] - annual baseline amount of carbon absorbed * When converting the amount of carbon to the weight of carbon dioxide, multiply the above formula by 44/12. [(2.9 m^3/ha/year x (200-2 ha)) x 1.23 x (1 + 0.25) x 0.3140 t/m^3 x 0.5] - 0 = 139 t-C/year
11. Cases where the reduction in CO_2 emissions serves as the indicator of environmental benefits from cargo transport projects concerning a modal shift from road to rail transport	
Precondition	• Annual total volume of cargo transport: 8,000,000 tkm/year • Basic unit of CO_2 emissions for cargo vehicles: 0.211 kg-CO_2/tkm • Basic unit of CO_2 emissions for freight railways: 0.025 kg-CO_2/tkm (Posted on the official website of the Ministry of Land, Infrastructure, Transport and Tourism)
Calculation	"Joint guidelines on methods for calculating carbon dioxide emissions in the logistics

method referenced	sector" (Posted on the official websites of the Ministry of Economy, Trade and Industry and the Ministry of Land, Infrastructure, Transport and Tourism)
Calculation formula	Reduction in CO_2 emissions = annual total volume of cargo transport x (basic unit of CO_2 emissions for cargo vehicles - basic unit of CO_2 emissions for freight railways) 8,000,000 tkm/year x (0.211 kg-CO_2/tkm - 0.025 kg-CO_2/tkm) x 1/1,000 (unit conversion kg → t) = 1,488 t-CO_2/year
12. Cases where the reduction in CO_2 emissions by electric cars compared to gasoline cars serves as the indicator of environmental benefits from projects to offer loans to new purchasers of electric cars	
Precondition	• Number of cars targeted for loans: 1,000 • Average fuel economy of gasoline cars: 21.8 km/L (Posted on the official website of the Ministry of Land, Infrastructure, Transport and Tourism) • Annual average mileage of gasoline cars (private cars): 10,000 km/year (Posted on the official website of the Ministry of Land, Infrastructure, Transport and Tourism) • Unit calorific value of gasoline: 34.6 MJ/L • Gasoline-related carbon emission coefficient: 0.0183 kg-C/MJ ("Manual for the Calculation and Reporting of Greenhouse Gas Emissions (ver. 4.2), Second Edition: Methods to calculate greenhouse gas emissions" posted on the official website of the Ministry of the Environment) • Electric power consumption by electric cars to be introduced: 6 km/kWh • The average CO_2 emissions coefficient from all power sources at a project site is used as an electricity-related CO_2 emissions coefficient. For example, if a project site is within the service area of Tokyo Electric Power Company, the emissions coefficient = 0.500 t-CO_2/MWh ("Emissions coefficients by electric power suppliers - Performance in 2015" posted on the official website of the Ministry of the Environment.)
Calculation method referenced	"Joint guidelines on methods for calculating carbon dioxide emissions in the logistics sector" (Posted on the official websites of the Ministry of Economy, Trade and Industry and the Ministry of Land, Infrastructure, Transport and Tourism)
Calculation formula	Reduction in CO_2 emissions = (((number of cars targeted for loans x annual average mileage (km/year)) ÷ fuel economy of gasoline cars) x unit calorific value of gasoline x gasoline carbon emission coefficient x 44/12) - ((number of cars targeted for loans x annual average mileage (km/year)) ÷ electric power consumption of electric cars x electricity-related CO_2 emissions coefficient) * 44/12 is a coefficient to convert the amount of carbon emissions to the amount of CO_2 emissions.

	[(1,000 cars x 10,000 km/year) ÷ 21.8 km/L] x 34.6 MJ/L x 0.0183 kg - C/MJ x 44/12 x (1/1,000 (unit conversion from kg to t)) - [(1,000 cars x 10,000 km/year) ÷ 6 km/kWh] x 0.500 t-CO_2/MWh x (1/1,000 (unit conversion from MWh to kWh)) = 232 t-CO_2/year
13. Cases where a decrease in the estimated wetted surface area and estimated number of affected houses are used as indicators of environmental benefits from projects to construct discharge channels to control submergence in the event of river flooding, which are conducted as part of a climate change adaptation project	
Precondition	• Estimated wetted surface area: about 100 ha (before construction) → about 25 ha (after construction) • Estimated number of affected houses: about 500 houses (before construction) → about 95 houses (after construction)
Calculation method referenced	None. *For the mapping of the estimated flooded area, the following were referenced: "Manual for the creation of anticipated flooded area maps (version 4)" (Posted on the official website of the Ministry of Land, Infrastructure, Transport and Tourism) and "Handbook for the creation of anticipated flooded area maps associated with small and medium-sized rivers" (Posted on the official website of the Ministry of Land, Infrastructure, Transport and Tourism)
Calculation formula	A decrease in flooded area = estimated wetted surface area before construction - estimated wetted surface area after construction = about 100 ha - about 25 ha = about 75 ha Estimated decrease in the number of affected houses = estimated number of affected houses before construction - estimated number of affected houses after construction = about 500 houses - about 95 houses = about 405 houses
14. Cases where the reduction in CO_2 emissions per ton of products serves as the indicator of environmental benefits from projects to enhance energy efficiency of the manufacturing process in plants	
Precondition	• Annual product production volume: 15,000 t/year • Use the average CO_2 emissions coefficient from all power sources at a project site as an electricity-related CO_2 emissions coefficient. For example, if a project site is within the service area of the Hokkaido Electric Power Co., Inc., the emissions coefficient is 0.669 t-CO_2/MWh ("Emissions coefficients by electric power suppliers - Performance in 2015" posted on the official website of the Ministry of the Environment) • Annual power consumption: 5,000 MWh/year (before renovation) → 4,000 MWh/year (after renovation)

	• Annual A-type heavy oil consumption: 800 kL/year (before renovation) → 600 kL/year (after renovation) • Unit calorific value of A-type heavy oil: 39.1 GJ/kL • A-type heavy oil-related carbon emission coefficient: 0.0189 tC/GJ
Calculation method referenced	"Manual for the Calculation and Reporting of Greenhouse Gas Emissions (ver. 4.2), Second Edition: Methods to calculate greenhouse gas emissions" (Posted on the official website of the Ministry of the Environment)
Calculation formula	Amount of basic unit reduced (reduction in CO_2 emissions per ton of products) = (annual power consumption before renovation x power drain coefficient + annual A-type heavy oil consumption before renovation x unit calorific value of A-type heavy oil x A-type heavy oil-related carbon emission coefficient x 44/12) ÷ annual product production volume–(annual power consumption after renovation x power drain coefficient + annual A-type heavy oil consumption after renovation x unit calorific value of A-type heavy oil x A-type heavy oil-related carbon emission coefficient x 44/12) ÷ annual product production volume * 44/12 is a coefficient to convert the amount of carbon emissions to the amount of CO_2 emissions. (5,000 MWh x 0.669 t-CO2/MWh + 800 kL x 39.1 GJ/kL x 0.0189 tC/GJ x 44/12)/15,000 t - (4,000 MWh x 0.669 t-CO2/MWh + 600 kL x 39.1 GJ/kL x 0.0189 tC/GJ x 44/12)/15,000 t = 0.08 t-CO_2/t
15. Cases where a reduction in the amount of plastics used serves as the indicator of environmental benefits from projects to introduce equipment to produce packaging materials with less plastics at packaging manufacturing plants	
Precondition	• Amount of plastics used per packaging material (unit index that is 100% before introduction): 100% (before introduction) → 60% (after introduction) • The current amount of plastics used to produce 100,000 packaging materials (before introduction): 5 tons
Calculation method referenced	None
Calculation formula	A reduction in the amount of plastics used to produce 100,000 packaging materials = 5 tons x (100% - 60%) = 2 tons

(xi) In advanced cases, some indicated basis of the calculation of environmental benefits in a more specific manner, such as XX units of YY equipment whose efficiency is higher by Z% than conventional ones, will be introduced.

5. External Review

(1) General matters related to external reviews

【General matters】

(i) It is recommended that issuers utilize an external review in case that they need an objective assessment of the alignment of their approaches with the framework for Green Bond issuances. Such reviews can be particularly useful in the following cases:

<Examples of cases where the use of external reviews is particularly useful>

* Examples are not limited to the following:

- Cases where the Green Projects designated for a Green Bond include those that have negative environmental effects in addition to environmental benefits, and where an issuer seeks an objective evaluation of the appropriateness in allocating proceeds to such projects.
- Cases where an issuer needs an objective external evaluation of the appropriateness of the determination criteria or the appropriateness of the criteria-based determination of Green Projects since no such expertise exists within the issuer's organization.
- Cases where an issuer requires an objective evaluation of the appropriateness of the environmental benefit calculation method developed by the issuer since the Green Projects to which the proceeds will be allocated are relatively unique and therefore, there is no existing framework for calculating the environmental benefits of the projects.
- Cases where an issuer needs to promote an understanding of Green Bonds among selected overseas investors who are unfamiliar with Green Projects and their associated information in Japan.

(ii) In cases where an external review of the entire framework of a Green Bond was conducted in the past and where an issuer plans to issue a new Green Bond with the same framework, it is considered that the issuer does not have to conduct an external review again.[8] Examples include cases where an SPC engaged exclusively in the implementation of Green Projects had an external review of the projects' environmental benefits and where the SPC plans to issue more than one Green Bond linked to the same type of projects. However, if an external review is not utilized, the issuer may be required by investors and other market participants to describe the appropriateness of the Green Bond framework in a highly transparent manner.

[8] However, care is possibly necessary when deciding whether or not an external review is required, since there are cases where the approaches to the appropriateness of the schemes of Green Projects and Green Bonds have changed or where the evaluation criteria of external review providers have changed since the last review.

【Examples of aspects that can be externally reviewed】

(iii) Examples of aspects that can be externally reviewed include the following:

<Examples of external review aspects>

* Examples are not limited to the following:

1) Reviews before the issuance of Green Bonds

- The evaluation of the appropriateness of Green Projects to which the proceeds will be allocated.
- The evaluation of the appropriateness of the determination criteria and the appropriateness of the criteria-based determination process.
- The evaluation of the appropriateness of specific methods to track and manage the proceeds from Green Bonds.
- The evaluation of the appropriateness of the expected environmental benefits of Green Projects (including the appropriateness of the methods for calculating environmental benefits and preconditions for the calculation).

2) Reviews after the issuance of Green Bonds

- The evaluation of whether the management of the Green Bond proceeds and the allocation of the proceeds to Green Projects were executed properly by using the methods specified by the issuer before the issuance of the Green Bonds.
- The evaluation of whether the Green Projects to which the Green Bond proceeds were allocated have actual environmental benefits and if they were calculated properly by using the methods specified by the issuer before the issuance of Green Bonds.

【Disclosure of information on external reviews】

(iv) External reviews include a consultant review, verification, certification, and rating,[9] and may vary in evaluation criteria. Therefore, to facilitate user understanding of the review, it is recommended that external institutions who conduct external reviews on Green Bonds clearly specify which aspects of the bond they have reviewed and which evaluation criteria they have employed in their review reports.

[9] GBP defines Rating as the ranking of the green nature of the framework of a Green Bond based on the criteria of a qualified third party, such as information vendor and a rating agency.

<Examples of review information that is recommended to be provided>

* Examples are not limited to the following:

This review evaluates the following aspects of the Green Bond:

(i) Reviews before the issuance of the Green Bond		
Evaluation Aspects	Target	Evaluation Criteria
• The appropriateness of Green Projects to which the proceeds will be allocated	○	Evaluation criteria of the company[10]
• The appropriateness of the criteria for the evaluation and selection of Green Projects to which proceeds will be allocated and the appropriateness of the process for the evaluation and selection of the Green Projects based on the criteria	○	Evaluation criteria of the company
• The appropriateness of the specific methods to track and manage the Green Bond proceeds		
• The appropriateness of the expected environmental benefits of the Green Projects (including the appropriateness of the methods to calculate environmental benefits and the preconditions for the calculation)	○	Evaluation criteria of the company
(ii) Reviews after the issuance of a Green Bond		
Evaluation Aspects	Target	Evaluation Criteria
• Whether the management of the Green Bond proceeds and the allocation of the proceeds to Green Projects were executed properly by using the methods specified by the issuer before the issuance of the Green Bonds		
• Whether the environmental benefits generated by the Green Projects to which the Green Bond proceeds were allocated were calculated properly by using the methods specified by the issuer before the issuance of the Green Bonds		

[10] While it is sometimes difficult to disclose detailed evaluation “criteria”, it is recommended to clearly state what type of criteria was used as much as possible.

【Disclosure of review results by issuers】

(v) If issuers have their Green Bonds reviewed, it is recommended that they disclose the documents showing the review results.

(2) Points to note regarding external review providers

【Recommended qualities that external review providers are expected to have】

(vi) To secure the social reliability of external reviews, it is recommended that external institutions that perform external reviews of Green Bonds have expertise relevant to the aspects they review and is independent from the issuer.

【Expertise】

(vii) It is not necessary for one external review provider to evaluate all the aspects of a Green Bond. It is considered that more than one external review provider can evaluate different aspects that are closely related to the expertise of each provider.

(viii) The possible expertise of external review providers includes the following:

<Examples of expertise>

* Expertise examples are not limited to the following:

1) Expertise in environmental evaluation and environmental certification when reviewing the appropriateness of Green Projects to which proceeds will be allocated, the process for project evaluation and selection, and environmental benefits
2) Expertise in financial and accounting audits when reviewing the appropriateness of the management and allocation of proceeds

【Independence of external review providers】

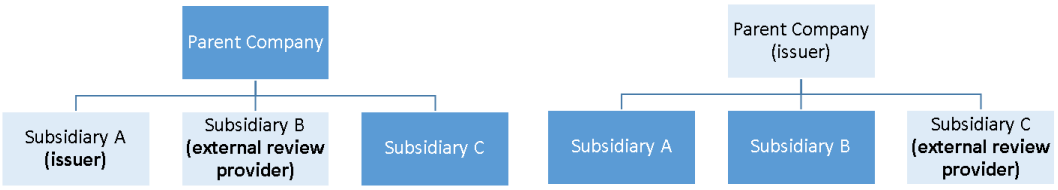
(ix) It is recommended that no personal and capital relationships exist between the issuers and the external institutions who review their Green Bonds. For example, an external review is not considered to be independent in the following cases:

<Examples where it is not considered to be independent >

* Examples are not limited to the following:

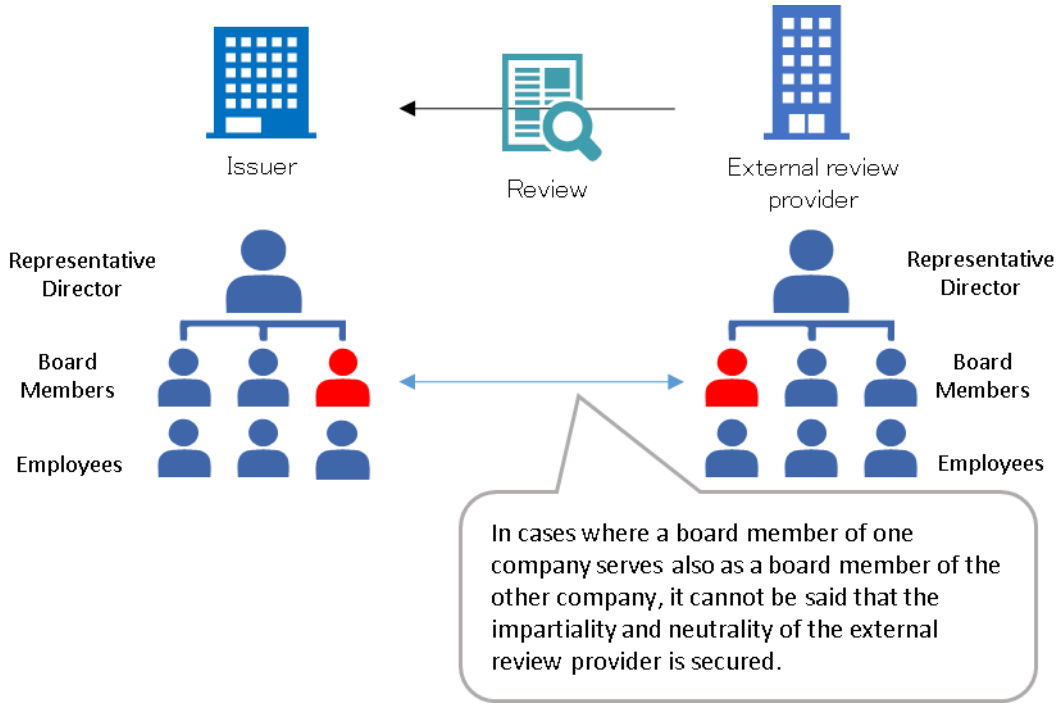
<Capital relationships>

- Cases where an issuer and an external review provider are subsidiaries of the same parent company
- Cases where an issuer is the parent company of an external review provider (subsidiary)



<Personal relationships>

- Cases where a board member (representative director, director (excluding external board members and directors of companies with a nominating committee), accounting advisor, auditor, and executive or representative executive of a company with a nominating committee)of one company (issuer) also serves as a board member of the other company (external review provider)



【Disclosure of information regarding expertise and independence of external review providers】

(x) It is recommended that external institutions who conduct external reviews of Green Bonds clearly state their relevant expertise to the aspects which they have reviewed and their independence from the issuers in the review report by stating the following:

<Examples of description concerning the expertise and independence of external review providers >

* Examples are not limited to the following:

<Expertise>

"Our company has offered environmental evaluation services for about XX years and has solid expertise in this field."

<Independence>

"Our company has no capital and personal relationships with XX, the issuer of the Green Bond."

"One of our board members also works as a board member of XX, the issuer of the Green Bond. Therefore, a certain personal relationship exists between the two companies."

Chapter 4 Model Cases

In an effort to facilitate reader understanding, this chapter presents some model cases of Green Bond issuance. For each case, possible approaches by Green Bond issuers are described in light of the characteristics of issuers, Green Projects, or Green Bond plans. Note, however, that these model cases of issuance are only examples and many other cases exist where Green Bonds can be used. Moreover, the specific approaches illustrated in each case are also just examples and different approaches could be taken in cases similar to those described in this chapter.

<Case 1> An SPC executing wind and solar power generation projects raises funds for the projects.

<Case 2> A financial institution raises funds for loans for renewable energy projects, such as solar, wind, and biomass power generation, and the construction of energy efficient houses and other buildings.

<Case 3> A waste treatment company raises funds for the construction of a new facility to recover rare metal in its plant premises and the installment of advanced treatment equipment in the facility for wastewater containing hazardous chemicals.

<Case 4> A manufacturing company raises funds to renovate plants to increase energy efficiency and to build a new energy efficient head office building.

<Case 5> A financial company, a group company of an automobile manufacturer, raises capital by securitizing loan claims for loans to purchasers of low-emission electric and hydrogen vehicles through a trust plan.

<Case 6> A local government raises capital to implement renewable energy, energy efficiency, waste treatment, and flood control projects as part of a climate change adaptation program.

(The following section is omitted in this translation.)

Chapter 5 Revisions of the Guidelines

In light of the development of Green Bonds market, the Guidelines will be revised in response to changes in the maturity of the Japanese market, international trends, and other conditions.

This is translation of the "Green Bond Guidelines 2017" published on March 28, 2017 by the Ministry of the Environment, Japan. Translations are to be used solely as reference material to aid in the understanding of the Guidelines. The Government of Japan will not be responsible for the accuracy, reliability, or dissemination of this translation, or for any consequence resulting from use of the information in this translation.