



Second Opinion

JGC HOLDINGS CORPORATION

Green Bond Framework

August 9, 2023

ESG Division
Hiroki Maeguchi

Rating and Investment Information, Inc. (R&I) has confirmed the alignment of the Green Bond Framework (Framework) of JGC Holdings Corporation dated August 2023 with the International Capital Market Association (ICMA)'s Green Bond Principles (GBP) 2021 and the Ministry of the Environment (MOE)'s Green Bond Guidelines 2022. This opinion is based on the following views.

■ Overview of the Opinion

(1) Use of Proceeds

The proceeds will be allocated to a wide array of green projects ranging from biofuels, biomaterials, hydrogen and ammonia production using waste materials-derived raw materials and biomass to products essential for widespread adoption of electric vehicles (EVs) and hydrogen vehicles, production of hydrogen and ammonia derived from renewable energy, and renewable energy initiatives. They correspond to GBP project categories of Renewable energy, Clean transportation, Circular economy adapted products, production technologies and processes, and Pollution prevention and control. JGC Holdings has established the eligibility criteria that give due consideration to negative environmental and social impacts according to project characteristics, and confirms the amount of life cycle CO2 emissions. When specific projects are carried out, the company confirms that environmental and social risk mitigation measures are implemented as necessary, including environmental impact assessment and explanation to local residents. The use of proceeds is reasonable.

(2) Process for Project Evaluation and Selection

In response to changes in the business environment mainly stemming from climate change, digitalization and the COVID-19 pandemic, the JGC Group has redefined its purpose as "Enhancing planetary health," and set out a vision aimed at solving three social issues by 2040: pursuing both a stable energy supply and decarbonization, reducing the environmental impact of resource consumption, and building and maintaining vital infrastructure and services. To realize "societies in harmony with the environment" identified as a material issue, the Group is striving to contribute to environmental objectives, including climate change mitigation and ecosystem conservation, through both its business activities and product offerings. The projects address the material issue in the environmental field, incorporated in the long-term management vision, "2040 Vision," and the medium-term business plan. The financial division, with the support of relevant internal departments with expertise, evaluates and selects projects by confirming their fulfillment of the eligibility criteria, and CFO makes the final decision. The process for project evaluation and selection is clear and rational.

(3) Management of Proceeds

Until full allocation to eligible projects, the financial division, in collaboration with the departments and group companies responsible for eligible projects, continuously monitors the allocation of proceeds using dedicated books, etc. Unallocated funds will be managed as cash or cash equivalents. The management of proceeds is appropriate.

(4) Reporting

JGC Holdings will report the allocation of proceeds until the proceeds are fully allocated and environmental benefits as long as the bonds issued under the Framework are outstanding, on its website at least once a year. Impact reporting will cover GHG emissions and waste reduction quantified to the extent possible according to environmental objectives of projects, combined with qualitative information such as brief descriptions of projects. The reporting is appropriate.

Rating and Investment Information, Inc.

Copyright (C) 2023 Rating and Investment Information, Inc. All rights reserved.

(Contact) Customer Service Department, Sales and Marketing Division: Terrace Square, 3-22, Kandanishiki-cho, Chiyoda-ku, Tokyo 101-0054, Japan TEL 03-6273-7471
Second Opinions are R&I's opinions on the alignment of a framework, formulated by companies etc. to raise funds for the purpose of environmental conservation and social contribution, with the principles etc. compiled by public organizations or private organizations related to the relevant financing as of the date of assessment and are not statements of fact. Further, R&I does not state its opinions about any matters other than the alignment, certify outcomes, give advice regarding investment decisions or financial matters, or endorse the merits of any investment subject to the financing. R&I does not undertake any independent verification of the accuracy or other aspects of the related information when issuing a Second Opinion and makes no related representations or warranties. R&I is not liable in any way for any damage arising in relation to Second Opinions. As a general rule, R&I issues a Second Opinion for a fee paid by the issuer. For details, please refer to the end of this document.

Outline of the Issuer

(1) Business Overview and Business Strategies

- JGC Holdings was founded in Tokyo in 1928 and adopted a holding company structure in 2019. Its core businesses are Total Engineering and Functional Materials Manufacturing. The JGC Group started engineering business in the 1930s and subsequently became Japan's first general contractor that executes the entire process of engineering, procurement and construction (EPC). It has implemented 20,000 projects in 80 countries to date, primarily in the area of oil & gas, including petroleum, natural gas and petrochemicals, supporting the supply of energy and petrochemical products in and outside of Japan.
- In response to changes in the business environment, the JGC Group defined its purpose as "Enhancing planetary health" and formulated its long-term management vision, "2040 Vision," as well as its medium-term business plan, "Building a Sustainable Planetary Infrastructure 2025," in 2021.
- The 2040 Vision is aimed at solving the following three social issues: pursuing both a stable energy supply and decarbonization, reducing the environmental impact of resource consumption, and building and maintaining vital infrastructure and services. Through a transformation that spans business areas, business models and its organization, the JGC Group is gearing up for the challenge of becoming a corporate group that contributes to enhancing planetary health. The Group will leverage its technologies and experience and apply its core competencies to develop the five business areas of energy transition, healthcare & life sciences, high-performance functional materials, circular economy, and industrial & urban infrastructure into pillars of business. As regards business models, a transformation of EPC operations will be sought, along with a diversified revenue structure based on expansion of non-EPC models. On the organizational front, regional management will be strengthened and a culture of innovation will be fostered.
- The JGC Group positioned the first five-year stage (fiscal 2021-2025) on the path to the 2040 Vision as five years of challenge, a period covered by the medium-term business plan. The three key strategies of "Transformation of EPC operations," "Expansion of manufacturing business for high-performance functional materials" and "Establishment of future engines of growth" form the basis for an array of ongoing businesses and investment strategies.

■ Example of EPC projects managed by the JGC Group









[Source: JGC Holdings]

(2) Promoting Sustainability

- The JGC Group's Basic Sustainability Policy is as follows: "Creating social value in line with the Group's purpose of "Enhancing planetary health" is intended to make JGC more valuable as a corporate group. In this commitment, we will actively pursue sustainability in environmental, social, governance, quality, safety, and health initiatives."
- Materiality is positioned as a fundamental element in establishing management policies and conducting business. The JGC Group has determined six material issues based on a comprehensive evaluation of priorities from the standpoint of stakeholders and the Group, and identified "societies in harmony with the environment" as a material issue in the environmental field.
- The Group has identified four social issues to be recognized in realizing "societies in harmony with the environment": "reducing the environmental impact of fossil energy," "promoting use of a greater share of renewable energy," "protecting ecosystems, maintaining biodiversity" and "promoting development of products and technologies that help curb global warming." Efforts to solve these issues are underway through both the Group's business activities and product offerings.
- As regards climate change, the JGC Group's commitment to carbon neutrality announced in the 2040 Vision pledges net-zero Scope 1 and 2 CO2 emissions by 2050 and a 30% reduction in Scope 1 and 2 CO2 emissions per unit of production by 2030. The Group's Scope 1 and 2 emissions mainly come from the fuel used at construction sites and functional material manufacturing operating companies' plants and the electricity used at the head office, construction sites, and plants and offices of manufacturing operating companies. To cut down on these emissions, the Group is working to reduce energy consumed at construction sites, adopt low-carbon practices in manufacturing operating companies' production processes and core technologies, and use energy-efficient electricity and renewable energy. For Scope 3 emissions, collaboration with stakeholders will be sought, as exemplified by the provision of energy transition solutions for stakeholders that make full use of the Group's technological prowess.
- The JGC Group established the Sustainability Committee in December 2021 to formulate policies and action plans in the field of sustainability and manage and report the status of activities. A governance framework is in place where Group companies collaborate to pursue activities.

■ Materiality

	Materiality		Related SDGs	Recognized Social Issues
E	Societies in harmony with environment			<ul style="list-style-type: none"> • Reducing the environmental impact of fossil energy • Promoting use of a greater share of renewable energy • Protecting ecosystems, maintaining biodiversity • Promoting development of products and technologies that help curb global warming
S	Materiality to address through business activities	Working with local communities around the world		<ul style="list-style-type: none"> • Contributing to economic and industrial development in emerging markets • Creating employment in emerging markets • Supporting technology transfer and human resource development in emerging markets
		Human rights, employee motivation		<ul style="list-style-type: none"> • Promoting workplace diversity • Promoting female hiring and strengthening skill-building • Respecting human rights in all business activities
	Materiality to achieve as a result of business activities	Energy access		<ul style="list-style-type: none"> • Meeting greater global energy demand • Promoting wider use of renewable energy that contributes to sustainable growth • Enhancing productivity through greater global energy efficiency
		Quality of life		<ul style="list-style-type: none"> • Responding to aging social and industrial infrastructure • Promoting development of social and industrial infrastructure in emerging markets • Improving global medical standards • Making life more convenient and comfortable
G	Corporate governance, risks management			<ul style="list-style-type: none"> • Strengthening and improving corporate governance • Ensuring regulatory compliance in business activities • Responding appropriately to corporate and business risk

[Source: JGC Holdings]

■ Targets in the commitment to carbon neutrality by 2050

Targets in the commitment to carbon neutrality by 2050

Target	Net-Zero Initiatives
Scope 1+2 2050 Net-zero CO₂ emissions	Develop "JGC Group CO ₂ emission reduction plan" in fiscal 2022, and for Scope 1 and 2 reductions, adopt low-carbon / decarbonized practices, such as by reducing energy consumed in business activities, by using renewable energy, and by other means.
Scope 1+2 2030 30% reduction in CO₂ emissions per unit of production	
Scope 3 Reduction as determined in consultation with stakeholders	For Scope 3 reductions, leverage technologies cultivated by the JGC Group to provide energy transition solutions to stakeholders <ul style="list-style-type: none"> • Reduction of plant energy consumption through smart O&M • CCS technology • Construction of environmentally conscious facilities such as solar power, biomass power, offshore wind power, and SMRs • Hydrogen / fuel ammonia operations • Chemical recycling (plastic and fiber waste), SAF, etc.

[Source: JGC Holdings]

1. Use of Proceeds

(1) Eligible Projects

- The proceeds will be used to finance or refinance the eligible projects listed below. The look-back period for refinancing will be 36 months prior to the green bond issuance under the Framework.

Project Category	ICMA Project Category ¹
Carbon Recycling / Chemical Recycling	Circular economy adapted products, production technologies and processes / Pollution prevention and control
Energy Transition	Clean Transportation / Circular economy adapted products, production technologies and processes / Renewable energy

(2) Project Categories and Expected Environmental Benefits of Eligible Projects

① Carbon Recycling / Chemical Recycling

Green Eligible Category: Circular economy adapted products, production technologies and processes / Pollution prevention and control

Project Summary & Eligibility Criteria: R&D, capital investment and expenditures related to biofuels, biomaterials, hydrogen and ammonia production through carbon and chemical recycling (only those satisfying the eligibility criteria shown below)

- Raw materials are limited to those derived from waste materials, biomass, and other materials that do not have a serious adverse effect on the environment or society
- When using biomass as a raw material, use only unused materials for domestic materials and those that have obtained FSC or other sustainability-related certifications for imported materials

< Project Examples >

- Investment in SAF production facilities using waste cooking oil

Sustainable aviation fuel (SAF) will be produced from used cooking oil, as a fuel without problems such as competition with food production and deforestation. While biofuels, when combusted, do emit CO₂ like fossil fuels, the plants used as raw materials absorb CO₂ during photosynthesis as they grow, which makes such fuels carbon neutral. To be used for decarbonization of aircraft, SAF must be certified by a third-party body against the sustainability criteria under the Sustainability Certification Scheme of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA). The certification scheme involves a process that confirms the CO₂ reduction effect of the project using the life cycle CO₂ emission factors defined by the International Civil Aviation Organization (ICAO) according to feedstock and manufacturing technology. This project also helps reduce waste in final disposal, because used cooking oil is collected and recycled as a fuel. JGC Holdings is working with other companies² to build a supply chain model for SAF production sourced from used cooking oil.

¹ Project categories are provided in the ICMA's GBP. Green Project categories include 10 categories, and Social Project categories include 6 categories.

² A project led by SAFFAIRE SKY ENERGY LLC, which was jointly established by Cosmo Oil Co., Ltd., Revo International Inc. and JGC Holdings, will target annual SAF production on the level of 30,000 kiloliters, seeking to become the first large-scale domestic producer of SAF in Japan. The fuel will be sourced entirely from used cooking oil.

- Development of polymer synthesis technology by microorganisms using CO₂ as direct raw material

This project invests in R&D related to the technology for synthesizing polymers, a raw material for plastic products, using CO₂. A raw material for plastics is produced by processing polymers extracted from microorganisms that convert CO₂ to polymers and store the polymers in their body. Hydrogen and oxygen are needed as a source of energy for proliferation of microorganisms and polymer synthesis, and uniformly maintaining hydrogen and oxygen at an appropriate mixing rate is essential for efficient polymer synthesis. These requirements pose challenges in the handling of hydrogen and oxygen that may turn into flammable gas depending on their mixing rate, as well as in the scaling-up of production facilities that makes mixture in a tank uneven easily. The JGC Group will develop the technology for maintaining mixed gas safely, appropriately and uniformly in microorganism culture and polymer synthesis processes, by capitalizing on the flammable gas handling technology it has accumulated in the oil & gas engineering field and leveraging a track record in technological development for producing bioethanol from non-edible resources and experience in development of high-efficiency bioreactors in the area of biopharmaceuticals. The group will study life cycle CO₂ emissions, starting from the R&D phase.

- Hydrogen production by gasification of plastic wastes




This project produces low-carbon hydrogen using the technology for gasification chemical recycling of plastic wastes called EUP (Ebara Ube Process). First, plastic wastes are crushed to generate refuse derived paper and plastics densified fuel (RPF), a high-grade solid fuel, and RPF is thermally decomposed in gasification furnaces to produce a synthetic gas composed mainly of CO and hydrogen. Second, a synthetic gas of hydrogen and CO₂ is produced by reaction of CO with water. The hydrogen obtained in this process is refined and compressed and supplied to customers. Since part of the RPF is used as a fuel for gasification furnaces, the manufacturing process does not use additional thermal energy.

The JGC Group has confirmed that CO₂ emissions from transport of plastic wastes through hydrogen production in the EUP process are significantly lower than CO₂ emissions from disposal of plastic wastes through incineration and hydrogen production via steam reforming using fossil fuels. This project also helps reduce waste in final disposal because it reuses plastic wastes as a raw material. Since CO₂ produced in this process can be captured more easily than in ordinary disposal through incineration, the Group will consider reducing CO₂ emissions further in the future by applying CCUS and CCS. In addition, a study is underway with BECCS³ as a possible option, which may be realized by this project employing bioplastics that will likely gain more popularity but are difficult to recycle.

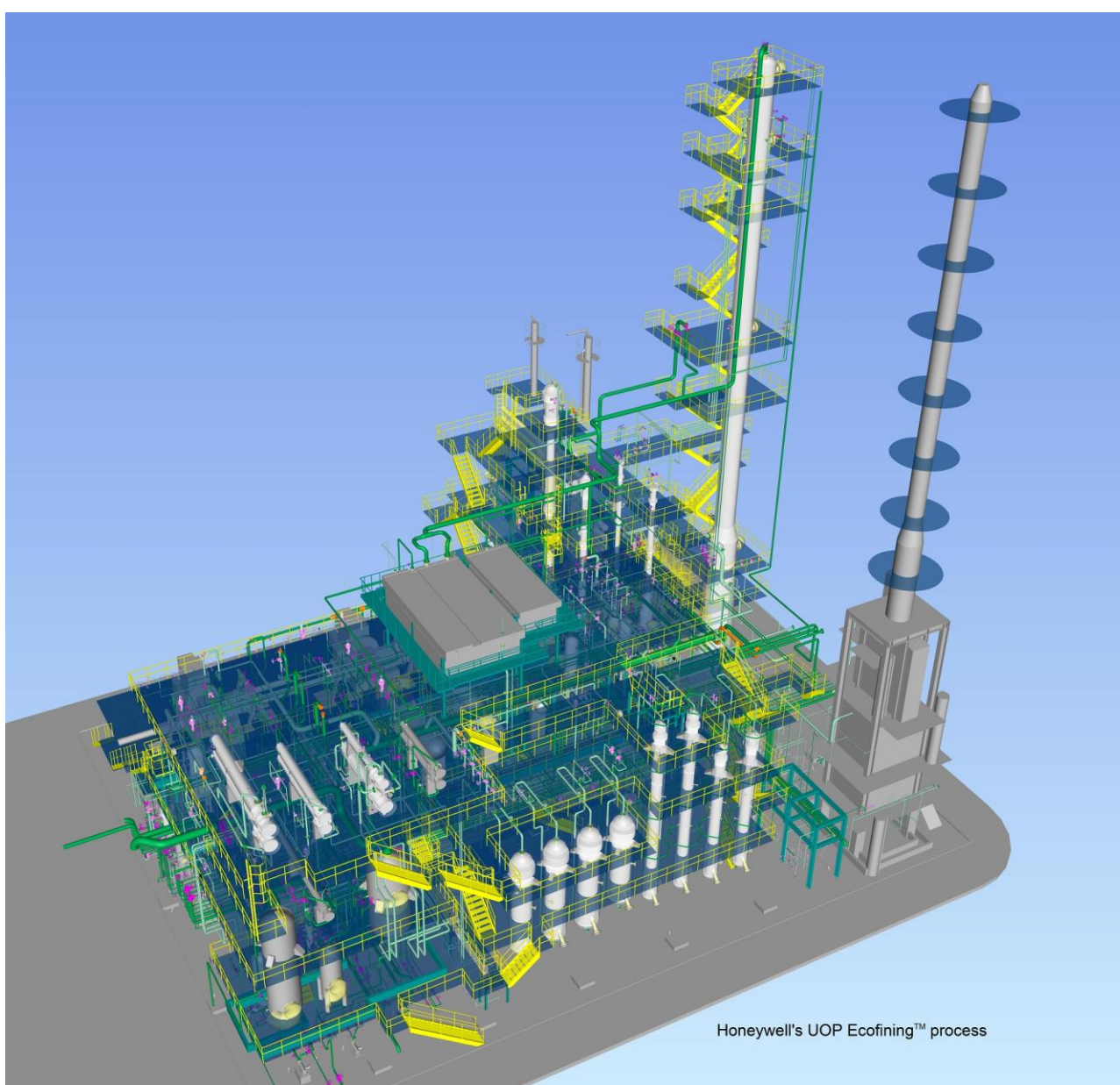
Environmental Benefits: The projects help reduce waste in final disposal through R&D, capital investment and expenditures related to biofuels, biomaterials, hydrogen and ammonia production through carbon and chemical recycling using waste-derived raw materials and biomass. They also contribute to GHG emissions reduction by replacing or cutting back on the use of fossil fuels and fossil fuel-derived materials. Environmental benefits of the projects will be assessed based on quantitative metrics, such as GHG emissions and waste reduced, according to environmental objectives of the projects. When quantitative evaluation is difficult such as in R&D, however, qualitative information, including expected applications and effects, will be used for the assessment.

³ Bio energy with carbon capture and storage involves capturing and storing CO₂ from processes where biomass is burned to generate energy. BECCS is considered a negative emissions technology.

< Relevance to SDGs >

SDGs	
  	<p>9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities</p> <p>12.1 Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries</p> <p>13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries</p>

■ SAF plant (3D model)



[Source: JGC Holdings]

② Energy Transition

Green Eligible Category: Clean Transportation / Circular economy adapted products, production technologies and processes / Renewable energy

Project Summary & Eligibility Criteria: R&D, capital investment and expenditures required for the following technologies and products to realize the energy transition toward a carbon-neutral society

- Technologies, core components and infrastructure essential for widespread adoption of electric and hydrogen vehicles (excluding technology and products used in internal combustion engines)
- Production of hydrogen and ammonia derived from renewable energy
- Solar power, onshore/offshore wind power

< Project Examples >




- Capital investment in high thermal conductivity silicon nitride substrates for high-efficiency, high-power power modules for EVs

Silicon nitride substrates are used as substrates for power modules that contain silicon carbide (SiC) and other power semiconductors for DC/AC power conversion and control. The project covers capital investment related to silicon nitride substrates used in power modules for EVs. The realization of power semiconductors such as SiC contributes to widespread adoption of EVs by improving vehicles' energy efficiency and range through smaller devices and higher power EVs. Silicon nitride substrates are indispensable for the performance improvement and wider use of SiC and other power semiconductors used in EVs.

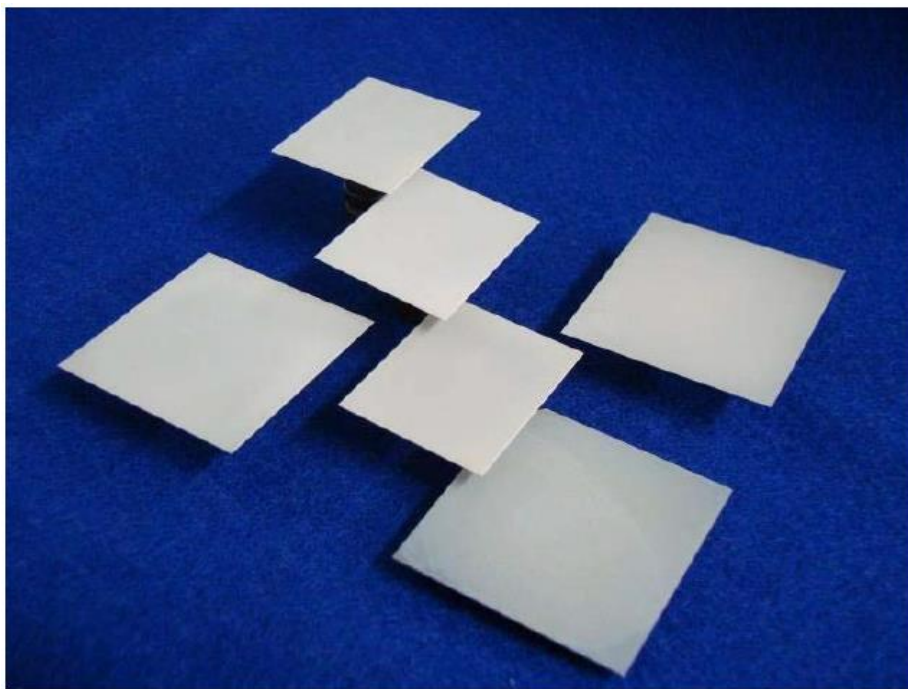
When EVs' power is increased, power semiconductors generate heat, potentially causing problems such as poor semiconductor performance and damage to substrates attributable to thermal stress, without appropriate cooling and heat dissipation. Aluminum nitride substrates with high thermal conductivity, which have been used as insulating heat dissipation substrates, lack reliability due to their low mechanical strength. Silicon nitride substrates produced by the JGC Group have high heat dissipation performance and mechanical strength compared to aluminum nitride and other ceramic substrates, constituting essential products for increasing the performance and penetration of power semiconductors, such as SiC, used in EVs.

Environmental Benefits: The projects contribute to realization of a carbon neutral society through R&D, capital investment and expenditures related to technologies, core components and infrastructure essential for widespread adoption of electric and hydrogen vehicles, production of hydrogen and ammonia derived from renewable energy, and solar power and onshore/offshore wind power. Environmental benefits of the projects will be assessed based on GHG emissions reduced through the projects. When quantitative evaluation is difficult such as in R&D, however, qualitative information, including expected applications and effects, will be used for the assessment.

< Relevance to SDGs >

SDGs	
  	<p>7.2 By 2030, increase substantially the share of renewable energy in the global energy mix</p> <p>9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities</p> <p>13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries</p>

■ High thermal conductivity silicon nitride substrates



[Source: JGC Holdings]

(3) Consideration for Negative Environmental and Social Impacts

- JGC Holdings has established the eligibility criteria that give due consideration to negative environmental and social impacts according to project characteristics as mentioned above, and confirms the amount of life cycle CO₂ emissions.
- In selecting specific projects, the company confirms that the following environmental and social risk mitigation measures are implemented, as necessary.
 - Compliance with environment-related laws and regulations required by the national and local governments where the project is located and environmental impact assessment as necessary
 - Full explanation of the project to local residents
 - Proper management and treatment of waste, rationalization of energy use and consideration of the introduction of non-fossil energy, resource recycling for construction work, and management of environmentally hazardous substances

The proceeds will be allocated to a wide array of green projects ranging from biofuels, biomaterials, hydrogen and ammonia production using waste materials-derived raw materials and biomass to products essential for widespread adoption of electric and hydrogen vehicles, production of hydrogen and ammonia derived from renewable energy, and renewable energy initiatives. They correspond to GBP project categories of Renewable energy, Clean transportation, Circular economy adapted products, production technologies and processes, and Pollution prevention and control. JGC Holdings has established the eligibility criteria that give due consideration to negative environmental and social impacts according to project characteristics, and confirms the amount of life cycle CO₂ emissions. When specific projects are carried out, the company confirms that environmental and social risk mitigation measures are implemented as necessary, including environmental impact assessment and explanation to local residents. The use of proceeds is reasonable.

2. Process for Project Evaluation and Selection

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

- In response to changes in the business environment mainly stemming from climate change, digitalization and the COVID-19 pandemic, the JGC Group has redefined its purpose as "Enhancing planetary health," and set out a vision aimed at solving three social issues by 2040: pursuing both a stable energy supply and decarbonization, reducing the environmental impact of resource consumption, and building and maintaining vital infrastructure and services.
- Through a transformation that spans business areas, business models and its organization, the JGC Group is gearing up for the challenge of becoming a corporate group that contributes to enhancing planetary health, as called for in the 2040 Vision. The Group will develop five business areas into pillars of business.
- The medium-term business plan covering the first five-year stage on the path to the 2040 Vision has identified three key strategies. In "Expansion of manufacturing business for high-performance functional materials," one of the key strategies, silicon nitride substrates are positioned as target products for "Expand sales of strategic products." Another key strategy of "Establishment of future engines of growth" outlines especially promising growth engines in the five business areas defined in the 2040 Vision. Such growth engines include hydrogen and ammonia, SAF, chemical recycling and renewable energy, which will be funded by the proceeds raised under the Framework. The target projects contribute to realization of the JGC Group's 2040 Vision and medium-term business plan.
- The target projects also help expand non-EPC business areas toward the business model transformation pursued in the 2040 Vision, as the JGC Group itself is expected to conduct R&D, manufacture products and directly participate in these projects, unlike in conventional EPC business models.
- The Group is pressing ahead with initiatives to solve four social issues it has identified for its materiality in the environmental field, "societies in harmony with environment": "reducing the environmental impact of fossil energy," "promoting use of a greater share of renewable energy," "protecting ecosystems, maintaining biodiversity" and "promoting development of products and technologies that help curb global warming." The target projects address materiality, encompassing initiatives for biofuels, biomaterials, hydrogen and ammonia production, manufacturing of products essential for widespread adoption of electric and hydrogen vehicles, and further introduction of renewable energy.

(2) Criteria for Project Evaluation and Selection

- Eligible projects aligned with project categories of GBP, etc. are clearly defined in the Framework, which constitute the criteria for evaluating and determining eligible projects.
- JGC Holdings has established the eligibility criteria that give due consideration to negative environmental and social impacts according to project characteristics, and confirms the amount of life cycle CO2 emissions.
- A process is in place to confirm that measures against negative environmental and social impacts are implemented as necessary, when specific projects are carried out.

(3) Process for Project Evaluation and Selection

- The financial division, with the support of relevant internal departments, selects eligible projects by confirming their fulfillment of the eligibility criteria, and CFO makes the final decision after confirming that the aforementioned environmental and social risk mitigation measures are implemented as necessary.

In light of the above, the process for project evaluation and selection is clear and rational.

■ Three key strategies in the medium-term business plan

Three key strategies

01 Transformation of EPC operations

Increase competitiveness and profitability in mega-sized EPC projects	Take on EPC growth markets and segments
<p>Improve project gross profit ratios</p> <ul style="list-style-type: none"> • Refine risk management • Improve project negotiations <p>Improve competitiveness in securing orders</p> <ul style="list-style-type: none"> • Develop and execute joint venture strategies • Develop and apply digital technologies • Optimize construction methods 	<p>Expanding into growth markets</p> <ul style="list-style-type: none"> • Actively expand business in the Asia region <hr/> <p>Expanding into growth segments</p> <ul style="list-style-type: none"> • LNG receiving terminals, Gas-fired power • Solar power, Biomass power • Pharmaceuticals / hospitals • Chemicals

02 Expansion of manufacturing business for high-performance functional materials

Offer more product lineups in existing business for increased revenue	Catalysts for chemical refineries, original chemical catalysts, materials for semiconductor / high-speed telecom applications, products used in semiconductor manufacturing equipment, etc.
Expand sales of strategic products	New chemical catalysts and fine chemicals products, high thermal conductivity silicon nitride substrates, etc.
Explore and develop next-generation business	Catalysts for carbon recycling and chemical recycling, materials for high-speed communications, materials used in the life sciences, all-solid-state battery, materials for bone regeneration

03 Establishment of future engines of growth

Among the business areas defined in the 2040 Vision, the following are especially promising in this regard. Operations established in these new areas will be developed into profitable future pillars of business.

Business areas	Growth engines	Business areas	Growth engines
Energy transition	<ul style="list-style-type: none"> • Carbon management • Offshore wind power • Hydrogen / fuel ammonia • Small modular reactors (SMRs) • Smart O&M 	High-performance functional materials	<ul style="list-style-type: none"> • Catalysts for carbon recycling, chemical recycling • Bone regeneration materials / OCP, etc.
		Circular economy	<ul style="list-style-type: none"> • Chemical recycling of plastic and fiber waste • Sustainable aviation fuel (SAF)
Healthcare & life sciences	<ul style="list-style-type: none"> • Smart hospitals • Smart factories • Digital healthcare 	Industrial & urban infrastructure	<ul style="list-style-type: none"> • Water treatment • Railways

[Source: JGC Holdings]

3. Management of Proceeds

- Until full allocation to eligible projects, the financial division, in collaboration with the departments and group companies responsible for eligible projects, continuously monitors the allocation of proceeds using dedicated books, etc.
- Unallocated funds will be managed as cash or cash equivalents.

In light of the above, the management of proceeds is appropriate.

4. Reporting

(1) Overview of Disclosure

- Reporting will be made as follows. If a significant change occurs in the allocation plan, JGC Holdings will disclose that on its website appropriately, as necessary.

	Items	Timing	Method
Allocation of Proceeds	<ul style="list-style-type: none"> • Overview of eligible projects funded • Allocated amount for each eligible project (including percentage of new financing and refinancing) • Unallocated amount 	At least once a year until full allocation	Website
Impact	<ul style="list-style-type: none"> • As shown in the table below 	At least once a year as long as the proceeds are outstanding	

■ Impact reporting items and metrics for green projects

Project Category	ICMA GBP Category	Reporting Items and Metrics
Carbon Recycling / Chemical Recycling	Circular economy adapted products, production technologies and processes / Pollution prevention and control	[For projects contributing to GHG emissions reduction] <ul style="list-style-type: none"> • GHG emissions reduction (t-CO2e) (actual or estimated) [For projects contributing to pollution prevention and control] <ul style="list-style-type: none"> • Waste reduction amount/effect (actual or estimated) * When quantitative reporting is difficult such as in R&D, the qualitative impact will be disclosed in detail to the extent practicable

Energy Transition	Clean Transportation / Circular economy adapted products, production technologies and processes / Renewable Energy	<ul style="list-style-type: none"> · GHG emissions reduction (t-CO2e) (actual or estimated) * When quantitative reporting is difficult such as in R&D, the qualitative impact will be disclosed in detail to the extent practicable
-------------------	--	---

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

- Impact reporting will cover GHG emissions and waste reduction quantified to the extent possible according to environmental objectives of projects, combined with qualitative information such as brief descriptions of projects.

In light of the above, the reporting is appropriate.

[Disclaimer]

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

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

The information used when R&I issues Second Opinions is information that R&I has determined, at its own discretion, to be reliable. However, R&I does not undertake any independent verification of the accuracy or other aspects of that information. R&I makes no representation or warranty, express or implied, as to the accuracy, timeliness, adequacy, completeness, merchantability, fitness for any particular purpose, or any other matter with respect to Second Opinions and any such information.

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

All rights and interests (including patent rights, copyrights, other intellectual property rights, and know-how) regarding Second Opinions belong to R&I. Use of Second Opinions, in whole or in part, for purposes beyond personal use (including reproducing, amending, sending, distributing, transferring, lending, translating, or adapting the information), and storing Second Opinions for subsequent use, is prohibited without R&I's prior written permission.

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

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

[Expertise and Third-Party Characteristics]

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

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

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