Welcome to your CDP Climate Change Questionnaire 2022

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

JGC HOLDINGS CORPORATION is the holding company for the JGC Group, whose main businesses are comprehensive engineering, functional materials manufacturing, and energy and environmental consulting. In the comprehensive engineering business, which covers plant and equipment design, procurement, construction, and maintenance, JGC CORPORATION handles the overseas business and JGC JAPAN CORPORATION handles the domestic business. In the functional materials manufacturing business, JGC Catalysts and Chemicals Ltd. develops, manufactures, and sells catalysts and fine chemical products, and Japan Fine Ceramics Co., Ltd. develops, manufactures, and sells fine ceramics products. In addition, JAPAN NUS CO., LTD. handles a wide range of consulting business related to energy and the environment.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	April 1, 2021	March 31, 2022	Yes	1 year

C0.3

(C0.3) Select the countries/areas in which you operate.

Algeria
China
Iraq
Japan
Kuwait
Thailand

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

JPY

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Other, please specify

(The reporting boundary covers JGC HOLDINGS CORPORATION and its main operating companies, JGC CORPORATION, JGC JAPAN CORPORATION, JGC Catalyst and Chemicals Ltd., Japan Fine Ceramics Co., Ltd., and JAPAN NUS CO., LTD.)

C0.8

(C0.8) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

Indicate whether you are able to provide a unique identifier for your organization	Provide your unique identifier
Yes, an ISIN code	JP366760BL72

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	The Representative Director, Chairman and CEO chairs the Board of Directors of JGC HOLDINGS CORPORATION. The Board of Directors is the highest decision-making body and is responsible for all decision-making, including responding to climate change issues, such as identifying and assessing climate-related issues, determining response policies including their reflection in business strategies, and setting targets for reducing greenhouse gas emissions. In principle, the Board of Directors meets once a month on a regular basis, and whenever necessary. The person responsible for responding to climate change issues is the CEO, who is responsible for ensuring that environment-related issues are reflected in the Group's business strategies and objectives. As examples of climate-related decision-making in fiscal 2021 by the Board of Directors, which is chaired by the

	CEO, the Group has carried out the following: the formulation of the Group's "2040 Vision," a Long-Term Management Vision that encompasses environmental issues including climate change as well as their countermeasures; the formulation of a Medium-Term Business Plan in light of said Vision; the formulation of Basic Policy for Sustainability that sets forth the "environment" as a major theme and includes responses to climate change; and the establishment of the Sustainability Committee chaired by the CEO.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action	The Board of Directors discusses the management strategies and the management goals of each Group company in light of environmental issues, including climate change. In fiscal 2021, the Board of Directors actively deliberated on environmental issues, including climate change, and the Group's management strategies to respond to these issues, set the Group's main business field such as "energy transition," which contributes to a stable energy supply and decarbonization, as well as "circular economy," which aims to create a market for a recycling-oriented society, and in light of these, led the formulation of the Long-Term Management Vision, "2040 Vision," and a Medium-Term Business Plan based on this vision. After the establishment of the Medium-Term Business Plan, the progress of the management strategy and its action plan with "energy transition" and "circular economy" at the core are deliberated by the Board of Directors as part of the reporting process of the progress of the Medium-Term Business Plan to the Board of Directors. In addition, the Board of Directors deliberates on issues related to investment and M&A in areas that match the "2040 Vision" and the Medium-Term Business Plan and in which growth is expected. The Board approved the formulation of the Basic Policy for Sustainability and the establishment of the Sustainability Committee, with "environment" as a major theme, including responses to climate change.

C1.1d

(C1.1d) Does your organization have at least one board member with competence on climate-related issues?

	Board member(s) have competence on climate-related issues	Criteria used to assess competence of board member(s) on climate-related issues
Row 1	Yes	The Representative Director, Chairman and CEO is most familiar with climate-related issues. The Group is part of the energy industry, which is strongly associated with climate-related issues, and he has been in the industry for more than 40 years since he joined the Company. He also chairs the Sustainability Committee established in FY2021 and is in a position to lead the Group's overall sustainability activities.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

The person responsible for responding to climate change issues in the Group is the Representative Director, Chairman and CEO, who is responsible for ensuring that environment-related issues are reflected in the Group’s business strategies and objectives, including both assessing and managing climate-related risks and opportunities. Monitoring of climate change-related issues is conducted by the Sustainability Committee, which is an advisory body for the Representative Director and is responsible for formulating policies and action plans related to sustainability, including the Group’s response to climate change, as well as for deliberating on the evaluation and promotion of actions. The Committee is chaired by the Representative Director, Chairman and CEO and is composed of each Representative Director, President of the main operating companies that constitute the Group, and the General Manager of the strategic department, which fosters next-generation businesses that contribute to sustainability at the holding company. The content of the Committee’s deliberations and reports are reported to the Board of Directors as appropriate through the Representative Director, Chairman and CEO, and the Representative Director, President and COO.

Several subcommittees have been established under the Sustainability Committee to be in charge of the following: (1) response to the disclosure of climate change-related information; (2) formulation and management of the CO_2 emission reduction plan; (3) development of systems to promote the response to sustainability; and (4) identification of and response to other sustainability issues.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	Our Group lists "Societies in harmony with environment" as part of its materiality. Construction projects and related initiatives that contribute to climate-related issues are the mainstay of the business of the Group, and particularly outstanding initiatives are rewarded with the Award of CEO and General Managers and given a bounty.

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Corporate executive team	Monetary reward	Emissions reduction project Energy reduction project Company performance against a climate-related sustainability index	Performance-based compensation is provided as compensation for Directors and Executive Officers. The Group's performance-based compensation system is designed to strongly encourage the officers to achieve the business performance figures in each fiscal year and to promote an increase in corporate value over the medium to long term without fail. In order to realize business fields based on the Group's Long-Term Management Vision "2040 Vision" and the Medium-Term Business Plan, such as "energy transition" which contributes to a stable energy supply and decarbonization as well as "circular economy" which aims to create a market for a recycling-oriented society, Directors and Executive Officers are evaluated individually based on their responsibilities to be fulfilled, and the compensation amount is determined to reflect the evaluation results.
All employees	Monetary reward	Emissions reduction project	As part of its employee compensation program, the Group has established a President's Commendation

		Energy reduction project Company performance against a climate-related sustainability index	system for individuals or teams of 8,100 employees who have made outstanding achievements in their work, to be recognized and praised by the Group and to serve as models for other employees, in addition to an award system for each department. Since the Group has set “societies in harmony with environment” as part of its materiality, project execution and related initiatives that contribute to climate-related issues are the mainstream of the business of the Group and are subject to evaluation. It also states that “CSV (Creating Shared Value) will be taken into account” in the selection of subjects, including contributions to combatting climate change. The subjects receive an award. In fiscal 2020, the President’s Commendation was awarded to the team that proposed the optimization of operation of an existing LNG plant according to weather changes using the DX method and won two orders for actual work to improve the plant operation. The General Manager’s Commendation was awarded to the team that established a method for assessing the environmental impact of businesses in which the Group is involved through LCA (Life Cycle Assessment) and the team that demonstrated the minimization of flare gas operations at an offshore LNG plant. In fiscal 2021, the President’s Commendation was awarded to the team in charge of formulating the “2040 Vision,” the Group’s Long-Term Management Vision that encompasses environmental issues including climate change and their responses, as well as the Medium-Term Business Plan that reflects said Vision.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	0	3	
Medium-term	3	5	In the Group, the Medium-Term Business Plan is made every five years.
Long-term	5	20	The Group has established a Long-Term Management Vision for 2040 (2040 Vision).

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

For the Group, the most substantive financial impact would be if climate change were to interfere with the continuation of projects in its mainstay comprehensive engineering business, including change in plans, cancellations, and suspension of the project, resulting in a decrease in sales and profits. In addition, a substantive impact on our business strategy would be a decrease in orders due to a significant change in the environment for orders received by the Group as a result of investment restraint by client companies or changing the nature of their business itself due to climate change. One of the criteria for the materiality of the Group, a listed company, in terms of monetary value is the requirement of the timely disclosure system of the financial instruments exchange that the increase or decrease in the forecasted figures should be 10% or more of consolidated net sales, 30% or more of consolidated operating income, consolidated ordinary income, and net income attributable to shareholders of the parent company. Applying the average value from fiscal 2017 to fiscal 2021, consolidated net sales were approximately 540 billion yen, of which 10% was 54 billion yen, and consolidated operating income was approximately 22 billion yen, of which 30% was 6.6 billion yen.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations
Upstream
Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term

Medium-term
Long-term

Description of process

As a basic approach to risk management including climate-related risks, we recognize that appropriate risk management can reduce losses and lead to profits for the Group, and strives to reduce and prevent risks from normal times by grasping and organizing the risks of the entire Group and establishing, maintaining, and improving risk management systems. Furthermore, in the event that risks surface, we strive to minimize their impact and losses through prompt and appropriate responses.
Specifically, based on the Group Risk Management Committee rules, the Group Risk Management Committee, chaired by the COO of JGC HOLDINGS CORPORATION and composed of the top management of each operating company, has been established to meet twice a year in principle with the purpose of planning and deliberating on the establishment, maintenance, and improvement of the risk management system for the entire Group. As a result, the Group has established and is operating a comprehensive risk management system to systematically identify short- to long-term risks not only in the direct operations of the Group but also in the entire value chain, including upstream and downstream operations, and is working to further reduce the risks of the Group. The management, including identification and assessment of climate-related business risks of the Group, is carried out mainly by the Risk Management Committee of each operating company engaged in the comprehensive engineering business, functional materials manufacturing, and energy and environmental conservation consulting in Japan and overseas. Risks identified in light of the business environment of each operating company are organized into a list of risk items, which are assessed for each risk based on the criteria described in 2.1b prior to the biannual meetings of the Group Risk Management Committee, and countermeasures are discussed and determined for each operating company. Then, each operating company takes the initiative in implementing the countermeasures as appropriate in light of instructions from the department in charge of crisis management and the department in charge of compliance as necessary.
Major topics are reported by the operating companies to the Group Risk Management Committee, which then deliberates at the committee meeting, and any major deficiencies or inadequacies in the risk management system are reported to the Board of Directors of the Group, as necessary, for deliberation on countermeasures.

[Case Study Applied to “Physical Risk or Opportunity”]
Situation: As global warming progresses due to the increase in cumulative greenhouse gas emissions, construction sites in the comprehensive engineering business and plants in the functional materials manufacturing business may be hit by unexpected natural disasters such as heavy rains and storms caused by climate change.
Task: It is necessary to identify specific physical risks, take countermeasures, and reduce the risks.
Action: As a result of examination by each operating company, there is a possibility that construction work may be interrupted or redone in the comprehensive engineering business as a physical risk. In the functional materials manufacturing business, there is a possibility of suspension of operation and reduction of production capacity at offices

and plants. In light of the criteria described in C2.1b, risks that could worsen the profitability of projects in the comprehensive engineering business and affect the business, financial position, and operating results of the Group including the functional materials manufacturing business have been identified.
As a risk management response, a safety confirmation system is introduced by prescribing response procedures in case of a natural disaster at each of the headquarters, construction sites, offices, factories, etc. of each Group company, based on the instructions from the department in charge of crisis management and the department in charge of compliance, and disaster prevention drills are conducted. In addition, relevant actions are sequentially implemented, such as collecting information on risks, setting reasonable contract conditions with customers regarding force majeure clauses, legal change clauses, etc.
Results: In the event of a natural disaster caused by climate change, the additional costs of delays and delays are expected to be minimized and the safety of workers ensured.

[Case Study Applied to “Transitional Risk or Opportunity”]
Situation: The main customers of the Group have been companies engaged in the development of oil and natural gas, etc. and the sale of products derived from fossil fuels. As the movement toward the realization of a decarbonized society in light of the long-term goals of the Paris Agreement is accelerating internationally, if the demand for fossil fuels and products derived from fossil fuels decreases faster than expected due to the strengthening of climate change policies, changes in environmental laws and regulations, and the introduction of new laws and regulations in various countries, the business activities of the client companies of the Group may be affected in the form of restrained investment in fossil fuels or changes in the business activities of client companies themselves.
Task: It is necessary to identify specific transitional risks and reduce them.
Action: As a result of the examination of each operating company, it was identified that there is a transition risk, including a risk of a decrease in the number of development projects and a decrease in prices due to intensification of competition with competitors over orders for limited projects. In light of the standards described in 2.1 b, inability of the Group to respond to such changes in the business environment may have an impact on business, financial position, operating results and cash flows, etc. of the Group. Accordingly, under the policy of formulating management strategies that focus on low-carbon and decarbonized businesses and further diversifying the business portfolio under the Group management structure as a response to risk management, the Group will transform its business area into a wide range of areas, including energy transition and healthcare/life sciences based on the Long-Term Management Vision “2040 Vision,” with the aim of contributing to the resolution of issues related to the global environment and human health. In addition, the Group will work on the transformation of its business model as well as the organizational transformation within the Group as a foundation for supporting these transformations.
Results: In addition to winning and executing projects in the non-fossil fuel field, which is beginning to show results both in Japan and overseas, we are expected to achieve

sustainable growth by further promoting efforts to achieve a decarbonized society by lowering carbon emissions in the fossil fuel field.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Currently, all fossil fuels distributed in Japan are subject to a Global warming countermeasure tax of 289 yen/tCO_2e, but this tax may increase in the future in order to achieve Japan's CO_2 emission reduction target. In the comprehensive engineering business of the Group, since fossil fuels are used for heavy construction equipment and transportation, any increase in the price of fossil fuels due to increased taxation in Japan will increase the cost of the domestic comprehensive engineering business. In the functional materials manufacturing business, since heat and electricity are used in the manufacturing plants in Japan, we recognize that an increase in tax will lead to an increase in manufacturing costs and pose a risk of reducing profits of the Group. Based on the above, risks related to “current regulation” are always included in the risk assessment in the Group, because they are important risk items for the operations of the Group business.
Emerging regulation	Relevant, always included	In the comprehensive engineering business of the Group, we recognize that the introduction of global carbon pricing will lead to a sharp rise in the cost of materials, equipment, and fuel, which will become a risk that will affect business costs in the future in the form of higher procurement prices for piping and equipment materials for construction, and diesel fuel used in the operation of heavy machinery and welding. In addition, we recognize that the introduction of carbon taxes, the establishment of carbon emission targets by each country, and other tightened regulations will reduce the number of new plant construction projects in the oil and gas sector, the core business of the Group, through a decline in demand for fossil fuels, and thus pose the risk of fewer opportunities for orders. Based on the above, risks related to “emerging regulation” are always included in the risk assessment in the Group, because they are important risk items for the operations of the Group business.
Technology	Relevant, always included	To mitigate climate change, low-carbon technologies are expected to spread and become more advanced. The comprehensive engineering business of the Group has traditionally focused on the construction of oil and gas related plants, with oil refineries accounting for the bulk of its sales. We recognize that the spread of electric and fuel cell vehicles poses the risk of reduced order opportunities through reduced demand for gasoline and reduced orders for oil refinery plants. The decline in

		the size of the petrochemical market due to the spread of decarbonized materials such as bioplastics will also result in fewer orders for oil refinery plants. The spread of high-performance storage batteries will lead to a shift to renewable energy, and there is a risk that orders for existing oil and gas-related plants will decline. On the other hand, we see this as an opportunity to focus on the development of technologies related to renewable energy and hydrogen, which are expected to become low-carbon energy sources in the future, but we also recognize the risk that this market will not expand in a timely manner. Based on the above, risks related to "technology" are always included in the risk assessment in the Group, because they are important risk items for the operations of the Group business.
Legal	Relevant, always included	In the event that the obligation to report emissions is strengthened, the comprehensive engineering business of the Group may be required by certain clients to disclose climate-related information as a legal requirement to participate in bidding for plant construction projects, and if we cannot respond, there is a risk of losing orders and deterioration of reputation. In addition, if the problem of global warming becomes serious, there is a risk that environmental NGOs and other organizations may file a lawsuit against the construction of oil and gas plants. Based on the above, risks related to "legal (litigation)" are always included in the risk assessment in the Group, because they are important risk items for the operations of the Group business.
Market	Relevant, always included	The shift to low-carbon energy is expected to be accompanied by a decline in coal- and oil-fired power generation, a long-term decline in gas-fired power generation, an expansion of the potential of nuclear power, an increase in renewable energy, and the introduction of CO_2-free fuels, including the use of hydrogen. In the comprehensive engineering business of the Group, there is a risk that opportunities for orders will decrease through a decrease in demand for oil and gas related plants. There is also a risk that the avoidance of fossil-fuel-related businesses in financial and capital markets may affect the establishment of projects. Based on the above, risks related to "market" are always included in the risk assessment in the Group, because they are important risk items for the operations of the Group business.
Reputation	Relevant, always included	With the growing international momentum for decarbonization, companies whose main business is oil and gas are at risk of being criticized for the activities of the relevant industrial sectors. In addition, although the comprehensive engineering business of the Group has technological capabilities that contribute to climate change countermeasures, such as low-carbonization in oil and gas-related plants, construction of renewable energy facilities, and initiatives related to hydrogen and fuel ammonia as clean energy, if we fail to maintain and improve its reputation, there is a risk that its reputation

		with stakeholders and banks will decline, which will have a negative impact on various aspects, such as opportunities to win orders for facility construction, financing, and securing human resources for corporate activities. Based on the above, risks related to “reputation” are always included in the risk assessment in the Group, because they are important risk items for the operations of the Group business.
Acute physical	Relevant, always included	In the event of an increase in extreme weather events, such as torrential rains, storms, typhoons, and floods, which are believed to be caused by global warming, in the comprehensive engineering business of the Group, we recognize that there is a risk of delays in construction work, including physical damage to materials, equipment, and facilities at construction sites and offices, human casualties among employees, and delays in procuring materials and equipment. In the past, a large plant construction site in the U.S. was damaged by flooding caused by a hurricane, resulting in delays in the construction schedule. In addition, there is a possibility that the business, financial position, and operating results of the Group may be affected by the suspension of operations or reduction in production capacity at offices and plants in the functional materials manufacturing business. Based on the above, risks related to “acute physical” are always included in the risk assessment in the Group, because they are important risk items for the operations of the Group business.
Chronic physical	Relevant, always included	In the comprehensive engineering business of the Group, there are many construction sites in the Middle East, Southeast Asia, and other regions where temperatures are conventionally high. Further increases in temperature are at risk of prolonged construction due to reduced labor productivity at construction sites in temperate and tropical regions. There is also concern that the increased costs of countermeasures and accident compensation due to increased occupational safety risks will have a long-term financial impact. In addition, if the sea level rises in coastal areas, there is a risk that ports will become unusable and transportation costs will rise due to the use of aircraft as an alternative. In addition, the risk of construction problems in the Arctic due to thawing permafrost can be assumed. Based on the above, risks related to “chronic physical” are always included in the risk assessment in the Group, because they are important risk items for the operations of the Group business.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Emerging regulation

Carbon pricing mechanisms

Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Company-specific description

JGC HOLDINGS CORPORATION is the holding company for the JGC Group, whose main businesses are comprehensive engineering, functional materials manufacturing, and energy and environmental consulting. Among the business fields, in the comprehensive engineering business, which covers the plant and equipment design, equipment procurement, construction work, and maintenance, JGC CORPORATION handles the overseas business while JGC JAPAN CORPORATION handles the domestic business, all of which account for approximately 70% of the Group's net sales of 428.4 billion yen in fiscal 2021. If carbon taxes, emissions trading scheme, and carbon border adjustment measures are strengthened and introduced, it is expected that the shift to low-carbon energy will be accelerated and the demand for fossil fuels will be reduced. This could have an impact on new orders and sales of large-scale oil and gas-related plant construction that JGC CORPORATION is undertaking in industrialized countries, such as North America and Australia, where carbon pricing systems may be introduced and enhanced at an early stage.

Time horizon

Long-term

Likelihood

Likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

31,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Over the three years from 2019 to 2021, the annual average sales of the oil and gas field (development of oil and gas resources, petroleum refining, LNG, chemical, etc.) was 310 billion yen. If the carbon tax, emissions trading system, and carbon border adjustment measures are strengthened, the potential financial impact, calculated on the assumption that the shift to low-carbon energy will reduce sales by 10% (the standard for timely disclosure by financial instruments exchanges), is 31 billion yen per year on average, which is 10% of 310 billion yen in average sales over the past three years.

Cost of response to risk

16,000,000,000

Description of response and explanation of cost calculation

Situation: If carbon taxes, emissions trading systems, and carbon border adjustment mechanism are strengthened and introduced, it is expected that the shift to low-carbon energy will be accelerated and the demand for fossil fuels will be reduced. This could have an impact on new orders and sales of large-scale oil and gas-related plant overseas, mainly handled by JGC CORPORATION.
Task: In light of the above situation, as businesses that utilize its process-related technologies and relationships with international oil companies and national oil companies, in the oil and gas sector, we are focusing on LNG and natural gas plants with CCS (CO_2 capture and storage) facilities and developing hydrogen and ammonia-related businesses. Another task is to expand orders for renewable energy (solar, wind, and biomass) facilities and to enter EPC business for small modular reactors (SMRs) as a new business area.
Action: In the Medium-Term Business Plan announced in 2021, the next-generation businesses including these businesses are defined as “future engines of growth,” and the Group announced that it plans to invest a total of 80 billion yen over five years from FY2021 to FY2025 in business development for that. An annual average of 16 billion yen is allocated to investment related to business development. Note that, in fiscal 2021 of the reporting year, an investment of US $40 million was made in NuScale Power, LLC, which is developing small modular reactors (SMRs).
Results: The risk is expected to be reduced, since a sales increase in next-generation businesses will be able to cover a sales decrease (31 billion yen / year) attributed to reduced demand for fossil fuels.

Cost calculation
Business development investment 80 billion yen / 5 years = 16 billion yen per year on average

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Reputation

Other, please specify

(Impact on trust from stakeholders such as customers)

Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Company-specific description

With the growing needs for decarbonization, companies whose main business is oil and gas are at risk of being criticized for the activities of the relevant industrial sectors. The Group's comprehensive engineering business, which accounts for about 70% of the Group's net sales of 428.4 billion yen in FY2021, has technological capabilities that contribute to climate change countermeasures, such as low carbonization in oil and gas-related plants, construction of renewable energy facilities, and hydrogen-related and ammonia initiatives as clean energy. However, if the Group fails to maintain and improve such technologies and its reputation, its reputation may decline with stakeholders, such as international oil companies, domestic chemical and pharmaceutical manufacturers, oil refiners, and utilities such as electric power companies, which are its major customers, and even banks. As a result, there is a risk of a decrease in sales due to negative effects, such as the inability to raise funds for project execution and secure human resources for corporate activities, which are attributed to a decrease in opportunities to receive orders for the construction of facilities and a decrease in execution capacity resulting from an outflow of human resources.

Time horizon

Long-term

Likelihood

About as likely as not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

31,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Over the three years from 2019 to 2021, the annual average sales of the oil and gas field (development of oil and gas resources, petroleum refining, LNG, chemicals, etc.) was 310 billion yen. If the activities of the oil and gas sector itself are subject to criticism or the reputation with stakeholders falls, the potential financial impact, calculated on the assumption that sales will decrease by 10% (the standard for timely disclosure by financial instruments exchanges), is 310 billion yen in average sales over the past three years × 10% = 31 billion yen per year.

Cost of response to risk

16,000,000,000

Description of response and explanation of cost calculation

Situation: With the growing needs for decarbonization, companies whose main business is oil and gas are at risk of being criticized for the activities of the relevant industrial sectors. Although the comprehensive engineering business of the Group has technological capabilities that contribute to climate change countermeasures, such as low-carbonization in oil and gas-related plants, construction of renewable energy facilities, and initiatives related to hydrogen/fuel ammonia as clean energy, if we fail to maintain and improve our technologies and reputation, there is a possibility that our reputation with stakeholders such as customers and banks will decline, which will have a negative impact on various aspects such as opportunities to win orders for facility construction, financing for project execution, and securing human resources for corporate activities

Task: The Group’s task is further diversification of the business portfolio through the formulation of a management strategy focusing on low-carbon and decarbonized businesses and the transition to a group management structure, and promotion of initiatives in such areas as low-carbonization in the oil and gas sector, renewable energy, hydrogen/fuel ammonia, small modular reactors (SMRs), circular economy, life sciences, healthcare, advanced functional materials, and industrial and urban infrastructure.

Action: In the Medium-Term Business Plan announced in 2021, the next-generation businesses including these businesses are defined as “future engines of growth,” and the Group announced that it plans to invest a total of 80 billion yen over five years from FY2021 to FY2025 in business development for that. An annual average of 16 billion yen is allocated to investment related to business development. Note that, in fiscal 2021 of the reporting year, an investment of US $40 million was made in NuScale Power, LLC, which is developing small modular reactors (SMRs).

Results: An increase in the share of sales from low-carbon next-generation businesses is expected to reduce the reputation risk of companies focusing on oil and gas-related businesses, thereby avoiding a decrease in sales (31 billion yen per year).

Cost calculation

Business development investment 80 billion yen / 5 years = 16 billion yen per year on average

Comment

Identifier
Risk 3

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver
Technology
Transitioning to lower emissions technology

Primary potential financial impact
Decreased revenues due to reduced demand for products and services

Company-specific description
To mitigate climate change, low-carbon technologies are expected to spread and become more advanced. Comprehensive engineering business of the Group has traditionally focused on the construction of oil and gas plants, with oil refineries accounting for the bulk of its sales. We recognize that the spread of electric and fuel cell vehicles poses the risk of reduced order opportunities and the sales through reduced demand for gasoline and reduced orders for oil refinery plants. The decline in the size of the petrochemical market due to the spread of decarbonized materials such as bioplastics will result in fewer orders for oil refinery plants. There is also a risk that the spread of high-performance batteries will lead to a shift to renewable energy, which will lead to a decrease in sales of existing oil and gas businesses. In fiscal 2021, overall sales in the oil and gas sector (domestic and overseas oil and gas, upstream resource development, petroleum refining, LNG, and chemical-related sales) accounted for approximately 70% of the consolidated sales of the Group.

Time horizon
Long-term

Likelihood
Likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
31,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Over the three years from 2019 to 2021, the annual average sales of the oil and gas field (oil and gas, upstream resource development, petroleum refining, LNG, chemical, etc.) was 310 billion yen. If the demand for gasoline and the market size of petrochemical products decrease due to the spread and advancement of low-carbon technologies, the potential financial impact, calculated on the assumption that sales will decrease by 10% (the standard for timely disclosure by the Tokyo Stock Exchange), is 310 billion yen in average sales over the past three years × 10% = 31 billion yen per year.

Cost of response to risk

16,000,000,000

Description of response and explanation of cost calculation

Situation: To mitigate climate change, low-carbon technologies are expected to spread and become more advanced. Comprehensive engineering business of the Group has traditionally focused on the construction of oil and gas plants, with oil refineries accounting for the bulk of its sales. The spread of high-performance batteries is expected to accelerate the shift to renewable energy. We recognize that the spread of electric and fuel cell vehicles poses the risk of reduced order opportunities through reduced demand for gasoline and reduced orders for oil refinery plants. In fiscal 2021, overall sales in the oil and gas sector (domestic and overseas oil and gas, upstream resource development, petroleum refining, LNG, and chemical-related sales) accounted for approximately 70% of the consolidated sales of the Group.
Task: The task is to promote the development of technologies related to renewable energy, hydrogen/fuel ammonia, and small modular reactors (SMRs), which are expected to become low-carbon energy sources in the future.
Action: In the Medium-Term Business Plan announced in 2021, the next-generation businesses including these businesses are defined as “future engines of growth,” and the Group announced that it plans to invest a total of 80 billion yen over five years from FY2021 to FY2025 in business development for that. An annual average of 16 billion yen is allocated to investment related to business development. Note that, in fiscal 2021 of the reporting year, an investment of US $40 million was made in NuScale Power, LLC, which is developing small modular reactors (SMRs).
Results: The risk is expected to be reduced, since a sales increase in next-generation businesses will be able to cover a sales decrease (31 billion yen per year) attributed to reduced demand for oil refining plants.

Cost calculation
Business development investment 80 billion yen / 5 years = 16 billion yen per year on average

Comment

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Other, please specify

(Entering new market)

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

The Group has a variety of solutions to respond to climate change-related issues. There are opportunities to respond to the growing demand for low-carbon technologies and renewable energy and increase earnings by focusing on meeting demand in the oil and gas plant sector, including CCS (CO_2 capture and storage) facilities, and expanding businesses in renewable energies (solar, offshore wind, biomass, etc.), small modular reactors (SMRs), hydrogen/ammonia, and circular economy, since these are all on the extensions and peripherals of the accumulation of technologies possessed by the Group. In the Medium-Term Business Plan announced in 2021, these products and services are defined as “future engines of growth,” and the Group announced an investment plan with a total of 80 billion yen over five years from FY2021 to FY2025 and a sales target of 50 billion yen by 2025.

Time horizon

Long-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

50,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

In the Medium-Term Business Plan announced in 2021, the next-generation businesses in the fields of clean energy and circular economy, including hydrogen/fuel ammonia, are defined as “future engines of growth,” and the Group announced that it plans to grow sales in these fields to 50 billion yen by 2025. Said target includes 30 billion yen of sales from offshore wind power and 20 billion yen of sales from others.

Cost to realize opportunity

16,000,000,000

Strategy to realize opportunity and explanation of cost calculation

Situation: The Group has a variety of solutions to respond to climate change-related issues. There is a need for focusing on meeting the demand for low-carbonization in the oil and gas plant sector, including CCS (CO_2 capture and storage) facilities, and seeing the expansion of business in renewable energies (solar, offshore wind, biomass, etc.), small modular reactors (SMRs), hydrogen/ammonia, and circular economy, as opportunities.

Task: The task is to promote the new projects as follows.

[Solar power]: The Group already has a long track record in Japan and overseas, and will propose comprehensive energy management solutions, including integration with energy storage facilities and existing facilities, as well as power sharing among facilities for Southeast Asia and island countries.

[Offshore wind power]: Demand for offshore wind power is expected to increase in Japan and around the world, and the Group will enter this field by utilizing the knowledge we have accumulated through our EPC (engineering, procurement, and construction) business. The Group is also utilizing its extensive experience in other fields, such as oil and gas and power generation, to collaborate with other companies in the same industry overseas, as well as with heavy electric manufacturers in Japan and overseas.

[Hydrogen/fuel ammonia]: Hydrohen/fuel emmonia play a major role as an energy carrier that does not emit CO_2 during combustion and ensurecompetitiveness by further strengthening technological and management capabilities.

[Nuclear power generation]: The Group plans to enter the EPC business of small modular reactors (SMRs) overseas by investing in a U.S. company that develops SMRs.

Action: In the Medium-Term Business Plan announced in 2021, the next-generation businesses including these businesses are defined as “future engines of growth,” and the Group announced that it plans to invest a total of 80 billion yen over five years in

business development for that. An annual average of 16 billion yen is allocated to investment related to business development. Said business has already launched and will play a central role in the Group's business in 2040, which is the goal of the Group's Long-Term Management Vision.
Results: More business opportunities to provide low-carbon and decarbonization solutions to meet customers' increased demand seeking to make their businesses low-carbon or decarbonized, and increased sales are expected.

Cost calculation
Business development investment 80 billion yen / 5 years = 16 billion yen per year on average

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of new products or services through R&D and innovation

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

The materiality of the Group includes the realization of "societies in harmony with environment" and the improvement of "energy access." As a trump card in a decarbonized society, the utilization of hydrogen energy, which does not emit CO_2 during combustion, is expected to expand in the future, and the Group is making a wide range of efforts toward its implementation in society. The supply chain for hydrogen energy is broadly divided into manufacturing, transportation (energy carrier), and utilization. At the manufacturing stage, the Group is working to expand its capacity and acquire new projects, covering a wide range of manufacturing methods, including green hydrogen, blue hydrogen (participation in a demonstration project in Saudi Arabia), waste-derived hydrogen, and use of by-product hydrogen. As for transportation, among the three major hydrogen carriers (liquid hydrogen, organic hydrides, and ammonia), the Group is paying particular attention to ammonia, which has the highest hydrogen density and is expected to be implemented in society at an early stage, because a large-scale supply chain has already been established and it can be used directly as a fuel. As a member of the Board, the Group participates in the Clean Fuel Ammonia Association, a general incorporated association that aims to realize a low-carbon society by utilizing CO_2-free ammonia. Demand for fuel ammonia in Japan alone is expected to grow from

about three million tons per year as of 2030 to about 30 million tons per year by 2050, providing opportunities to increase sales for the Group that is actively working on the social implementation of fuel ammonia. In the reporting year, the project was accepted as a NEDO Green Innovation Fund project titled “Large-scale Alkaline Water Electrolysis System Development and Green Chemical Plant Demonstration,” with the expected project period from FY2021 to FY2030, and the Group will develop an integrated control system that realizes operational optimization by controlling the amount of hydrogen supply. The scale of demonstration is approximately75 billion yen.

Time horizon

Long-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

50,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

In the Medium-Term Business Plan announced in 2021, the Group announced that it would participate in the establishment of a value chain for blue hydrogen and fuel ammonia by 2025 and aim to achieve sales of over 50 billion yen by 2030.

Cost to realize opportunity

16,000,000,000

Strategy to realize opportunity and explanation of cost calculation

Situation: As a trump card in a decarbonized society, hydrogen energy, which does not emit CO_2 during combustion, is expected to be widely used in the future. Among the three major hydrogen carriers (liquid hydrogen, organic hydrides, and ammonia), the Group is paying particular attention to ammonia, which has the highest hydrogen density and is expected to be implemented in society at an early stage, because a large-scale supply chain has already been established and it can be used directly as a fuel.
Task: The tasks are to realize businesses by utilizing various technologies including in-house technologies and to develop and commercialize fuel ammonia production projects overseas in cooperation with various companies that make up the value chain.
Action: In October 2018, in collaboration with the National Institute of Advanced Industrial Science and Technology (AIST), the Group succeeded for the first time in the

world in synthesizing ammonia from hydrogen produced by water electrolysis using renewable energy, and in generating electricity using a gas turbine fuelled by the synthesized ammonia. In the Medium-Term Business Plan announced in 2021, the next-generation businesses including these businesses are defined as “future engines of growth,” and the Group announced that it plans to invest a total of 80 billion yen over five years from FY2021 to FY2025 in the development of next-generation businesses. An annual average of 16 billion yen is allocated to investment related to business development. In FY2021 of the reporting year, the project was accepted as a joint project by a NEDO Green Innovation Fund project (scale of this demonstration: approximately 75 billion yen) titled “Large-scale Alkaline Water Electrolysis System Development and Green Chemical Plant Demonstration,” with the expected project period from FY2021 to FY2030. Note that for the commercialization, the Group has adjusted the licensing agreement with an ammonia licensor and the alliance agreement with an EPC contractor for ammonia.
Results: Sales are expected to increase as a result of the establishment of a domestic hydrogen production base utilizing surplus renewable energy, resolution of the technical issues such as the development of an integrated control system that optimizes and operates the entire process in addition to cost reduction to acquire advanced overseas markets, the establishment of a partnering relationship for commercialization, and the provision of solutions to the increased demand for fuel ammonia.

Cost calculation
Business development investment 80 billion yen / 5 years = 16 billion yen per year on average

Comment

Identifier
Opp3

Where in the value chain does the opportunity occur?
Downstream

Opportunity type
Products and services

Primary climate-related opportunity driver
Development of new products or services through R&D and innovation

Primary potential financial impact
Increased revenues resulting from increased demand for products and services

Company-specific description
Marine pollution caused by waste plastics has become a global social issue, and from the viewpoint of circular economy it is necessary to establish a chemical recycling method as one of the effective recycling methods. In the aviation industry, expectations are rising for a stable supply of SAF (next-generation aviation fuel) produced from

biomass materials and exhaust gas in order to reduce CO_2 emissions, and the textile industry is also expected to expand its efforts to recycle resources due to the problem of mass disposal of clothing. The Group has the opportunity to respond to a demand increase in a timely manner and increase sales in the future by sequentially acquiring technologies that respond to these issues (such as the unique process for waste plastic gasification (EUP)) and working aggressively to commercialize them. In the Medium-Term Business Plan announced in 2021, waste plastic/waste fiber recycling and SAF are defined as one of the future engines of growth, and circular economy is positioned as the main business area also in the Long-Term Management Vision with 2040 as a goal.

Time horizon

Long-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

50,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

In the Medium-Term Business Plan announced in 2021, the next-generation businesses in the fields of clean energy and circular economy, including SAF businesses, are defined as “future engines of growth,” and the Group announced that it plans to grow sales in these fields to 50 billion yen by 2025 and aims to achieve sales of 50 billion yen in the chemical recycling field alone by 2030.

Cost to realize opportunity

16,000,000,000

Strategy to realize opportunity and explanation of cost calculation

Situation: Marine pollution caused by waste plastics has become a global social issue, and it is necessary to establish effective recycling methods from the viewpoint of circular economy. In the aviation industry, expectations are rising for a stable supply of SAF (next-generation aviation fuel) produced from biomass materials and exhaust gas in order to reduce CO_2 emissions, and the textile industry is also expected to expand its efforts to recycle resources due to the problem of mass disposal of clothing. It is

expected that we will increase sales in the future by acquiring technologies that address these issues and working aggressively to commercialize them.
Task: In order to realize a sustainable society, it is necessary to respond to these issues, and the Group is expected to increase sales in the future by acquiring technologies sequentially and working aggressively to commercialize them.
[Plastic Waste Recycling]: In October 2020, we signed a sublicensing agreement for the EUP license, and as the official licensor/contractor, we will be responsible for licensing and construction of the facility. We will also propose chemical production equipment and hydrogen production equipment using syngas and construct a value chain.
[SAF]: We will work to build a value chain to produce domestic SAF by hydrogenating used cooking oil.
[Waste fiber recycling]: We are planning to license chemical recycling technology for polyester with several partners.
Action: In the Medium-Term Business Plan announced in 2021, the next-generation businesses including these businesses are defined as “future engines of growth,” and the Group announced that it plans to invest a total of 80 billion yen over five years from 2021 to 2025 in this business development. An annual average of 16 billion yen is allocated to investment related to business development. In fiscal 2021 of the reporting year, the following actions were taken.
[Waste plastic gasification]
• Acceptance of “Study toward the development of a regional low carbon hydrogen model based on waste plastic gasification recycling in urban areas” as a NEDO project
[Waste plastic pyrolysis]
• Promotion of chemical recycling through waste plastic pyrolysis
[Waste fiber recycling]
• Execution of a joint agreement by three companies for licensing chemical recycling technology for polyester
[SAF]
• Adoption of “Establishment of a Supply Chain Model for Bio-jet Fuel Production from Domestic Used Cooking Oil” as a NEDO Project
• Establishment of “ACT FOR SKY,” a voluntary organization working for the commercialization, promotion, and expansion of domestically produced SAF
Results: Increased demand for circular economy, including chemical recycling and SAF, will expand business opportunities, and increased sales are expected by providing solutions in a timely manner.

Cost calculation
Business development investment 80 billion yen / 5 years = 16 billion yen per year on average

Comment

C3. Business Strategy

C3.1

(C3.1) Does your organization's strategy include a transition plan that aligns with a 1.5°C world?

Row 1

Transition plan

No, our strategy has been influenced by climate-related risks and opportunities, but we do not plan to develop a transition plan within two years

Explain why your organization does not have a transition plan that aligns with a 1.5°C world and any plans to develop one in the future

In the Long-Term Management Vision announced in 2021, the Group declared its intention to realize carbon neutrality by 2050. In the reporting year, the "Subcommittee on CO_2 Reduction Plans" was established under the umbrella of the Group's Sustainability Committee, and each operating company is examining its own reduction plan. These plans are scheduled to be compiled as a reduction plan for the entire Group within fiscal 2022. Consistency with the 1.5°C target is under consideration, including the way it should be.

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

	Use of climate-related scenario analysis to inform strategy
Row 1	Yes, qualitative and quantitative

C3.2a

(C3.2a) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenario	Scenario analysis coverage	Temperature alignment of scenario	Parameters, assumptions, analytical choices
Transition scenarios IEA SDS	Company-wide		For the Group, whose main business field is the energy sector, the World Energy Outlook (WEO) published by the IEA is a document that the Group always refers to and is well known and widely referred to by the public. Therefore, the Sustainable Development Scenario (SDS) of IEA WEO 2020 was selected as a scenario of heightened transition risk. As parameters for the scenario analysis, current values of carbon price increases, stricter GHG emission targets, changes in

			the energy mix (reduction in fossil fuels/increase in renewable energy and nuclear power), changes in energy demand (decrease in demand for gasoline), and increased demand for renewable energy generation were input as input data, along with future values indicated in the scenarios with severe transition risk. The time frame for the analysis was set to 2040, in line with the time frame of the “2040 Vision,” a Long-Term Management Vision, and qualitative and quantitative analyses were used as the method of analysis. As an analytical choice, reference was made where appropriate to the “Practical guide for Scenario Analysis in line with the TCFD recommendations” published by the Ministry of the Environment, Japan.
Physical climate scenarios RCP 6.0	Company-wide		For the Group, whose main business field is the energy sector, the World Energy Outlook (WEO) published by the IEA is a document that the Group always refers to and is well known and widely referred to by the public. Therefore, the Stated Policy Scenario (STEPS) was selected as a scenario of heightened physical risk. In STEPS, the temperature range will be the same as that of the RCP 6.0. For the scenario analysis, current values of carbon price increases, GHG emission increases, changes in the energy mix (reduction in fossil fuels/increase in renewable energy and nuclear power), changes in energy demand (decrease in demand for gasoline), and increased demand for renewable energy generation were input as input data, along with future values based on the assumption of scenarios with severe physical risk. The time frame for the analysis was set to 2040, in line with the time frame of the “2040 Vision,” a Long-Term Management Vision, and qualitative and quantitative analyses were used as the method of analysis. As an analytical choice, reference was made where appropriate to the “Practical guide for Scenario Analysis in line with the TCFD recommendations” published by the Ministry of the Environment, Japan.

C3.2b

(C3.2b) Provide details of the focal questions your organization seeks to address by using climate-related scenario analysis, and summarize the results with respect to these questions.

Row 1

Focal questions

In the Group, the comprehensive engineering business, centered on the construction of oil and gas plants, accounts for approximately 70% of the Group's sales. By assuming the IEA-SDS as a scenario of increased transition risk due to climate change and the RCP 6.0 as a scenario of increased physical risk, the challenge, which will be the purpose and focal questions of scenario analysis, is to understand the impact on the order receiving environment and business execution in this business area, to reflect the response strategy in the Group's strategy including the Medium-Term Business Plan, and to review it as appropriate.
It should be noted that for the Group, whose main business field is the energy sector, the World Energy Outlook (WEO) published by the IEA is a document that the Group always refers to and is well known and widely referred to by the public, which is the reason for choosing the IEA-SDS and RCP 6.0. Therefore, based on the Sustainable Development Scenario (SDS) as a typical transition scenario of the IEA WEO and the Stated Policy Scenario (STEPS) as a typical physical climate change scenario, RCP 6.0 of the IPCC, which has similar CO_2 emissions, was selected.

Results of the climate-related scenario analysis with respect to the focal questions

(1) The period covered and the relevance of that period to the business of the Group
The time frame for the analysis was set to 2040, in line with the time frame of the "2040 Vision," a Long-Term Management Vision. The reason why the time frame for the vision study was set to 2040 is that even if the 1.5°C scenario of the IPCC is considered, it is necessary for the examination of the impact on business to capture the energy transition process, from the energy system centered on the existing fossil fuels to the measures to reduce CO_2 through renewable energy utilization and CCS.

(2) Targeted boundaries
The targeted area was all areas, including overseas. This is because the scope of business of JGC Group encompasses all regions of the world, including Asia, Africa, Europe, and the Americas, and dividing the scope by a specific region would not be consistent with our objectives.
The scope of business is five companies: JGC CORPORATION (JGBL), JGC JAPAN CORPORATION (JJPN), JGC Catalysts and Chemicals Ltd. (C&C), Japan Fine Ceramics Co., Ltd. (JFC), and JAPAN NUS CO., LTD. (JANUS). Although JGBL is the company in the entire JGC Group that will be most significantly affected by climate change on a sales basis, the impact of the profits of JJPN, C&C, JFC, and JANUS on the Group as a whole cannot be ignored, so they were included in the scope of consideration.

The boundary of the company shall be within the scope of the consolidated financial statements. However, in cases where there are risks or opportunities in the upstream or downstream of the supply chain where the degree of impact could not be ignored, efforts were made to understand them qualitatively as much as possible.

(3) Summary of scenario analysis results (explanations specific to the Group)
In the IEA-SDS scenario with the severe transition risk, the introduction of carbon

pricing, stricter carbon emission targets in various countries, changes in the energy mix (reduction in fossil fuels/increase in renewable energy and nuclear power), and changes in energy demand (decrease in demand for gasoline) will reduce demand for oil and gas plant construction, which will be a factor to reduce opportunities for oil and gas plant construction that is the mainstay of the comprehensive engineering business of the Group. Therefore, these can be considered risk factors. On the other hand, it is expected that the demand for facilities such as renewable power generation including offshore wind power generation, as well as LNG with CCS/natural gas, hydrogen energy, bio-based chemical industry, small modular reactors, and circular economy, will increase, and will be a big opportunity for the Group to work on the social implementation of these technologies.

Promoting CCS for oil and gas in consideration of measures against global warming, as well as working on renewable energy power generation and hydrogen/ammonia in view of the energy transition, will be one of the measures to enhance resilience against climate change.

Under the scenario RCP 6.0 with severe physical risk, demand for oil and gas plant construction is not expected to decrease. On the other hand, as an acute physical risk, an increase in extreme weather events, such as torrential rains, storms, typhoons, and floods, which are believed to be caused by global warming, poses a risk to the business, including physical damage to materials, equipment, and facilities of the Group, human casualties among employees, and delays in procuring materials and equipment. Moreover, as a chronic physical risk, average temperature increases pose a risk of prolonged construction due to reduced labor productivity at construction sites in temperate and tropical regions. There is also a concern about increased costs of countermeasures and accident compensation due to increased occupational safety risks. In addition, if the sea level rises in coastal areas, there is a risk of increased transportation costs due to ports becoming unusable.

[Case studies showing how the results of the scenario analysis directly impact the business objectives and strategies]
Situation: The transition scenario assumes increasing decarbonization needs and a decline in demand for oil and gas plants. On the other hand, it was found that the widespread adoption of low-carbon technologies and the advancement of next-generation technologies may create new opportunities in the low-carbon energy market, including hydrogen, CCU, bio-based chemical industries, and distributed utility supply.
Task: The mainstay of the comprehensive engineering business of the Group is the construction of oil and gas plants, and it will be necessary to accelerate efforts in the low-carbon energy market.
Action: Based on the results of a scenario analysis in which we are to promote CCS for oil and gas plant construction in consideration of measures against global warming, and in which working on renewable energy power generation and manufacture of hydrogen/ammonia in view of the energy transition will serve as a measure to enhance resilience against climate change, in the Long-Term Management Vision announced in May 2021, the main business area to be worked on in the future was set to be “energy transition,” which aims to achieve a stable energy supply and decarbonization, and this

was also set as the core business for the next five years in the Medium-Term Business Plan.
Results: Since increased sales are expected in the areas of carbon management, offshore wind, hydrogen/fuel ammonia, small modular reactors, and smart O&M (operations and maintenance), which are expected to be growth engines, this influenced the reflection and revision of the Group's strategy, which was the focus of the scenario analysis.

C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	How the strategy in this area has been influenced by climate-related risks and opportunities: According to the result of scenario analysis, the growing need for decarbonization is expected to reduce demand for oil and gas plant construction, which is the current mainstay of the comprehensive engineering business of the Group. On the other hand, demand for low-carbon energy is expected to increase. This has led to the establishment of an "energy transition" in which a stable supply of energy and decarbonization are realized, as one of business areas to focus on, in both the Long-Term Management Vision to be announced in May 2021 and the Medium-Term Business Plan for the five years from fiscal 2021. Time Horizon: Medium to long term [Case Study of Strategic Decision Making] Situation: The introduction of carbon pricing, stricter carbon emission targets in various countries, changes in the energy mix (reduction in fossil fuels/increase in renewable energy and nuclear power), and changes and decrease in energy demand (e.g., gasoline) due to the growing needs for decarbonization will be factors that reduce opportunities for oil and gas plant construction. On the other hand, demand is expected to increase for low-carbon energy markets, including offshore wind and other renewable energy generation, LNG with CCS (CO_2 capture and storage) facilities, hydrogen, bio-based chemistry, and SMRs (small modular reactors). Comprehensive engineering business of the Group is currently dominated by the construction of oil and gas

		plants, and reduced opportunities for this business pose climate-related risks. Task: On the other hand, it will be a great opportunity for the Group working on the social implementation of low carbon energy. Therefore, it is necessary to develop a strategy to focus on it and expand the business. Action: This analysis influenced the formulation process of the Long-Term Management Plan announced in May 2021, and as an example of strategic decision making, the main business domain was defined as “energy transition” to realize a stable energy supply and decarbonization in the Long-Term Management Vision. This is also defined as the core business in the Medium-Term Business Plan. Results: Increased sales are expected in carbon management, offshore wind, hydrogen/fuel ammonia, SMRs, and smart O&M (operations and maintenance) areas, etc., which are expected to be growth engines.
Supply chain and/or value chain	Yes	How the strategy in this area has been influenced by climate-related risks and opportunities: According to the scenario analysis results, with the introduction of carbon pricing and stricter carbon emission targets in various countries, it is expected that the construction of gas production facilities with accompanying CCS facilities as well as LNG plants will become more common, especially in the transition period of decarbonization for customers in the value chain of the current mainstay oil and gas engineering businesses of the Group. This was recognized as a climate-related opportunity and influenced the reinforcement of the CCS business execution structure of the Group in the value chain strategy including customer service, such as the establishment of a new low-carbon and decarbonization and CCUS (CO_2 capture, utilization, and storage) unit at JGC CORPORATION from fiscal 2021. Time Horizon: Short to medium term [Case Study of Strategic Decision Making] Situation: With the introduction of carbon pricing and stricter carbon emission targets in various countries, it is expected that the construction of gas production and LNG plants with accompanying CCS facilities will become more common, especially in the transition period of decarbonization for customers in the value chain of current mainstay oil and gas engineering businesses of the Group.

		Although we have a wealth of experience and knowledge in CCS-related projects, we did not have a well-developed system for organizational accumulation, sharing, and succession, nor have we had a clear promotion system and an explicit department in charge. Task: It is necessary to unify knowledge and information of CCS-related projects and establish a promotion system. Action: As a good practice of strategic decision-making, the CCS business execution structure of the Group has been reviewed, and a new Decarbonization and CCUS Unit has been established in JGC CORPORATION from fiscal 2021 as part of the value chain strategy of the Group. Results: By taking advantage of climate-related opportunities, centralizing knowledge, and information on CCS-related projects, and clarifying the promotion system, related businesses are expected to materialize early.
Investment in R&D	Yes	How the strategy in this area has been influenced by climate-related risks and opportunities: According to the scenario analysis results, the widespread adoption of low-carbon technologies and the advancement of next-generation technologies may create new opportunities in the low-carbon energy market, including hydrogen, CCU, bio-based chemistry, and distributed utility supply. This has also affected the research and development investment strategy of the Group, shifting development themes from a focus on oil and gas to a focus on environment-related issues, including low-carbon and decarbonization technologies such as hydrogen and CCUS. In the Medium-Term Business Plan announced in May 2021, the Group substantially increased its investment in low-carbon and decarbonization-related research and development. Time Horizon: Short to medium term [Case Study of Strategic Decision Making] Situation: The widespread adoption of low-carbon technologies and the advancement of next-generation technologies may create new opportunities in the low-carbon energy market, including hydrogen, CCU, bio-based chemistry, and distributed utility supply. Task: The technology development of the comprehensive engineering business of the Group to date has been mainly related to oil and gas, and it has been necessary to review the priority of research and development themes in

		order to create new business opportunities in the low-carbon energy market. Action: As an example of strategic decision making, oil and gas related research and development themes were drastically reviewed and shifted to environmental related themes such as climate change. In the area of hydrogen, we are working with several partners to prepare for the social implementation of ammonia as a carrier. For CCUS, we are also investing in overseas actual gas demonstration tests of a zeolite membrane system that efficiently separates CO_2 from associated gas during the recovery of increased crude oil production using CO_2. In the Medium-Term Business Plan that is being formulated, we intend to substantially increase the investment in low- and decarbonization-related research and development. In the Medium-Term Business Plan that was announced in May 2021, we intend to substantially increase the investment in low- and decarbonization-related research and development. Results: We expect to take advantage of climate-related opportunities and expand business in low-carbon energy markets.
Operations	Yes	How the strategy in this area has been influenced by climate-related risks and opportunities: according to scenario analysis results, the momentum for RE100 compliance is growing, especially in the manufacturing industry, and services for reducing greenhouse gas emissions for such industry can be expected as a new market. Taking this as a climate-related opportunity affected the operational strategy including its operational structure of the Sales Department and the department responsible for commercializing low and decarbonized technologies. As an example of strategic decision making, in order to understand the needs of customers for low and decarbonization, including RE100 compliance, and to provide solutions through dialogue with customers, we have strengthened the strategic efforts of the Sales Department including expansion of the range of customers to be served, which is the point of contact, and promoted the use of opportunities for dialogue at the top level. In addition, we have integrated the research and development team into the Sustainability Co-Creation Department, which is responsible for the commercialization of CO_2 separation and low and decarbonization technologies and established a system that can efficiently

		match a wide range of customer needs with research and development. Time Horizon: Short to medium term [Case Study of Strategic Decision Making] Situation: Due to the growing need for decarbonization, demand for oil and gas plant construction, the current mainstay of the comprehensive engineering business of the Group, is expected to decline. On the other hand, the momentum for RE100 compliance is growing, especially in the manufacturing industry, and services for reducing greenhouse gas emissions for such industry can be expected as a new market. Task: It was necessary to develop new customers, especially in the manufacturing industry, and to strengthen the system to provide low-carbon solutions at an early stage. Action: As an example of strategic decision making, in order to understand the needs of customers for low and decarbonization, including RE100 compliance, and to provide solutions through dialogue with customers, we have strengthened the strategic efforts of the Sales Department including expansion of the range of customers to be served, which is the point of contact, and promoted the use of opportunities for dialogue at the top level. In addition, we have integrated the research and development team into the Sustainability Co-Creation Department directly under JGC HOLDINGS CORPORATION, which is responsible for the commercialization of CO_2 separation and low and decarbonization technologies and established a system that can efficiently match a wide range of customer needs with research and development. Result: We have established an operational system that can provide integrated services close to top management, from understanding the needs of customers for low and decarbonization to the response and social implementation, which is expected to speed up the commercialization and social implementation.

C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Capital expenditures	As energy transition toward a low-carbon and decarbonized society progresses globally, there will be significant business opportunities due to expected demand increases in new fields such as low-carbon and decarbonization in the oil and gas field, renewable energy such as solar power, storage of electricity, and biomass, as well as offshore wind power, hydrogen/fuel ammonia, and chemical recycling. Based on this, the Long-Term Management Vision identifies “energy transition” as one of the business areas that will be the future growth engine. This has also affected the financial plan of the Medium-Term Business Plan announced in May 2021, and the necessary strategic investments were scheduled to be made. [Case study of how climate-related risks and opportunities have influenced our financial planning] Situation: As the energy transition toward a low-carbon and decarbonized society progresses, there will be significant business opportunities in new fields such as low-carbon and decarbonization in the oil and gas field, renewable energy such as solar power, storage of electricity, and biomass, as well as offshore wind power, hydrogen/fuel ammonia, and chemical recycling. In the Medium-Term Business Plan for the period from 2016 to 2020, we established a system to commercialize these clean energy and circular economy-related technologies as a stepping stone to growth, but the concrete realization of these technologies as businesses remained limited. Task: A new financial plan, including increased investment, was needed to capture the expanding business opportunities created by accelerated domestic and international climate change actions. Action: As an example of the impact on the financial plan, this recognition had a significant impact on the strategic investment policy in the Long-Term Management Vision and Medium-Term Business Plan announced in May 2021, and resulted in the expected required investment. Specifically, the plan is anticipated to call for a strategic investment of 80 billion yen to establish future growth engines, including carbon management, offshore wind power, and hydrogen/fuel ammonia. Result: Significant business expansion is expected in the areas of clean energy and circular economy. Time Horizon: Medium to long term

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Absolute target
Intensity target

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Year target was set

2021

Target coverage

Company-wide

Scope(s)

Scope 1
Scope 2

Scope 2 accounting method

Location-based

Scope 3 category(ies)

Base year

2020

Base year Scope 1 emissions covered by target (metric tons CO2e)

84,325

Base year Scope 2 emissions covered by target (metric tons CO2e)

48,221

Base year Scope 3 emissions covered by target (metric tons CO2e)

Total base year emissions covered by target in all selected Scopes (metric tons CO2e)

132,546

Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1

100

Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2

100

Base year Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)

Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes

100

Target year

2050

Targeted reduction from base year (%)

100

Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]

0

Scope 1 emissions in reporting year covered by target (metric tons CO2e)

87,856

Scope 2 emissions in reporting year covered by target (metric tons CO2e)

45,717

Scope 3 emissions in reporting year covered by target (metric tons CO2e)

Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)

133,573

% of target achieved relative to base year [auto-calculated]

-0.7748253437

Target status in reporting year

Underway

Is this a science-based target?

No, and we do not anticipate setting one in the next 2 years

Target ambition

Please explain target coverage and identify any exclusions

The scope of the target is JGC HOLDINGS CORPORATION and its main Group companies (JGC CORPORATION, JGC JAPAN CORPORATION, JGC Catalysts and Chemicals Ltd., Japan Fine Ceramics Co., Ltd., and JAPAN NUS CO., LTD.). However, businesses managed by overseas Group companies are excluded.

Plan for achieving target, and progress made to the end of the reporting year

In May 2021, JGC HOLDINGS CORPORATION and its main Group companies (JGC CORPORATION, JGC JAPAN CORPORATION, JGC Catalysts and Chemicals Ltd., Japan Fine Ceramics Co., Ltd., and JAPAN NUS CO., LTD.) set reduction targets for GHG emissions.

In the Group's Long-Term Management Vision announced in May 2021, the Group declared its intention to realize carbon neutrality by 2050.

By setting 2020 as the base year, net-zero targets for Scopes 1 and 2 to be achieved by 2050 were set.
As compared with Scope 1 and 2 emissions of 132,546 tons in fiscal 2020, those of fiscal 2021 were 133,573 tons, up 0.8% from the base year.

List the emissions reduction initiatives which contributed most to achieving this target

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Year target was set

2021

Target coverage

Company-wide

Scope(s)

Scope 1
Scope 2

Scope 2 accounting method

Location-based

Scope 3 category(ies)

Intensity metric

Other, please specify

(Metric tons CO_2e per unit revenue)

Base year

2020

Intensity figure in base year for Scope 1 (metric tons CO2e per unit of activity)

0.000000194

Intensity figure in base year for Scope 2 (metric tons CO2e per unit of activity)

0.000000111

Intensity figure in base year for Scope 3 (metric tons CO2e per unit of activity)

Intensity figure in base year for all selected Scopes (metric tons CO2e per unit of activity)

0.000000305

% of total base year emissions in Scope 1 covered by this Scope 1 intensity figure

100

% of total base year emissions in Scope 2 covered by this Scope 2 intensity figure

100

% of total base year emissions in Scope 3 (in all Scope 3 categories) covered by this Scope 3 intensity figure

% of total base year emissions in all selected Scopes covered by this intensity figure

100

Target year

2030

Targeted reduction from base year (%)

30

Intensity figure in target year for all selected Scopes (metric tons CO2e per unit of activity) [auto-calculated]

0.0000002135

% change anticipated in absolute Scope 1+2 emissions

-4.2

% change anticipated in absolute Scope 3 emissions

0

Intensity figure in reporting year for Scope 1 (metric tons CO2e per unit of activity)

0.000000205

Intensity figure in reporting year for Scope 2 (metric tons CO2e per unit of activity)

0.000000107

Intensity figure in reporting year for Scope 3 (metric tons CO2e per unit of activity)

Intensity figure in reporting year for all selected Scopes (metric tons CO2e per unit of activity)

0.000000312

% of target achieved relative to base year [auto-calculated]

-7.650273224

Target status in reporting year

Underway

Is this a science-based target?

No, and we do not anticipate setting one in the next 2 years

Target ambition

Please explain target coverage and identify any exclusions

In May 2021, JGC HOLDINGS CORPORATION and its main Group companies (JGC CORPORATION, JGC JAPAN CORPORATION, JGC Catalysts and Chemicals Ltd., Japan Fine Ceramics Co., Ltd., and JAPAN NUS CO., LTD.) set reduction targets for GHG emissions.

Plan for achieving target, and progress made to the end of the reporting year

JGC HOLDINGS CORPORATION and its main Group companies (JGC CORPORATION, JGC JAPAN CORPORATION, JGC Catalysts and Chemicals Ltd., Japan Fine Ceramics Co., Ltd., and JAPAN NUS CO., LTD.) set a target of reducing the carbon intensity in Scopes 1 and 2 by 30% by 2030, with 2020 as the base year. Each company's specific plans for CO_2 reduction are scheduled to be formulated by 2022. As compared with carbon intensity of 0.000000305 tons/yen in fiscal 2020, those of fiscal 2021 were 0.000000312 tons/yen, up 2% from the base year.

List the emissions reduction initiatives which contributed most to achieving this target

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Net-zero target(s)
Other climate-related target(s)

C4.2b

(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.

Target reference number
Oth 1

Year target was set
2021

Target coverage
Business activity

Target type: absolute or intensity
Intensity

Target type: category & Metric (target numerator if reporting an intensity target)
Waste management
Percentage of total waste generated that is recycled

Target denominator (intensity targets only)
metric ton of waste

Base year
2021

Figure or percentage in base year
97

Target year
2021

Figure or percentage in target year
98.4

Figure or percentage in reporting year
98.4

% of target achieved relative to base year [auto-calculated]
100

Target status in reporting year

New

Is this target part of an emissions target?

No

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain target coverage and identify any exclusions

The scope of the target is all domestic construction sites where JGC JAPAN CORPORATION, which conducts domestic engineering business in the Group, carried out projects in the target fiscal year.

Plan for achieving target, and progress made to the end of the reporting year

At construction sites in Japan, the "Zero Emissions Initiative" sets a target for the recycling rate of industrial waste and analyses the results, and the target was achieved in fiscal 2021.

List the actions which contributed most to achieving this target

---

Target reference number

Oth 2

Year target was set

2017

Target coverage

Business division

Target type: absolute or intensity

Intensity

Target type: category & Metric (target numerator if reporting an intensity target)

Energy consumption or efficiency

Other, please specify

(Crude Oil Equivalent kl)

Target denominator (intensity targets only)

metric ton of product

Base year

2017

Figure or percentage in base year

100.9

Target year

2021

Figure or percentage in target year

95.9

Figure or percentage in reporting year

98.7

% of target achieved relative to base year [auto-calculated]

44

Target status in reporting year

Underway

Is this target part of an emissions target?

No

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain target coverage and identify any exclusions

The scope of the target is all business domain of JGC Catalysts and Chemicals Ltd., which an operating company engaged in the manufacturing of functional materials in the Group.

Plan for achieving target, and progress made to the end of the reporting year

JGC Catalysts and Chemicals Ltd., an operating company engaged in the manufacturing of functional materials in the Group, is a Specified Business as stipulated in the Act on the Rational Use of Energy (Energy Conservation Act) and is required to reduce energy consumption intensity by an average of 1% or more per year in the medium to long term as a target of business operators. The average rate of change of intensity from 2017 to 2021 was 97.2%, achieving the target.

List the actions which contributed most to achieving this target

---

Target reference number

Oth 3

Year target was set

2017

Target coverage

Business division

Target type: absolute or intensity

Intensity

Target type: category & Metric (target numerator if reporting an intensity target)

Energy consumption or efficiency

Other, please specify

(Crude Oil Equivalent kl)

Target denominator (intensity targets only)

unit revenue

Base year

2017

Figure or percentage in base year

101.6

Target year

2021

Figure or percentage in target year

96.6

Figure or percentage in reporting year

92.8

% of target achieved relative to base year [auto-calculated]

176

Target status in reporting year

Underway

Is this target part of an emissions target?

No

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain target coverage and identify any exclusions

The scope of the target is the entire scope of business of Japan Fine Ceramics Co., Ltd., an operating company that manufactures functional materials in the Group.

Plan for achieving target, and progress made to the end of the reporting year

Japan Fine Ceramics Co., Ltd., an operating company engaged in the manufacturing of functional materials in the Group, is a Specified Business as stipulated in the Act on the Rational Use of Energy (Energy Conservation Act) and is required to reduce energy consumption intensity by an average of 1% or more per year in the medium to long term as a target of business operators. The average rate of intensity change from 2017 to 2020 was 102.8%, failing to achieve the target.

List the actions which contributed most to achieving this target

C4.2c

(C4.2c) Provide details of your net-zero target(s).

Target reference number

NZ1

Target coverage

Company-wide

Absolute/intensity emission target(s) linked to this net-zero target

Abs1

Int1

Target year for achieving net zero

2050

Is this a science-based target?

No, and we do not anticipate setting one in the next 2 years

Please explain target coverage and identify any exclusions

In the Group's Long-Term Management Vision announced in May 2021, the Group declared its intention to realize carbon neutrality by 2050. The target coverage is as follows.

(1) Scope 1 and 2 CO_2 emissions to be net zero by 2050

(2) To achieve this goal, reduce CO_2 emissions intensity of Scope 1 and 2 by 30% by 2030.

(3) Reduce CO_2 emissions of Scope 3 in collaboration with stakeholders.

Do you intend to neutralize any unabated emissions with permanent carbon removals at the target year?

Yes

Planned milestones and/or near-term investments for neutralization at target year

In the Group's Long-Term Management Vision announced in May 2021, the Group declared its intention to realize carbon neutrality by 2050. As a medium-term target for the achievement of this long-term goal, the Group has set a reduction of carbon intensity in Scopes 1 and 2 by 30% by 2030.

Planned actions to mitigate emissions beyond your value chain (optional)

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	0	0
Implementation commenced*	0	0
Implemented*	2	0
Not to be implemented	2	0

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in buildings

Other, please specify

(Reducing electricity, cooling, and steam consumption in offices)

Estimated annual CO2e savings (metric tonnes CO2e)

114

Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

4,164,829

Investment required (unit currency – as specified in C0.4)

0

Payback period

No payback

Estimated lifetime of the initiative

Ongoing

Comment

The Yokohama Office, where the majority of the employees of JGC HOLDINGS CORPORATION, JGC CORPORATION, and JGC JAPAN CORPORATION in the Group work, has set environmental targets for each department and implemented environmental improvement activities in the office as maintenance and management items, calling them EMS Office Activities, and reports the results of these activities monthly and annually. We achieved a reduction in energy consumption (electricity, cooling, and steam) compared to the previous year by implementing activities to reduce electricity consumption and heat and cooling consumption, such as turning off lights and air conditioning when returning home.

Initiative category & Initiative type

Company policy or behavioral change

Other, please specify

(Engagement with suppliers)

Estimated annual CO2e savings (metric tonnes CO2e)

0

Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 1

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

0

Investment required (unit currency – as specified in C0.4)

0

Payback period

No payback

Estimated lifetime of the initiative

Ongoing

Comment

At energy plant construction sites in Japan supervised by JGC JAPAN CORPORATION, the Group has been promoting “Zero Emissions Initiative” as an environmental target from July 2016 to March 2021 and has set annual carbon intensity targets. In fiscal 2021, CO_2 emissions from electricity, fuel, gas, and water use were increased by 2,326 tons from the previous fiscal year. This is because fuel consumption increased due to the busy season at large sites, such as solar power plant construction sites and biomass power plant construction sites, where heavy machinery and other equipment are frequently used.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	JGC Catalysts and Chemicals Ltd. and Japan Fine Ceramics Co., Ltd., which are engaged in the functional materials manufacturing business in the Group, are obligated under the Energy Conservation Act as Specified Businesses to reduce their energy consumption intensity or electric demand leveling evaluation intensity by 1% or more on an annual average over the medium to long term. In order to achieve this, both companies are investing in energy conservation and other measures and formulating production plans.
Dedicated budget for low-carbon product R&D	New business opportunities are likely to emerge in low-carbon energy markets such as hydrogen, CCU, and bio-based chemistry as low-carbon technologies become more prevalent and next-generation technologies advance. During the period under review, we invested in the social implementation of hydrogen and ammonia, and in the development of CO_2 membrane separation systems, etc. In the Medium-Term Business Plan, we intend to substantially increase its investment in low- and decarbonization-related research and development.
Employee engagement	The Yokohama Office of the Group has set environmental targets for each department in the EMS Office Activities and is implementing environmental improvements such as reducing electricity consumption, reducing heating and cooling, and conserving resources, reducing waste, and recycling.
Internal incentives/recognition programs	We have established an award system for individuals or groups of employees who have made outstanding achievements in their work, to be recognized and praised by the Company and to serve as models for other employees. Since we have set ”Societies in harmony with environment” as part of its materiality, construction projects and related initiatives that contribute to climate-related issues are the mainstream of the business of the Group and are subject to evaluation. We also state that “CSV (social and economic value) will be taken into account” in the selection of subjects, including contributions to combating climate change. The recipients receive an award.
Partnering with governments on technology development	We actively participate in research and development and demonstration projects publicly offered by the New Energy and Industrial Technology Development Organization (NEDO) and the Japan Oil, Gas and Metals National Corporation (JOGMEC) under the Ministry of Economy, Trade and Industry.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products.

Level of aggregation

Group of products or services

Taxonomy used to classify product(s) or service(s) as low-carbon

The IEA Energy Technology Perspectives Clean Energy Technology Guide

Type of product(s) or service(s)

Power

Large-scale light-water nuclear reactor

Description of product(s) or service(s)

EPC business of small modular reactors (SMRs) (investment in NuScale Power, LLC in the U.S.)

Have you estimated the avoided emissions of this low-carbon product(s) or service(s)

No

Methodology used to calculate avoided emissions

Life cycle stage(s) covered for the low-carbon product(s) or services(s)

Functional unit used

Reference product/service or baseline scenario used

Life cycle stage(s) covered for the reference product/service or baseline scenario

Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario

Explain your calculation of avoided emissions, including any assumptions

Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year

0

Level of aggregation

Group of products or services

Taxonomy used to classify product(s) or service(s) as low-carbon

The IEA Energy Technology Perspectives Clean Energy Technology Guide

Type of product(s) or service(s)

Hydrogen

Electrolysis

Description of product(s) or service(s)

Green chemical production utilizing large-scale hydrogen production systems

Have you estimated the avoided emissions of this low-carbon product(s) or service(s)

No

Methodology used to calculate avoided emissions

Life cycle stage(s) covered for the low-carbon product(s) or services(s)

Functional unit used

Reference product/service or baseline scenario used

Life cycle stage(s) covered for the reference product/service or baseline scenario

Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario

Explain your calculation of avoided emissions, including any assumptions

Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year

0

C5. Emissions methodology

C5.1

(C5.1) Is this your first year of reporting emissions data to CDP?

No

C5.1a

(C5.1a) Has your organization undergone any structural changes in the reporting year, or are any previous structural changes being accounted for in this disclosure of emissions data?

Row 1

Has there been a structural change?

No

C5.1b

(C5.1b) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?

	Change(s) in methodology, boundary, and/or reporting year definition?	Details of methodology, boundary, and/or reporting year definition change(s)
Row 1	Yes, a change in boundary	In the calculation of Scope 3, the three operating companies (JGC Catalysts and Chemicals Ltd., Japan Fine Ceramics Co., Ltd., and JAPAN NUS CO., LTD.) that were excluded last year were included in the calculation and boundaries of reporting. As a result, from this report onward, Scope 3 is calculated for the entire Group as in Scopes 1 and 2, and reported accordingly. The categories of high importance were already calculated last year, but several other categories (category 3, 6, 9, and 12) were newly calculated for this fiscal year.

C5.1c

(C5.1c) Have your organization's base year emissions been recalculated as result of the changes or errors reported in C5.1a and C5.1b?

	Base year recalculation	Base year emissions recalculation policy, including significance threshold

Row 1	No, because the impact does not meet our significance threshold	In its new Medium-Term Business Plan covering the period from FY2021 to FY2025, the Group declares net-zero emissions in 2050 regarding GHG emissions associated with the business activities of its Group companies at their sites. Therefore, monitoring Scopes 1 and 2 is of high importance. On the other hand, Scope 3 is to be worked on for its reduction in cooperation with stakeholders, and calculation and disclosure are planned to be gradually enhanced; therefore, the base year emission is not recalculated.

C5.2

(C5.2) Provide your base year and base year emissions.

Scope 1

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

84,325

Comment

Scope 2 (location-based)

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

48,221

Comment

Scope 2 (market-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 1: Purchased goods and services

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

332,982

Comment

For JGC JAPAN CORPORATION and JGC CORPORATION, calculations were made for commodities procured as plant materials. Procurement amounts are based on actual figures* for the reporting year. Emission factors were determined using IDEA v. 2.3 and in-house statistical data.

* Collected the total order quantity for each project in progress as an actual value. Then, the procurement progress rate for each fiscal year was calculated based on the order date/order amount, and the order quantity corresponding to the procurement progress rate for the reporting year was used as the actual value.

JGC Catalyst and Chemicals Ltd., Japan Fine Ceramics Co., Ltd., and JAPAN NUS CO., LTD. are excluded from Scope 3.

Scope 3 category 2: Capital goods

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

34,772

Comment

Calculated using the emissions intensity listed in the industry-specific tables in the Emissions Intensity Database for Calculating Greenhouse Gas Emissions from Organizations in the Supply Chain and the purchase price of capital goods on a consolidated basis.

Scope 3 category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2)

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

Comment

Not calculated, as it is estimated to be less than 5% of Scope 3 emissions.

Scope 3 category 4: Upstream transportation and distribution

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

11,833

Comment

For JGC JAPAN CORPORATION and JGC CORPORATION, the transportation of the above procured goods was covered. Transport distances are generalized values for each construction region based on in-house statistical data. Emission factors refer to IDEA v2.3.

Scope 3 category 5: Waste generated in operations

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

25,074

Comment

For JGC CORPORATION, the amount of waste generated was calculated based on actual data collected at each site. Emission factors refer to IDEA v2.3.

Scope 3 category 6: Business travel

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

161,496

Comment

For JGC CORPORATION, CO_2 emissions from the temporary return of construction site workers (by air) were recorded. The travel distance was calculated based on the

statistics of the number of people working in the field, the average frequency of returning home, and the flight distance. Emission factors refer to IDEA v2.3.
JGC JAPAN CORPORATION, JGC Catalyst and Chemicals Ltd., Japan Fine Ceramics Co., Ltd. and JAPAN NUS CO., LTD. are excluded from Scope 3.

Scope 3 category 7: Employee commuting

Base year start
April 1, 2020

Base year end
March 31, 2021

Base year emissions (metric tons CO2e)

Comment
Not calculated, as it is estimated to be less than 5% of Scope 3 emissions.

Scope 3 category 8: Upstream leased assets

Base year start
April 1, 2020

Base year end
March 31, 2021

Base year emissions (metric tons CO2e)

Comment
Not calculated, as it is estimated to be less than 5% of Scope 3 emissions.

Scope 3 category 9: Downstream transportation and distribution

Base year start
April 1, 2020

Base year end
March 31, 2021

Base year emissions (metric tons CO2e)

Comment
Not calculated, as it is estimated to be less than 5% of Scope 3 emissions.

Scope 3 category 10: Processing of sold products

Base year start
April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

Comment

Not calculated, as it is estimated to be less than 5% of Scope 3 emissions.

Scope 3 category 11: Use of sold products

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 12: End of life treatment of sold products

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

Comment

Not calculated, since no evaluation method has been established.

Scope 3 category 13: Downstream leased assets

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

Comment

Not calculated, as it is estimated to be less than 5% of Scope 3 emissions.

Scope 3 category 14: Franchises

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

Comment

The Group is not engaged in any business that falls under the category of franchising.

Scope 3 category 15: Investments

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

Comment

No investments have been made.

Scope 3: Other (upstream)

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

Comment

Scope 3: Other (downstream)

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

Comment

C5.3

(C5.3) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

87,856

Start date

April 1, 2021

End date

March 31, 2022

Comment

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)

84,325

Start date

April 1, 2020

End date

March 31, 2021

Comment

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

45,717

Scope 2, market-based (if applicable)

46,663

Start date

April 1, 2021

End date

March 31, 2022

Comment

Past year 1

Scope 2, location-based

48,221

Scope 2, market-based (if applicable)

Start date

April 1, 2020

End date

March 31, 2021

Comment

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source

Emissions made by business activities in overseas subsidiaries and business offices of JGC CORPORATION, and emissions made by business activities in subsidiaries and local offices of JGC JAPAN CORPORATION.

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

Explain why this source is excluded

The Group gives priority to its main operating companies, which account for more than 90% of the Group's sales, in calculating and reporting the emission amount. Scope 1 and 2 emissions from the Group's Total Engineering business account for approximately 20% of the Group's total emissions. As for the subsidiaries and business offices of Total Engineering business companies excluded from disclosure, their business types are the same, and their emissions are estimated to be 10% or less of the entire engineering business companies in proportion to sales.

Estimated percentage of total Scope 1+2 emissions this excluded source represents

2

Explain how you estimated the percentage of emissions this excluded source represents

Scope 1 and 2 emissions from the Group's Total Engineering business account for approximately 20% of the Group's total emissions. Since the sales of engineering subsidiaries not included in the disclosure are 10% or less of the total sales of engineering business companies, the emissions are estimated to be total emissions × 0.2 × 0.1 × 100 = approximately 2%.

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

525,899

Emissions calculation methodology

Hybrid method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Capital goods

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

20,596

Emissions calculation methodology

Average spend-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

22,183

Emissions calculation methodology

Average data method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

5,528

Emissions calculation methodology

Distance-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Waste generated in operations

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

80,499

Emissions calculation methodology

Average data method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Business travel

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

2,585

Emissions calculation methodology

Spend-based method
Distance-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Employee commuting

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

3,990

Emissions calculation methodology

Average data method
Distance-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

The Group's general engineering business leases construction equipment and vehicles, and in some cases, the headquarters and other operating companies lease buildings and computers. Since these are emissions associated with operations, they are reported in Scope 1 and 2.

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

498

Emissions calculation methodology

Distance-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Not calculated, as it is estimated to be less than 5% of Scope 3 emissions.

Use of sold products

Evaluation status

Relevant, not yet calculated

Please explain

End of life treatment of sold products

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

41,094

Emissions calculation methodology

Average data method

Waste-type-specific method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

Emissions resulting from the management of leased assets, which are owned by the company for a leasing business and leased to other companies, could be covered in the calculation of this category, but the Group has no business falling under this category.

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

The Group is not engaged in any business that falls under the category of franchising.

Investments

Evaluation status

Not relevant, explanation provided

Please explain

The Group does not provide investment or financial services.

Other (upstream)

Evaluation status

Please explain

Other (downstream)

Evaluation status

Please explain

C6.5a

(C6.5a) Disclose or restate your Scope 3 emissions data for previous years.

Past year 1

Start date

April 1, 2020

End date

March 31, 2021

Scope 3: Purchased goods and services (metric tons CO2e)

332,982

Scope 3: Capital goods (metric tons CO2e)

34,772

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

Scope 3: Upstream transportation and distribution (metric tons CO2e)

11,833

Scope 3: Waste generated in operations (metric tons CO2e)

25,074

Scope 3: Business travel (metric tons CO2e)

Scope 3: Employee commuting (metric tons CO2e)

161,496

Scope 3: Upstream leased assets (metric tons CO2e)

Scope 3: Downstream transportation and distribution (metric tons CO2e)

Scope 3: Processing of sold products (metric tons CO2e)

Scope 3: Use of sold products (metric tons CO2e)

Scope 3: End of life treatment of sold products (metric tons CO2e)

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)

Scope 3: Investments (metric tons CO2e)

Scope 3: Other (upstream) (metric tons CO2e)

Scope 3: Other (downstream) (metric tons CO2e)

Comment

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.0000003118

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

133,573

Metric denominator

unit total revenue

Metric denominator: Unit total

428,401,000,000

Scope 2 figure used

Location-based

% change from previous year

2.2

Direction of change

Increased

Reason for change

At construction sites, various reduction initiatives were undertaken, but fuel consumption increased due to the busy season at multiple large sites, where large cranes, heavy construction equipment, and generators were used frequently, thereby slightly increasing the global emissions from the previous year. On the other hand, sales as the denominator decreased by more than 1%, resulting in an about 2% increase in the intensity figure.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

No

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
China	10,969
Thailand	1,711
Algeria	1,938
Kuwait	1,938
Iraq	148
Japan	71,152

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By business division

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
JGC HOLDINGS CORPORATION	0
JGC CORPORATION	16,704
JGC JAPAN CORPORATION	4,049
JGC Catalyst and Chemicals Ltd.	65,959
Japan Fine Ceramics Co., Ltd.	1,130
JAPAN NUS CO., LTD.	13

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
China	1,842	
Thailand	915	
Algeria	2,724	
Kuwait	0	
Iraq	0	
Japan	40,235	41,181

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By business division

C7.6a

(C7.6a) Break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
JGC HOLDINGS CORPORATION	3,422	
JGC CORPORATION	5,482	
JGC JAPAN CORPORATION	382	
JGC Catalyst and Chemicals Ltd.	26,798	28,214
Japan Fine Ceramics Co., Ltd.	9,566	9,095
JAPAN NUS CO., LTD.	67	68

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Remained the same overall

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	0	No change	0	(Change from previous year in Scope 1 and 2 emissions) / (Scope 1 and 2 emissions in the previous fiscal year)×100=0/132,546×100=0%
Other emissions reduction activities	1,027	Increased	0.77	(Change from previous year in Scope 1 and 2 emissions) / (Scope 1 and 2 emissions in the previous fiscal year)×100=1,027/132,546×100=0.77%
Divestment	0	No change	0	(Change from previous year in Scope 1 and 2 emissions) / (Scope 1 and 2 emissions in the previous fiscal year)×100=0/132,546×100=0%

Acquisitions	0	No change	0	(Change from previous year in Scope 1 and 2 emissions) / (Scope 1 and 2 emissions in the previous fiscal year)) ×100=0/132,546×100=0%
Mergers	0	No change	0	(Change from previous year in Scope 1 and 2 emissions) / (Scope 1 and 2 emissions in the previous fiscal year)×100=0/132,546×100=0%
Change in output	0	No change	0	(Change from previous year in Scope 1 and 2 emissions) / (Scope 1 and 2 emissions in the previous fiscal year)) ×100=0/132,546×100=0%
Change in methodology	0	No change	0	(Change from previous year in Scope 1 and 2 emissions) / (Scope 1 and 2 emissions in the previous fiscal year)×100=0/132,546×100=0%
Change in boundary	0	No change	0	(Change from previous year in Scope 1 and 2 emissions) / (Scope 1 and 2 emissions in the previous fiscal year)) ×100=0/132,546×100=0%
Change in physical operating conditions	0	No change	0	(Change from previous year in Scope 1 and 2 emissions) / (Scope 1 and 2 emissions in the previous fiscal year)×100=0/132,546×100=0%
Unidentified	0	No change		
Other	0	No change		

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	445,983	445,983
Consumption of purchased or acquired electricity		0	99,602	99,602
Consumption of purchased or acquired steam		0	2,767	2,767
Consumption of self-generated non-fuel renewable energy				
Total energy consumption		0	548,352	548,352

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	Yes
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Sustainable biomass

Heating value

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

Comment

Other biomass

Heating value

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

Comment

Other renewable fuels (e.g. renewable hydrogen)

Heating value

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

Comment

Coal

Heating value

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

Comment

Oil

Heating value

HHV

Total fuel MWh consumed by the organization

38,542

MWh fuel consumed for self-generation of electricity

434

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

Comment

Gas

Heating value

HHV

Total fuel MWh consumed by the organization

407,194

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

196,942

MWh fuel consumed for self-generation of steam

167,943

MWh fuel consumed for self-generation of cooling

Comment

Other non-renewable fuels (e.g. non-renewable hydrogen)

Heating value

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

Comment

Total fuel

Heating value

HHV

Total fuel MWh consumed by the organization

80,663

MWh fuel consumed for self-generation of electricity

434

MWh fuel consumed for self-generation of heat

196,942

MWh fuel consumed for self-generation of steam

167,943

MWh fuel consumed for self-generation of cooling

Comment

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	434	434		

Heat	213,437	213,427		
Steam	167,943	167,943		
Cooling				

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero or near-zero emission factor in the market-based Scope 2 figure reported in C6.3.

Sourcing method

Green electricity products from an energy supplier (e.g. green tariffs)

Energy carrier

Electricity

Low-carbon technology type

Renewable energy mix, please specify

(Type of green electricity is unknown)

Country/area of low-carbon energy consumption

Japan

Tracking instrument used

Contract

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)

82

Country/area of origin (generation) of the low-carbon energy or energy attribute

Japan

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

Comment

C8.2g

(C8.2g) Provide a breakdown of your non-fuel energy consumption by country.

Country/area

Japan

Consumption of electricity (MWh)
84,519

Consumption of heat, steam, and cooling (MWh)
2,767

Total non-fuel energy consumption (MWh) [Auto-calculated]
87,286

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

Description
Waste

Metric value
98.4

Metric numerator
Amount recycled (t)

Metric denominator (intensity metric only)
Total amount of industrial waste (t)

% change from previous year
1.11

Direction of change
Increased

Please explain
At construction sites in Japan, the target for the rate of recycling of industrial waste (recycling rate) is set in the “Zero Emissions Initiative,” and the performance is analyzed. The target value in fiscal 2021 was 97%. Although the target values were not achieved for three consecutive years since fiscal 2018, the target value was achieved in fiscal 2021 due to a large amount of concrete scraps, asphalt concrete scraps, wood chips, and construction sludge, which have high recycling rates.
As for the discharge of five types of waste, including waste plastics, mixed wastes (stable and controlled), other debris, and glass and ceramics, all of which have low recycling rates, further separation, as well as the selection of intermediate disposal contractors with higher recycling rates, will continue to proceed.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	No third-party verification or assurance
Scope 2 (location-based or market-based)	No third-party verification or assurance
Scope 3	No third-party verification or assurance

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

No, but we are actively considering verifying within the next two years

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

Japan carbon tax

C11.1c

(C11.1c) Complete the following table for each of the tax systems you are regulated by.

Japan carbon tax

Period start date

April 1, 2021

Period end date

March 31, 2022

% of total Scope 1 emissions covered by tax

81

Total cost of tax paid

20,562,928

Comment

Calculated by multiplying domestic fuel-derived CO_2 emissions (Scope 1) by the currently added Global Warming Countermeasure Tax (289 yen/tCO_2). 71,152t-CO_2×289 yen/t-CO_2＝20,562,928 yen

The importing and drilling companies are the direct taxable entities, while the Group is an indirect taxable entity.

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

Strategy: In order to reduce the impact of the Japan Carbon Tax on the operations and activities of the Group, it is necessary to reduce fuel consumption itself in the Total Engineering business and Functional Materials Manufacturing business in Japan and to reduce fuel-derived CO_2 emissions through improved fuel efficiency. For the former, the Group is promoting its own “Zero Emissions Initiative” and is working to reduce the amount of utilities used at domestic plant construction sites in order to reduce CO_2 emissions; that is, to avoid the impact of the Japan Carbon Tax.

[The Group’s strategy for regulatory compliance and how it has been applied]

Situation: Currently, a Global Warming Countermeasure Tax is imposed indirectly on domestic fuel-derived CO_2 emissions (Scope 1), and the tax may increase in the future.

Task: In order to reduce the impact of the Japan Carbon Tax on the operations and activities of the Group, it is necessary to reduce the amount of fuel used by the Total Engineering business and the Functional Materials Manufacturing business in Japan, as well as to reduce fuel-derived CO_2 emissions.

Action: Fuel-derived CO_2 in the Total Engineering business of the Group arises primarily from the use of construction equipment at construction sites. At energy plant construction sites in Japan supervised by JGC JAPAN CORPORATION, a domestic operating company, we have been promoting “Zero Emissions Initiative” as an environmental target from FY 2021 to FY 2025 and have set annual CO_2 emission intensity targets. In order to reduce utility usage, we are working on introducing low-pollution construction equipment, promoting the stopping of engine idling and revving, reducing energy usage, using solar power, and introducing carpooling, hybrid vehicles and electric cars for commuting.

Results: In FY 2021, the carbon intensity from energy sources was 1.91 kg-CO_2/MH (emissions/unit working hours), exceeding the target of 0.7 kg-CO_2/MH. The Group will continue to work to reduce CO_2 emissions and reduce the impact of the Japan Carbon Tax on the operations and activities of the Group.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

No, but we anticipate doing so in the next two years

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

Yes, our customers/clients

Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Engagement & incentivization (changing supplier behavior)

Details of engagement

Run an engagement campaign to educate suppliers about climate change

% of suppliers by number

45

% total procurement spend (direct and indirect)

45

% of supplier-related Scope 3 emissions as reported in C6.5

Rationale for the coverage of your engagement

In the Total Engineering business of the Group, the Group works with subcontractors to develop construction plans for sites and procure construction materials, equipment, and labor through cooperative companies. The reason for the coverage of the engagement is that the Group's production activities would not be feasible without its subcontractors, who are important suppliers in the supply chain, and that the Group conducts CO_2 environment-related activities involving the subcontractors as suppliers.

Total Engineering business accounts for 90% of the sales of the Group. Among them, the cost of construction at the above sites accounts for approximately 50%, and the percentage of suppliers by number and percentage of the total procurement spend were calculated as 100% × 0.9 × 0.5 = 45%.

Impact of engagement, including measures of success

The reduction of CO_2 emissions from construction sites can be achieved by introducing low-emission construction equipment, promoting the stopping of engine idling and revving, and saving the amount of energy use. These will be implemented in cooperation with the Group and subcontractors, and the achievement of the target carbon intensity of 0.7 kg-CO_2/MH (emissions/unit working hours) in construction sites in Japan is regarded as a measure of success. As a specific impact of this engagement, a "Construction Site Environmental Management Plan" is issued for large domestic construction sites, and environmental education including environmental policy is carried out for construction parties who enter the site. Environmental items are monitored and recorded according to the "Environmental Targets and Environmental Action Plan" and by using the "Checklist for Confirming Environmental Considerations in the Vicinity of Site Offices and Construction Sites" and the "Survey Chart of Operation Rate of Low-Pollution Construction Equipment, Heavy Equipment, and Transportation Vehicles, and Idling Stop Chart." As a result, the carbon intensity at sites in fiscal 2021 was 1.91 kg-CO_2/MH and the target of 0.7 kg-CO_2/MH was not achieved. This is because the CO_2 emissions increased along with increasing fuel use at multiple large sites that were in the busiest season and frequently used heavy machinery and relied on generators without electricity supply. As an impact of this engagement, daily operations and actions at construction sites have changed, such as stopping idling/ revving of an engine and conserving energy, which enables the execution of construction work that leads to CO_2 emission reduction as well as activities that take into consideration the vicinity of construction sites.

Comment

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement & Details of engagement

Collaboration & innovation

Run a campaign to encourage innovation to reduce climate change impacts

% of customers by number

90

% of customer - related Scope 3 emissions as reported in C6.5

Please explain the rationale for selecting this group of customers and scope of engagement

Total Engineering business accounts for 90% of the sales of the Group. Therefore, the percentage of the number of customers is calculated to be 90%. The business activities of these customers are the operation of energy and manufacturing plants, and CO_2 is emitted with the use of fuels, etc. Therefore, all customers are included in the scope of collaboration. From the perspective of reducing the CO_2 emissions associated with the

use of heat and electricity during the operation period of LNG and other facilities designed and constructed by the Group, the Group proposes to customers at the design stage energy-saving measures that include the period after the start of operation.

Impact of engagement, including measures of success

In response to the social issues of reducing the environmental impact of fossil energy and reducing greenhouse gas emissions by improving energy efficiency worldwide, the Group is actively engaged in the construction of fossil energy plants with a low environmental impact and in energy conservation and efficiency improvements at energy plants. The measure of success will be the amount of CO_2 reduction compared to before the proposal. As an impact of this engagement, in the year covered by this report, “electric LNG” was adopted at the design stage of several projects to significantly reduce CO_2 generated during LNG production by employing electric drive for compressors that are normally driven by gas turbines in LNG plants. In particular, in the U.S., an electrical grid has been established, and large LNG plants release a large amount of CO_2 emissions during operation. Therefore, the Group actively considered adopting the electric LNG system. For the project with 5 million tons of LNG produced annually, it is expected to reduce annual CO_2 emissions by about 1 million tons.

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

Scope: Aviation industry, fuel manufacturing and sales industry, general trading companies, heavy industry, railway industry, and food industry

Climate-related engagement strategies:
Situation: In the aviation industry, the ICAO (International Civil Aviation Organization) has adopted the introduction of the CORSIA system, which requires the use of biomass-derived fuels and the purchase of CO_2 emission credits, etc., and expectations are rising for the development and stable supply of SAF (sustainable aviation fuel, and next-generation aviation fuel), which is produced from biomass-derived raw materials such as municipal solid waste, vegetable and animal fats, used cooking oil, and raw materials derived from biomass such as wood, as well as from exhaust gas from steel mills and oil refineries.
Task: Under these circumstances, aviation fuel using SAF has already been commercialized in Europe and the United States, and efforts are steadily progressing to expand SAF demand in the aviation industry in the future, such as the start of SAF procurement from overseas by airlines in Japan. On the other hand, with regard to SAF manufactured in Japan, there is an urgent need to establish a highly economical SAF manufacturing system and a stable supply chain from raw material procurement to supply, as manufacturing costs and supply stability have become issues. In response to this issue, we can contribute to the optimization of the entire supply chain and the proposal and construction of efficient and economical manufacturing facilities by utilizing the knowledge and experience of the Group in the environmental field, as well as the various engineering technologies and project management capabilities we have accumulated through its EPC business.
Action: The Group is working with three relevant companies (REVO International Inc., Cosmo Oil Co., Ltd., and Odakyu Electric Railway Co., Ltd.) on the establishment of a specific supply

chain, including a plan to procure used cooking oil as raw material, the introduction of a manufacturing process using technology proven in Europe and the United States, cost estimation of manufacturing facilities, and a scheme for product transportation and sales in order to establish a manufacturing system and supply chain for SAF in Japan. The Group is also working to strengthen cooperation with aviation companies, which are the users of the services of the Group, and with government agencies involved in aviation fuel supply. Moreover, in March 2022, four companies including the Group, REVO International Inc., All Nippon Airways Co., Ltd., and Japan Airlines Co., Ltd. became founding companies to establish the “Act For Sky,” a voluntary organization that consists of 16 relevant companies and is working for the commercialization, promotion, and expansion of domestically produced SAF. Results: Through these efforts, we expect to be able to contribute to the development and stable supply of SAF by realizing a business plan for the operation and full-scale commercialization of the SAF production facility, which is targeted for around 2025.

C12.2

(C12.2) Do your suppliers have to meet climate-related requirements as part of your organization’s purchasing process?

Yes, suppliers have to meet climate-related requirements, but they are not included in our supplier contracts

C12.2a

(C12.2a) Provide details of the climate-related requirements that suppliers have to meet as part of your organization’s purchasing process and the compliance mechanisms in place.

Climate-related requirement

Implementation of emissions reduction initiatives

Description of this climate related requirement

A “Construction Site Environmental Management Plan” is issued for large domestic construction sites, and environmental education including environmental policy is carried out for construction parties who enter the site. Moreover, the proper disposal of wastes and the observance of environmental pollution-related laws and regulations are requested. In addition, environmental items are monitored and recorded in cooperation with suppliers according to the “Environmental Targets and Environmental Action Plan” and by using the “Checklist for Confirming Environmental Considerations in the Vicinity of Site Offices and Construction Sites” and the “Survey Chart of Operation Rate of Low-Pollution Construction Equipment, Heavy Equipment, and Transportation Vehicles, and Idling Stop Chart.”

% suppliers by procurement spend that have to comply with this climate-related requirement

45

% suppliers by procurement spend in compliance with this climate-related requirement

45

Mechanisms for monitoring compliance with this climate-related requirement

Supplier self-assessment

Response to supplier non-compliance with this climate-related requirement

Retain and engage

C12.3

(C12.3) Does your organization engage in activities that could either directly or indirectly influence policy, law, or regulation that may impact the climate?

Row 1

Direct or indirect engagement that could influence policy, law, or regulation that may impact the climate

Yes, we engage directly with policy makers

Yes, we engage indirectly through trade associations

Yes, we engage indirectly by funding other organizations whose activities may influence policy, law, or regulation that may significantly impact the climate

Does your organization have a public commitment or position statement to conduct your engagement activities in line with the goals of the Paris Agreement?

Yes

Attach commitment or position statement(s)

20201009002-1.pdf

Describe the process(es) your organization has in place to ensure that your engagement activities are consistent with your overall climate change strategy

As for the conformity with climate change response strategies, when joining an outside organization, an “application for approval to join an external organization,” which specifies the details of the business and the reason for joining, is drafted by the person in charge, and the decision is made after the approval of the general manager, director, vice president, president, and chairperson. During the approval process, consideration will be given to whether the activities of the organization are consistent with strategy of the Group, including its climate change strategy. The Government/Industry Relations Department manages the organizations to which they belong and monitors their activities. In particular, the Clean Fuel Ammonia Association and the Public-Private Council on Fuel Ammonia Introduction are industry organizations that aim to implement climate change-related technologies in society, and their activities are consistent with the Group's climate change response strategy. Therefore, we strive to make a positive contribution, and the status of its activities is shared with relevant business companies

and divisions as appropriate. In addition, we are actively participating in meetings to formulate climate change-related policies in industry associations, such as the Japan Business Federation and the Engineering Advancement Association of Japan, and are collaborating with relevant business companies and departments as appropriate in questionnaires and hearings to provide answers that are consistent with the Group's climate change response strategy.
Participating in the "Zero-Emission Challenge" and becoming a TCFD supporting company are also addressed based on the above-mentioned process.

C12.3a

(C12.3a) On what policy, law, or regulation that may impact the climate has your organization been engaging directly with policy makers in the reporting year?

Focus of policy, law, or regulation that may impact the climate

Low-carbon, non-renewable energy generation

Specify the policy, law, or regulation on which your organization is engaging with policy makers

"Public-Private Council on Fuel Ammonia Introduction"
Shaping of measures to achieve carbon neutrality by 2050

Policy, law, or regulation geographic coverage

National

Country/region the policy, law, or regulation applies to

Japan

Your organization's position on the policy, law, or regulation

Support with no exceptions

Description of engagement with policy makers

The Ministry of Economy, Trade and Industry led the establishment of the "Public-Private Council on Fuel Ammonia Introduction" in October 2020. We have participated as a member since the first meeting. The activities of the Council include recommendations on legislative measures to enable the introduction of fuel ammonia, and we contributed to the compilation of the recommendations in terms of technical knowledge.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Focus of policy, law, or regulation that may impact the climate

Low-carbon, non-renewable energy generation
Renewable energy generation

Specify the policy, law, or regulation on which your organization is engaging with policy makers

A demonstration project supported by the Ministry of Economy, Trade and Industry for the world's first blue ammonia transport

Policy, law, or regulation geographic coverage

Global

Country/region the policy, law, or regulation applies to

Your organization's position on the policy, law, or regulation

Support with no exceptions

Description of engagement with policy makers

The Group is participating in a demonstration project supported by the Ministry of Economy, Trade and Industry for the world's first blue ammonia transport.
Not only green ammonia, which is produced using electricity derived from renewable energy sources, but also blue ammonia, which is produced from fossil fuels and reduces CO_2 emissions as a by-product through CCS and other means, is expected to expand its use during the transition period. The Group is participating in a demonstration project for a supply network of blue ammonia to Japan in Saudi Arabia, promoted by the Institute of Energy Economics, Japan, and Saudi Aramco, and is contributing to the spread of this technology.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Focus of policy, law, or regulation that may impact the climate

Low-carbon, non-renewable energy generation

Specify the policy, law, or regulation on which your organization is engaging with policy makers

"Public-Private Council to Promote the Introduction of Sustainable Aviation Fuel (SAF)"
In order to facilitate decarbonization in the aviation sector, the use of SAF, which is considered to be the most effective in reducing CO_2 in the future, is expected; however, at present, the supply of SAF is small worldwide, and manufacturing costs and other issues also pose problems. In introducing SAF, the development and manufacture of

internationally competitive domestic SAF will be promoted while cooperation between wholesalers on the supply side and aviation companies as users will be promoted for the establishment of future supply chains.

Policy, law, or regulation geographic coverage

National

Country/region the policy, law, or regulation applies to

Japan

Your organization's position on the policy, law, or regulation

Support with no exceptions

Description of engagement with policy makers

The Group is working with three companies (REVO International Inc., Cosmo Oil Co., Ltd., and Odakyu Electric Railway Co., Ltd.) on the establishment of a specific supply chain, including a plan to procure used cooking oil as raw material, the introduction of a manufacturing process using technology proven in Europe and the United States, cost estimation of manufacturing facilities, and a scheme for product transportation and sales in order to establish a manufacturing system and supply chain for SAF in Japan. The Group is also working to strengthen cooperation with aviation companies, which are the users of the services of the Group, and with government agencies involved in aviation fuel supply. Moreover, in March 2022, four companies including the Group, REVO International Inc., All Nippon Airways Co., Ltd., and Japan Airlines Co., Ltd. became founding companies to establish the "Act For Sky," a voluntary organization that consists of 16 relevant companies and is working for the commercialization, promotion, and expansion of domestically produced SAF.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Focus of policy, law, or regulation that may impact the climate

Carbon tax

Emissions trading schemes

Specify the policy, law, or regulation on which your organization is engaging with policy makers

GX League

Recognizing the initiatives for 2050 carbon neutrality and the achievement of national greenhouse gas emission reduction targets by 2030 as opportunities for economic growth, it aims to transform the entire economic and social system for the realization of emission reduction and improvement of industrial competitiveness.

Policy, law, or regulation geographic coverage

National

Country/region the policy, law, or regulation applies to

Japan

Your organization's position on the policy, law, or regulation

Support with no exceptions

Description of engagement with policy makers

In the "GX League," in anticipation of realizing our country's 2050 carbon neutrality target, "a group of companies" that are actively engaged in GX will take on the challenges for GX through collaborations with government, academia, and financial institutions, and will engage in discussions for the transformation of the entire economic and social system and in the practice for the creation of new markets in an integrated manner.

In addition to working to reduce its own CO_2 emissions, the Group also owns a consulting company concerning environment and energy that supports the institutional design, project formulation, and social implementation for the establishment of a decarbonized society.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Focus of policy, law, or regulation that may impact the climate

Methane emissions

Specify the policy, law, or regulation on which your organization is engaging with policy makers

Initiatives for 2050 carbon neutrality and the achievement of national greenhouse gas emission reduction targets by 2030

Policy, law, or regulation geographic coverage

National

Country/region the policy, law, or regulation applies to

Japan

Your organization's position on the policy, law, or regulation

Support with no exceptions

Description of engagement with policy makers

Since LNG, hydrogen, and fuel ammonia do not emit CO_2 during combustion, they have been designated as an important area of the government's Green Growth Strategy Through Achieving Carbon Neutrality in 2050. As the Group was selected for JOGMEC's public offering project, "Survey for constructing a global MRV/CI methodology for GHG emission," it investigated and formulated MRV methods and CI calculation methods for GHG emissions calculation (GHG/CI Guidelines) in harmony with international calculation standards. These Guidelines will be used as a tool in the Japanese government's green energy policy.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

C12.3b

(C12.3b) Provide details of the trade associations your organization engages with which are likely to take a position on any policy, law or regulation that may impact the climate.

Trade association

Japan Business Federation (Keidanren)

Is your organization's position on climate change consistent with theirs?

Consistent

Has your organization influenced, or is your organization attempting to influence their position?

We are attempting to influence them to change their position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)

The government has indicated its policy to address the issue of climate change, and fundamental changes in the entire economy and society are essential for addressing this issue. The initiatives of Keidanren (Japan Business Federation), such as "Society 5.0 with Carbon Neutral" and "Challenge Zero," are aimed at solving this problem. Among them, as a top runner in the engineering industry, the Group supports the measures set forth by Keidanren to realize a low-carbon and decarbonized society, and the Group actively participates in related meetings and councils to make contributions.

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

Describe the aim of your organization's funding

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Trade association

Other, please specify

(Engineering Advancement Association of Japan)

Is your organization's position on climate change consistent with theirs?

Consistent

Has your organization influenced, or is your organization attempting to influence their position?

We are attempting to influence them to change their position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)

Since the Association considers responding to the issue of climate change to be an urgent issue, as a group of companies that provide solutions to that, the Association plans and implements projects in line with policies in close collaboration with government and academia. From 2007 to 2009, the then Chairman of JGC JAPAN CORPORATION served as the President of the Association, and now the Chairman of JGC HOLDINGS CORPORATION is a member of the Board. The Association coordinated the "report on climate change" (the report, which was published in June 2021, aims to provide recommendations on the direct impact of climate change on the management and operations of Japanese companies and the need for measures to prepare for such risks), and the Group was heavily involved in this coordination.

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

Describe the aim of your organization's funding

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Trade association

Other, please specify

(Clean Fuel Ammonia Association)

Is your organization's position on climate change consistent with theirs?

Consistent

Has your organization influenced, or is your organization attempting to influence their position?

We are attempting to influence them to change their position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)

Since the Association considers responding to the issue of climate change to be an urgent issue, as a group of companies that provide solutions to that, the Association plans and implements projects in line with policies in close collaboration with government and academia. From 2007 to 2009, the then Chairman of JGC JAPAN CORPORATION served as the President of the Association, and now the Chairman of JGC HOLDINGS CORPORATION is a member of the Board. The Association coordinated the "report on climate change" (the report, which was published in June 2021, aims to provide recommendations on the direct impact of climate change on the management and operations of Japanese companies and the need for measures to prepare for such risks), and the Group was heavily involved in this coordination.

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

Describe the aim of your organization's funding

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

C12.3c

(C12.3c) Provide details of the funding you provided to other organizations in the reporting year whose activities could influence policy, law, or regulation that may impact the climate.

Type of organization

Start-up company

State the organization to which you provided funding

Kyoto Fusioneering Ltd.

Funding figure your organization provided to this organization in the reporting year (currency as selected in C0.4)

Describe the aim of this funding and how it could influence policy, law or regulation that may impact the climate

By setting “realization of carbon neutrality” as one target theme, through the CVC Fund, the JGC Group invests in start-ups in Japan and overseas that have innovative technologies and business models potentially contributing to the establishment of safe, secure, and sustainable social systems. Kyoto Fusioneering Ltd. is conducting research and development on equipment related to fusion reactors for the realization of a carbon-neutral society, based on Kyoto University’s extensive experience and technologies in fusion reactor engineering. In particular, it is proud to have advanced and sophisticated technological capabilities in plant engineering, such as heating equipment and heat extraction equipment for fusion reactors and is drawing attention as a world pioneer in the field of fusion reactor engineering. Since nuclear fusion does not emit carbon dioxide during its power generation process, it is expected to serve as a next-generation energy source that can both meet energy demand and realize a decarbonized society. The Group determined that, through this investment, the fusion of Kyoto Fusioneering’s technologies with the Group’s engineering technologies cultivated in the fields related to nuclear energy, such as nuclear fusion and low-level radioactive waste treatment, would contribute to the realization of nuclear fusion research facilities, which are under consideration, and that it would be possible to obtain various knowledge and know-how for the practical application of a nuclear fusion reactor plant. Therefore, it decided to make an investment.

Have you evaluated whether this funding is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

C12.4

(C12.4) Have you published information about your organization’s response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In mainstream reports

Status

Complete

Attach the document

fy21_yukashoken_1.pdf

Page/Section reference

Governance: P.38-62
Strategy: P.10-12
Risks & opportunities: P13-16

Content elements

Governance
Strategy
Risks & opportunities

Comment

Publication

Other, please specify
(JGC Report (Integrated Report))

Status

Underway – previous year attached

Attach the document

JGCReport2021_j_A4.pdf

Page/Section reference

Governance: P.66-73
Strategy: P.5-14, P.23-60, P.87-90
Risks & opportunities:
Emissions figures:

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures

Comment

C15. Biodiversity

C15.1

(C15.1) Is there board-level oversight and/or executive management-level responsibility for biodiversity-related issues within your organization?

	Board-level oversight and/or executive management-level	Description of oversight and objectives relating to biodiversity

	responsibility for biodiversity-related issues	
Row 1	Yes, executive management-level responsibility	In the comprehensive engineering business in the Group that carries out the construction of energy plants, the holding company and each operating company have set their own "Environmental Policy," which is signed by the Representative Director, President of each company. In said Policy, each company declares that it will continue to improve environmental protection activities, including biodiversity issues.

C15.2

(C15.2) Has your organization made a public commitment and/or endorsed any initiatives related to biodiversity?

	Indicate whether your organization made a public commitment or endorsed any initiatives related to biodiversity
Row 1	No, but we plan to do so within the next 2 years

C15.3

(C15.3) Does your organization assess the impact of its value chain on biodiversity?

	Does your organization assess the impact of its value chain on biodiversity?
Row 1	Yes, we assess impacts on biodiversity in our downstream value chain only

C15.4

(C15.4) What actions has your organization taken in the reporting year to progress your biodiversity-related commitments?

	Have you taken any actions in the reporting period to progress your biodiversity-related commitments?	Type of action taken to progress biodiversity- related commitments
Row 1	Yes, we are taking actions to progress our biodiversity-related commitments	Land/water protection Land/water management Education & awareness

C15.5

(C15.5) Does your organization use biodiversity indicators to monitor performance across its activities?

	Does your organization use indicators to monitor biodiversity performance?	Indicators used to monitor biodiversity performance

Row 1	No, we do not use indicators, but plan to within the next two years	

C15.6

(C15.6) Have you published information about your organization's response to biodiversity-related issues for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Report type	Content elements	Attach the document and indicate where in the document the relevant biodiversity information is located
Other, please specify JGC Report (Integrated Report) 2020	Other, please specify Initiatives to protect rare plants and animals in the area around construction sites	Attached file p.38 (LNG Canada Project) [1]JGCReport2020_j.pdf

C16. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C16.1

(C16.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Chairperson of the Board and Chief Executive Officer (CEO) of JGC HOLDINGS CORPORATION, the holding company of the JGC Group	Chief Executive Officer (CEO)

SC. Supply chain module

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

SC0.1

(SC0.1) What is your company's annual revenue for the stated reporting period?

	Annual Revenue
Row 1	

SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

SC1.2

(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

SC1.3

(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Allocation challenges	Please explain what would help you overcome these challenges

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

SC2.1

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services?

Submit your response

In which language are you submitting your response?

Japanese

Please confirm how your response should be handled by CDP

	I understand that my response will be shared with all requesting stakeholders	Response permission
Please select your submission options	Yes	Public

Please confirm below

I have read and accept the applicable Terms