Welcome to your CDP Climate Change Questionnaire 2023

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 total engineering, functional materials manufacturing, and energy and environmental consulting. In the total 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. (JFC) 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 and indicate whether you will be providing emissions data for past reporting years.

Reporting year

Start date

April 1, 2022

End date

March 31, 2023

Indicate if you are providing emissions data for past reporting years

Yes

Select the number of past reporting years you will be providing Scope 1 emissions data for

2 years

Select the number of past reporting years you will be providing Scope 2 emissions data for

2 years

Select the number of past reporting years you will be providing Scope 3 emissions data for

2 years

C0.3

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

Algeria
China
Iraq
Japan
Saudi Arabia
Taiwan, China
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 Catalysts 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	JP3667600005

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 or committee	Responsibilities for climate-related issues
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. In FY2022, the Board of Directors discussed and formulated a document outlining a concrete path toward the achievement of our Long-Term Management Vision "2040 Vision" formulated in FY2021, and the Medium-term Business Plan, and disseminated details to our employees. In addition, given that approximately one year has passed since its formulation, the Board of Directors conducted monitoring and rolling review of the Medium-term Business Plan. As well as this, in FY2021, the Group established a Sustainability Committee and its subcommittees dedicated to addressing sustainability issues, and the activities of said committee and subcommittees are reported to the Board of Directors. Furthermore, the Group is actively engaged in investment, M&A, and business development in areas where growth is expected and consistent with the "2040 Vision" and the Medium-term Business Plan. As an example of climate-related decisions made by the Board of Directors in FY2022, to contribute to the mitigation of global warming, the Board decided to implement a project to produce next-generation aviation fuel (SAF-Sustainable Aviation Fuel) using waste cooking oil.

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	Overseeing major capital expenditures Overseeing acquisitions, mergers, and divestitures Overseeing and guiding employee incentives Reviewing and guiding strategy Overseeing the setting of corporate targets Monitoring progress towards corporate targets	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 FY2022, the Board of Directors discussed and formulated a document outlining a concrete path toward the achievement of our Long-Term Management Vision “2040 Vision” formulated in FY2021, and the Medium-term Business Plan, and disseminated details to our employees. In addition, given that approximately one year has passed since its formulation, the Board of Directors conducted monitoring and rolling review of the Medium-term Business Plan. As well as this, in FY2021, the Group established a Sustainability Committee and its subcommittees dedicated to addressing sustainability issues, and the activities of said committee and subcommittees are reported to the Board of Directors. Furthermore, the Group is actively engaged in investment, M&A, and business development in areas where growth is expected and consistent with the “2040 Vision” and the Medium-term Business Plan. For example, in FY2022, to contribute to the mitigation of global warming, the Board of Directors approved a project to produce next-generation aviation fuel (SAF-Sustainable Aviation Fuel) using waste cooking oil.

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 at large, which is strongly associated with climate-related issues, and he has been in the industry for more than 40 years since he joined the Group. 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.

Position or committee

Chief Executive Officer (CEO)

Climate-related responsibilities of this position

Managing major capital and/or operational expenditures related to low-carbon products or services (including R&D)
Managing climate-related acquisitions, mergers, and divestitures
Providing climate-related employee incentives
Setting climate-related corporate targets
Monitoring progress against climate-related corporate targets

Coverage of responsibilities

Reporting line

Reports to the board directly

Frequency of reporting to the board on climate-related issues via this reporting line

More frequently than quarterly

Please explain

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 COO and CFO of the JGC Holdings, as well as 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. The implementation of projects that contribute to addressing climate-related issues and related initiatives are the mainstay of the Group's business, and the President's Award and General Manager's Award are given to particularly outstanding initiatives, providing incentives.

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

Corporate executive team

Type of incentive

Monetary reward

Incentive(s)

Bonus - % of salary
Shares

Performance indicator(s)

Progress towards a climate-related target

Incentive plan(s) this incentive is linked to

Both Short-Term and Long-Term Incentive Plan

Further details of incentive(s)

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 the business areas based on the Company's Long-Term Management Vision "2040 Vision" and the Medium-term Business Plan, individual Directors and Executive Officers are assessed based on the responsibilities they are expected to fulfil, and the amount of their compensation is determined reflecting this assessment.

Explain how this incentive contributes to the implementation of your organization's climate commitments and/or climate transition plan

We believe that these incentives help directors and employees to work voluntarily and autonomously to carry out projects that contribute to addressing climate-related issues and to implement related initiatives. There is a framework for setting and assessing targets, including at the executive level, which also covers climate change-related responses.

Entitled to incentive

All employees

Type of incentive

Monetary reward

Incentive(s)

Bonus – set figure

Performance indicator(s)

Progress towards a climate-related target

Incentive plan(s) this incentive is linked to

Both Short-Term and Long-Term Incentive Plan

Further details of incentive(s)

As part of its employee compensation program, the Group has established a President's Commendation 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. Employees who are deemed worthy of recognition receive a commendation and a monetary award. In FY2022, the President's Commendation was presented to the team that commercialized the production of next-generation aviation fuel (SAF-Sustainable Aviation Fuel) using waste cooking oil both for its contribution to the response to global warming as a social value and its promotion of the transformation of the Group's business model and business domain. In addition, the team responsible for establishing

and operating the Sustainability Committee received the President's Commendation for its significant contribution to improving the sustainability of the entire JGC Group, including the formulation of a CO_2 reduction plan and the establishment of a basic human rights policy.

Explain how this incentive contributes to the implementation of your organization's climate commitments and/or climate transition plan

We believe that these incentives help directors and employees to work voluntarily and autonomously to carry out projects that contribute to addressing climate-related issues and to implement related initiatives. There is a framework for setting and assessing targets, including at the management level, which also covers climate change-related responses.

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 caused if climate change were to interfere with the continuation of projects in its mainstay total 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 caused by 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 any of consolidated net sales, 30% or more of consolidated operating profit, consolidated ordinary profit, and net profit attributable to shareholders of the parent company. Applying the average value from FY2018 to FY2022, consolidated net sales were approximately 514 billion yen, of which 10% was 51.4 billion yen, and consolidated operating income was approximately 24.8 billion yen, of which 30% was 7.4 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. The management of climate-related business risks of the Group, including identification and assessment, are led by the Risk Management Committees of each of the operating companies that conduct total engineering, functional materials manufacturing, and energy and environmental conservation consulting businesses in Japan and overseas and the Company has established and operates a comprehensive risk management system that systematically identifies short- to long-term risks throughout the entire value chain, including, not only for direct operations, but also for upstream and downstream operations, in an effort to further reduce the risks to the Group.

Process for identifying (extracting) and assessing climate-related risks: 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. Short- to long-term risks, including climate-related risks throughout the entire value chain, not only for the Group's direct operations but also for upstream and downstream, are taken into account in the process of identification and assessment, with reference to the definitions and indicators of "substantive financial or strategic impacts" as defined in the requirements of the timely disclosure system of financial instruments exchanges.

Process for responding to risks rated as substantive: Risks rated as substantive after above extraction and assessment are sorted as a list of risk items at each operating company and reported to the Group Risk Management Committee twice a year. After assessing each risk, the operating companies take the initiative in formulating and implementing countermeasures, taking into account 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 responses.

[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 total 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 total engineering business as a case of 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 total 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 number of 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 fields, 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 total 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 total 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 total 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 total 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 total 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 total 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 total 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 total 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 total 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 would risk causing prolonged construction due to reduced labour 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 total engineering, functional materials manufacturing, and energy and environmental consulting. Among the business fields, in the total 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 90% of the Group's total sales of 606.8 billion yen in FY2022. 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 the construction of large-scale oil and gas-related plants, especially on new orders and sales of LNG plants, which accounts for a large percentage of sales, that JGC CORPORATION is undertaking in developed countries, such as North America and Australia, where carbon pricing systems may be introduced and enhanced at an early stage. Sales in the oil and gas sector in FY2022 were about 440 billion yen.

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)

35,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Over the three years from 2020 to 2022, the annual average sales of the oil and gas field (development of oil and gas resources, petroleum refining, LNG, chemical, *etc.*) was 350 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% (one of the standards for monetary materiality of our group as a listed company, the standard for timely disclosure by the Tokyo Stock Exchange), is 35 billion yen per year on average, which is 10% of 350 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 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 overseas, mainly handled by JGC CORPORATION.

Task: In light of the above situation, as businesses that leverage process-related technologies of our own and our close 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 order receipt for renewable energy (solar, wind, and biomass) facilities and to enter EPC business for small modular reactors (SMRs) as new business areas.

Action: In the Medium-term Business Plan announced in 2021, the next-generation businesses including these businesses are defined as “next-generation growth engines,” and the Group announced that it plans to invest a total of 80 billion yen over five years from FY2021 to FY2025 in their establishment. An annual average of 16 billion yen is allocated to investment related to business development. Note that, in FY2021, an investment of US $40 million was made in NuScale Power, LLC, an American company that develops small modular reactors (SMRs). In FY2022, the reporting year, the company decided to make new investments, including R&D, in SAF business, fibre recycling business, bio manufacturing, and other businesses.

Result: The risk is expected to be reduced, since a sales increase in next-generation businesses will be able to cover a sales decrease (35 billion yen per year) attributed to reduced demand for fossil fuels.

Cost calculation: Strategic investment for next-generation growth engine areas: 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 total engineering business, which accounts for about 90% of the Group's total sales of 606.8 billion yen in FY2022, 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 opportunities to receive orders for construction of oil and gas plants and other facilities, and a decrease in capacity to carry out projects due to an exodus of personnel to competitors, which may adversely affect the ability to adequately finance projects and secure personnel for corporate activities, leading to a decrease in sales.

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)

35,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Over the three-year period from 2020 to 2022, the average annual sales of the total engineering business, including the oil and gas sector (oil and gas resource development, petroleum refining, LNG, and chemical-related), was 350 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% (one of the standards for monetary importance of our group as a listed company, the standard for timely disclosure by financial instruments exchanges), is 350 billion yen in average sales over the past three years × 10% = 35 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 total 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), resource recycling, 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 "next-generation growth engines," and the Group announced that it plans to invest a total of 80 billion yen over five years from FY2021 to FY2025 in their establishment. An annual average of 16 billion yen is allocated to investment related to business development. Note that, in FY2021, an investment of US $40 million was made in NuScale Power, LLC, an American company that develops small modular reactors (SMRs). In FY2022, the reporting year, the company decided to make new investments in SAF business, fibre recycling business, bio manufacturing, and other businesses. The company also strengthened its disclosure of these new decarbonization-related business initiatives and its dialogue with investors.
Result: By increasing the share of sales from low-carbon, next-generation businesses, we expect to reduce the risk (35 billion yen per year) of lower sales in the total engineering business, including the oil and gas sector (oil and gas resource

development, petroleum refining, LNG, and chemical-related businesses), by avoiding reputational risk for companies that focus on oil and gas-related businesses.
Cost calculation: Strategic investment for next-generation growth engine areas: 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. The total 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 FY2022, overall sales in the oil and gas sector (domestic and overseas oil and gas 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)

35,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Over the three years from 2020 to 2022, the annual average sales in the oil and gas sector (oil and gas resource development, petroleum refining, LNG, chemical-related) was 350 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% (one of the standards for monetary materiality of our group as a listed company, the standard for timely disclosure by the Tokyo Stock Exchange), is 350 billion yen in average sales over the past three years × 10% = 35 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. The total 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 FY2022, overall sales in the oil and gas sector (domestic and overseas oil and gas 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 “next-generation growth engines,” and the Group announced that it plans to invest a total of 80 billion yen over five years from FY2021 to FY2025 in their establishment. An annual average of 16 billion yen is allocated to investment related to business development. Note that, in FY2021, an investment of US $40 million was made in NuScale Power, LLC, an American company that develops small modular reactors (SMRs). In FY2022, the reporting year, the company decided to make new investments in SAF business, fibre recycling business, bio manufacturing, and other businesses.
Result: The risk is expected to be reduced, since a sales increase in next-generation businesses will be able to cover a sales decrease (35 billion yen per year) attributed to reduced demand for petroleum refining plants.

Cost calculation: Strategic investment for next-generation growth engine areas: 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. Responding to demand in the oil and gas plant field, including CO_2 capture and storage (CCS) facilities, renewable energy such as solar power, offshore wind power, and biomass, small modular reactors (SMRs), hydrogen and ammonia, and resource recycling are all extensions of or peripheral to the Group's accumulated technologies. By focusing on expanding business in these areas, there are opportunities to increase revenues in the Middle East and Southeast Asia, the key business regions for the engineering business, as well as globally, to respond to the growing demand for low-carbon technologies and renewable energy. In the Medium-Term Management Plan announced in 2021, these products and services are defined as "next-generation growth engines," 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 Management Plan announced in 2021, the next-generation businesses in the fields of clean energy and resource recycling, including hydrogen/fuel ammonia, are defined as “next-generation growth engines,” and the Group announced that it plans to achieve additional sales in these fields of 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 resource recycling, 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]: Hydrogen / fuel ammonia play a major role as an energy carrier that does not emit CO_2 during combustion and ensure competitiveness 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 Management Plan announced in 2021, the next-generation businesses including these businesses are defined as “next-generation growth engines,” and the Group announced that it plans to invest a total of 80 billion yen over five years to establish them. 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: Strategic investment for next-generation growth engine areas: 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, 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 is expected to grow to approximately 3 million tons/year in 2030 and 30 million tons/year in 2050 in Japan alone. For our Group, which is actively involved in the social implementation of fuel ammonia, there are opportunities to increase sales by receiving orders for engineering services and providing manufacturing-related technologies. In the reporting year, the project was implemented as a NEDO GI Fund project titled “Large-scale Alkaline Water Electrolysis System Development and Green Chemical Plant Demonstration,” which also includes the manufacturing of green ammonia, with the 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 approximately 75 billion yen. The company is steadily increasing its track record in hydrogen and ammonia-related businesses, including licensing agreements with ammonia licensors and alliance agreements with an ammonia EPC contractor, as well as order receipts for aboveground plant facilities for a blue hydrogen and ammonia demonstration project in Japan, in which the CO_2 separation and capture technology jointly developed by us has been adopted.

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 Management 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 as we overcome technological challenges, 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 are defined as “next-generation growth engines,” and the Group announced that it plans to invest a total of 80 billion yen over the five years from FY2021 to FY2025 in their establishment. An annual average of 16 billion yen is allocated to investment related to business development. In FY2021, the project was accepted as a joint NEDO GI Fund project (scale of the demonstration: approximately 75 billion yen) titled “Large-scale Alkaline Water Electrolysis System Development and Green Chemical Plant Demonstration,” which also includes the manufacturing of green ammonia, with the expected project period from FY2021 to FY2030. In FY2022, the reporting year, we signed a license agreement with an ammonia licensor and an alliance agreement with an ammonia EPC contractor to build partnerships for commercialization. In addition, we have received an order for the construction of the aboveground plant facilities for a blue hydrogen and ammonia demonstration project in Japan, which aims to be the world’s first integrated plant to operate from blue hydrogen production to hydrogen utilization, and our jointly developed CO_2 separation and capture technology has been adopted for the plant.
Result: Through establishing a domestic hydrogen production base using surplus renewable energy, *etc.*, reducing costs to capture leading overseas markets, overcoming technological challenges such as the development of an integrated control system that optimizes the entire process, establishing partnerships for commercialization, and winning construction projects and providing licenses, we expect to increase sales by providing solutions to the growing demand for fuel ammonia.
Cost calculation: Strategic investment for next-generation growth engine areas: 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 resource recycling 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 increase its sales in the future by responding to a demand increase in a timely manner through fully leveraging its maximizing engineering knowledge and experience to sequentially acquire technologies that respond to these issues (such as the proprietary process for waste plastic gasification (EUP)) and working actively to commercialize them.
In the Medium-Term Management Plan announced in 2021, waste plastic/waste fibre recycling and SAF are defined as fields of the next-generation growth engines, and resource recycling is designated as one of the main business domains 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 Management Plan announced in 2021, the next-generation businesses in the fields of clean energy and resource recycling, including SAF businesses, are defined as “next-generation growth engines,” and the Group announced that it plans to expand 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 resource recycling. 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 actively 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 actively to commercialize them.
[Waste plastic 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.
[Waste fibre recycling]: We are planning to license chemical recycling technology for polyester with several partners.
[SAF]: We will work to build a value chain to produce domestic SAF by hydrogenating used cooking oil.
Action: In the Medium-Term Management Plan announced in 2021, the next-generation businesses including these businesses are defined as “next-generation growth engines,” 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 FY2022 of the reporting year, the following actions were taken.
[Waste plastic recycling]
• Signed a basic agreement to study collaboration on a hydrogen production business using waste plastic gasification facilities near the Port of Nagoya, Aichi Prefecture.

[Waste fibre recycling]
• Report of the industry-academia collaboration working group for building a sustainable textile industry ecosystem released
• Established RePEaT Co., Ltd., a joint venture for the licensing of chemical recycling technology for polyester.
• Signed an agreement for licensing chemical recycling technology for polyester
[SAF]
• Basic agreement on cooperation for commercialization of domestically produced SAF signed with three airports in Kansai area.
• Established a new company, SAFFAIRE SKY ENERGY, to realize the first large-scale production of domestically produced SAF in Japan.
• Signed a basic agreement on cooperation for recycling waste cooking oil into domestically produced SAF (Marunouchi area restaurants, *etc.*).
• Signed an alliance agreement with another contractor for the receipt of an order for construction and implementation of a domestic SAF manufacturing plant project.
Results: Increased demand for resource recycling, including chemical recycling and SAF, will expand business opportunities, and increased sales are expected by providing solutions in a timely manner. In particular, with regard to SAF, we have concluded multiple alliances for the establishment of a new company to produce domestically produced SAF and for the recovery of waste cooking oil as a raw material, and is making steady progress with a view to commercialization in FY2025 and beyond. For waste fibre recycling, a license agreement has been signed for technology owned by RePEaT.
Cost calculation: Strategic investment for next-generation growth engine areas: 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 climate transition plan that aligns with a 1.5°C world?

Row 1

Climate transition plan

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

Explain why your organization does not have a climate 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 has identified its own reduction plan. These plans are scheduled to be compiled as a reduction execution plan for the entire Group within FY2023.

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 and assumptions 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	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

scenarios RCP 6.0			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. Input data for the scenario analysis included current values in terms of increased severity of extreme weather events such as cyclones and floods, higher average temperatures, higher sea levels, and changes in precipitation patterns and extremes in weather patterns, as well as future values shown assuming a scenario with more severe physical risks. 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 total engineering business, centred 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 purpose and focal questions of scenario analysis are to understand the impact on the environment in which the orders were received and business execution in this business area, including the impact on demand for oil and gas-related plants, to reflect the response strategy in the Group’s strategy including the Medium-Term Management 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 centred 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 six companies: JGC HOLDINGS CORPORATION (JHD), 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)
[Transition scenarios In the IEA-SDS scenario, where transition risks become severe toward 2040, which is the milestone on the transition to 2050 and also the time horizon of the Group’s long-term business vision, the introduction of a carbon price, tighter 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 gasoline demand) are risk factors because they will reduce demand for oil and gas plant construction, thus reduce opportunities for oil and gas plant construction, the core business of the Group’s total engineering business. 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 resource recycling, 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.

[Physical scenarios] In Scenario RCP6.0, where transition risks become severe toward 2040, which is the milestone on the transition to 2050 and also the time horizon of the Group's long-term business vision, 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 labour 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 total 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 Management 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	Description of influence

	opportunities influenced your strategy in this area?	
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 total 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 Management Plan for the five years from FY2021. 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). The total 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 Management 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 CCUS (CO_2 capture, utilization, and storage) business unit within the Sustainability Co-Creation Office, which promotes sustainability-related business in JGC HOLDINGS CORPORATION. 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 an example of the impact of strategic decision-making, we are reviewing our Group's CCS business execution structure as part of our Group's value chain strategy, establishing a new CCUS (CO_2 capture, utilization,

		and storage) business unit within our Sustainability Co-Creation Office, and expanding our staff in FY2022. 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. 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 Management Plan announced in May 2021, the Group substantially increased its investment in low-carbon and decarbonization-related research and development, and allocated it to demonstration tests in FY2022. 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 total 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 Management Plan that is being formulated, we intend to substantially increase the investment in low- and decarbonization-related research and development. In the Medium-Term Management 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 strengthening the organizational 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 total 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 Management Plan

		announced in May 2021, and the necessary strategic investments were scheduled to be made. Time Horizon: Medium to long term [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 Management Plan for the period from 2016 to 2020, we established a system to commercialize these clean energy and resource recycling-related technologies as a steppingstone 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 Management 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 resource recycling.

C3.5

(C3.5) In your organization's financial accounting, do you identify spending/revenue that is aligned with your organization's climate transition?

	Identification of spending/revenue that is aligned with your organization's climate transition
Row 1	No, but we plan to in the next two years

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

Is this a science-based target?
Yes, we consider this a science-based target, but we have not committed to seek validation of this target by the Science Based Targets initiative within the next two years

Target ambition
2°C aligned

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, Category 1: Purchased goods and services emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 2: Capital goods emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 4: Upstream transportation and distribution emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 5: Waste generated in operations emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 6: Business travel emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 7: Employee commuting emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 8: Upstream leased assets emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 9: Downstream transportation and distribution emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 10: Processing of sold products emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 11: Use of sold products emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 12: End-of-life treatment of sold products emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 13: Downstream leased assets emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 14: Franchises emissions covered by target (metric tons CO2e)

Base year Scope 3, Category 15: Investments emissions covered by target (metric tons CO2e)

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

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

Base year total 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, Category 1: Purchased goods and services emissions covered by target as % of total base year emissions in Scope 3, Category 1: Purchased goods and services (metric tons CO2e)

Base year Scope 3, Category 2: Capital goods emissions covered by target as % of total base year emissions in Scope 3, Category 2: Capital goods (metric tons CO2e)

Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target as % of total base year emissions in Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

Base year Scope 3, Category 4: Upstream transportation and distribution covered by target as % of total base year emissions in Scope 3, Category 4: Upstream transportation and distribution (metric tons CO2e)

Base year Scope 3, Category 5: Waste generated in operations emissions covered by target as % of total base year emissions in Scope 3, Category 5: Waste generated in operations (metric tons CO2e)

Base year Scope 3, Category 6: Business travel emissions covered by target as % of total base year emissions in Scope 3, Category 6: Business travel (metric tons CO2e)

Base year Scope 3, Category 7: Employee commuting covered by target as % of total base year emissions in Scope 3, Category 7: Employee commuting (metric tons CO2e)

Base year Scope 3, Category 8: Upstream leased assets emissions covered by target as % of total base year emissions in Scope 3, Category 8: Upstream leased assets (metric tons CO2e)

Base year Scope 3, Category 9: Downstream transportation and distribution emissions covered by target as % of total base year emissions in Scope 3, Category 9: Downstream transportation and distribution (metric tons CO2e)

Base year Scope 3, Category 10: Processing of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 10: Processing of sold products (metric tons CO2e)

Base year Scope 3, Category 11: Use of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 11: Use of sold products (metric tons CO2e)

Base year Scope 3, Category 12: End-of-life treatment of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 12: End-of-life treatment of sold products (metric tons CO2e)

Base year Scope 3, Category 13: Downstream leased assets emissions covered by target as % of total base year emissions in Scope 3, Category 13: Downstream leased assets (metric tons CO2e)

Base year Scope 3, Category 14: Franchises emissions covered by target as % of total base year emissions in Scope 3, Category 14: Franchises (metric tons CO2e)

Base year Scope 3, Category 15: Investments emissions covered by target as % of total base year emissions in Scope 3, Category 15: Investments (metric tons CO2e)

Base year Scope 3, Other (upstream) emissions covered by target as % of total base year emissions in Scope 3, Other (upstream) (metric tons CO2e)

Base year Scope 3, Other (downstream) emissions covered by target as % of total base year emissions in Scope 3, Other (downstream) (metric tons CO2e)

Base year total 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)

82,943

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

51,061

Scope 3, Category 1: Purchased goods and services emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 2: Capital goods emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 4: Upstream transportation and distribution emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 5: Waste generated in operations emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 6: Business travel emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 7: Employee commuting emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 8: Upstream leased assets emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 9: Downstream transportation and distribution emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 10: Processing of sold products emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 11: Use of sold products emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 12: End-of-life treatment of sold products emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 13: Downstream leased assets emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 14: Franchises emissions in reporting year covered by target (metric tons CO2e)

Scope 3, Category 15: Investments emissions in reporting year covered by target (metric tons CO2e)

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

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

Total 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)

134,004

Does this target cover any land-related emissions?

No, it does not cover any land-related emissions (*e.g.,* non-FLAG SBT)

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

-1.0999954733

Target status in reporting year

Underway

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

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.) declared 2050 Carbon Neutrality in the Group's long-term business vision announced in May 2021.
Net-zero targets for Scope 1 and 2 emissions to be achieved by 2050 were set with 2020 as the base year.
Compared with the combined Scope 1 and 2 emissions of 132,546 tons in FY2020, those of FY2022 were 134,004 tons, up 1% 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

Is this a science-based target?

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

Target ambition

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 CO2e 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, Category 1: Purchased goods and services (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 2: Capital goods (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 4: Upstream transportation and distribution (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 5: Waste generated in operations (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 6: Business travel (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 7: Employee commuting (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 8: Upstream leased assets (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 9: Downstream transportation and distribution (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 10: Processing of sold products (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 11: Use of sold products (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 12: End-of-life treatment of sold products (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 13: Downstream leased assets (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 14: Franchises (metric tons CO2e per unit of activity)

Intensity figure in base year for Scope 3, Category 15: Investments (metric tons CO2e per unit of activity)

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

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

Intensity figure in base year for total 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, Category 1: Purchased goods and services covered by this Scope 3, Category 1: Purchased goods and services intensity figure

% of total base year emissions in Scope 3, Category 2: Capital goods covered by this Scope 3, Category 2: Capital goods intensity figure

% of total base year emissions in Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) covered by this Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) intensity figure

% of total base year emissions in Scope 3, Category 4: Upstream transportation and distribution covered by this Scope 3, Category 4: Upstream transportation and distribution intensity figure

% of total base year emissions in Scope 3, Category 5: Waste generated in operations covered by this Scope 3, Category 5: Waste generated in operations intensity figure

% of total base year emissions in Scope 3, Category 6: Business travel covered by this Scope 3, Category 6: Business travel intensity figure

% of total base year emissions in Scope 3, Category 7: Employee commuting covered by this Scope 3, Category 7: Employee commuting intensity figure

% of total base year emissions in Scope 3, Category 8: Upstream leased assets covered by this Scope 3, Category 8: Upstream leased assets intensity figure

% of total base year emissions in Scope 3, Category 9: Downstream transportation and distribution covered by this Scope 3, Category 9: Downstream transportation and distribution intensity figure

% of total base year emissions in Scope 3, Category 10: Processing of sold products covered by this Scope 3, Category 10: Processing of sold products intensity figure

% of total base year emissions in Scope 3, Category 11: Use of sold products covered by this Scope 3, Category 11: Use of sold products intensity figure

% of total base year emissions in Scope 3, Category 12: End-of-life treatment of sold products covered by this Scope 3, Category 12: End-of-life treatment of sold products intensity figure

% of total base year emissions in Scope 3, Category 13: Downstream leased assets covered by this Scope 3, Category 13: Downstream leased assets intensity figure

% of total base year emissions in Scope 3, Category 14: Franchises covered by this Scope 3, Category 14: Franchises intensity figure

% of total base year emissions in Scope 3, Category 15: Investments covered by this Scope 3, Category 15: Investments intensity figure

% of total base year emissions in Scope 3, Other (upstream) covered by this Scope 3, Other (upstream) intensity figure

% of total base year emissions in Scope 3, Other (downstream) covered by this Scope 3, Other (downstream) intensity figure

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

0.000000136

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

0.000000084

Intensity figure in reporting year for Scope 3, Category 1: Purchased goods and services (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 2: Capital goods (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 4: Upstream transportation and distribution (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 5: Waste generated in operations (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 6: Business travel (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 7: Employee commuting (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 8: Upstream leased assets (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 9: Downstream transportation and distribution (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 10: Processing of sold products (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 11: Use of sold products (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 12: End-of-life treatment of sold products (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 13: Downstream leased assets (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 14: Franchises (metric tons CO2e per unit of activity)

Intensity figure in reporting year for Scope 3, Category 15: Investments (metric tons CO2e per unit of activity)

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

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

Intensity figure in reporting year for total 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)

0.000000221

Does this target cover any land-related emissions?

No, it does not cover any land-related emissions (e.g., non-FLAG SBT)

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

91.8032786885

Target status in reporting year

Underway

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 2023.

As compared with carbon intensity of 0.000000305 tons/yen in FY2020, those of FY2022 were 0.000000221 tons/yen, down 28% 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

98.4

Target year

2022

Figure or percentage in target year

99

Figure or percentage in reporting year

99

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

100

Target status in reporting year

Achieved

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

List the actions which contributed most to achieving this target

In FY2022, a large amount of high-recycled concrete waste, asphalt shavings, wood waste, and construction sludge were discharged, driving the overall recycling rate, enabling us to achieve the target value.

Target reference number

Oth 2

Year target was set

2018

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

2018

Figure or percentage in base year

100.3

Target year

2022

Figure or percentage in target year

110.3

Figure or percentage in reporting year

110.3

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

100

Target status in reporting year

Achieved

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

List the actions which contributed most to achieving this target

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. In FY2022, while we took measures to reduce CO_2 emissions, such as updating heat exchangers, electrification of forklifts, and use of LED lighting, the average rate of change of intensity over the five-year period from 2018 to 2022 was 100.1% compared to the previous year, failing to meet the 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

Achieved

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

List the actions which contributed most to achieving this target

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 changes from 2017 to 2021 was 102.8% year-on-year, failing to achieve the target (reported last year's result, as the figures for FY2022, the reporting year, are still being tabulated).
In FY2022, energy-saving equipment was introduced.

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 two 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*	1	12.7
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)

12.7

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)

0

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. In FY2022, we implemented activities to reduce electricity consumption and heat/cooling consumption, such as turning off lights and air conditioning when employees return home, and as part of these activities, LED lighting was installed on some floors, resulting in a 12.7-ton (approximate) reduction in CO_2 emissions.

Initiative category & Initiative type

Company policy or behavioural 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 April 2021 to March 2026 and has set annual carbon intensity targets. In FY2022, CO_2 emissions from electricity, fuel, gas, and water use were increased by 1,120 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. On the other hand, the CO_2 emissions per activity hour (carbon intensity) decreased by about 30% compared to the previous year, because the activity time increased significantly from the previous year.

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 electricity 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 Management Plan, we intend to substantially increase our 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 Office Activities EMS 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 our materiality, construction projects and related initiatives that contribute to climate-related issues, being the mainstream of the business of the Group, 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

Small-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 Scope 3 calculation, the transportation of modules (large construction structures), which was included in Category 9 the previous year, was changed to be included in Category 4 in accordance with the fact that our Group is a shipper.

C5.1c

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

	Base year recalculation	Base year emissions recalculation policy, including significance threshold	Past years' recalculation
Row 1	No, because the impact does not meet our significance threshold	In its new Medium-Term Management 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

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

48,221

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 Catalysts 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, 2021

Base year end

March 31, 2022

Base year emissions (metric tons CO2e)

22,183

Comment

Calculated by multiplying the amount of activity (energy consumption) used in the calculation of Scope 1 and 2 emissions by the carbon intensity for Category 3 as described in the carbon intensity database.

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 Catalysts 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, 2021

Base year end

March 31, 2022

Base year emissions (metric tons CO2e)

3,990

Comment

Calculated by multiplying the amount of transportation expense paid for each mode of transportation (passenger aircraft, passenger railways, passenger ship, and automobiles) used during commuting by the carbon intensity.

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

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

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

In the engineering business, which accounts for 80% of the Group's sales, there is no downstream transportation because the primary business is to construct and deliver plants at customers' sites. Accordingly, this is 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

In the engineering business, which accounts for 80% of the Group's sales, there is no processing of products sold because the primary business is to construct and deliver plants at customers' sites. Accordingly, this is 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

Not disclosed because it is customer-specific information.

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

Base year start

April 1, 2021

Base year end

March 31, 2022

Base year emissions (metric tons CO2e)

41,094

Comment

For engineering business, emissions from the fuel consumption of heavy equipment required to dismantle the plant (including fuel used to dismantle structures and equipment) as calculated based on the quantity of concrete, are considered.

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

The Group's main businesses are engineering and functional materials manufacturing, and there are no leased assets owned for rental business and leased to other companies by us.

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's main businesses are engineering and functional materials manufacturing, and it does not engage in any business that falls into the category of franchise.

Scope 3 category 15: Investments

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO2e)

Comment

The Group's main businesses are engineering and functional materials manufacturing, and it does not engage in making investments.

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)

82,943

Start date

April 1, 2022

End date

March 31, 2023

Comment

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)

87,856

Start date

April 1, 2021

End date

March 31, 2022

Comment

Past year 2

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

51,061

Scope 2, market-based (if applicable)

49,245

Start date

April 1, 2022

End date

March 31, 2023

Comment

Past year 1

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 2

Scope 2, location-based

48,221

Scope 2, market-based (if applicable)

48,221

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, Scope 2 or Scope 3 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, Scope 2, or Scope 3 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source of excluded emissions

Emissions made by business activities in overseas subsidiaries and business offices of JGC CORPORATION

Emissions from business activities of subsidiaries and regional offices of JGC JAPAN CORPORATION

Scope(s) or Scope 3 category(ies)

Scope 1
Scope 2 (market-based)
Scope 3: Purchased goods and services
Scope 3: Capital goods
Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)
Scope 3: Upstream transportation and distribution
Scope 3: Waste generated in operations

Scope 3: Business travel
Scope 3: Employee commuting
Scope 3: Upstream leased assets
Scope 3: Downstream transportation and distribution
Scope 3: Processing of sold products
Scope 3: Use of sold products
Scope 3: End-of-life treatment of sold products
Scope 3: Downstream leased assets
Scope 3: Franchises
Scope 3: Investments
Scope 3: Other (upstream)
Scope 3: Other (downstream)

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Relevance of market-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of Scope 3 emissions from this source

Emissions are not relevant

Date of completion of acquisition or merger

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

2

Estimated percentage of total Scope 3 emissions this excluded source represents

5

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, in consideration of their business being identical to other total engineering business, their emissions are estimated to be approximately 9% of the entire engineering business companies, using their proportion in sales.

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 Scope 1 and 2 emissions. Since the sales of engineering subsidiaries not included in the disclosure represent approximately 9% of the total sales of engineering business companies, the emissions are estimated to be 0.2 × 0.09 × 100 = approximately 2%.
The Scope 3 emissions of our total engineering business account for approximately 60% of the Group's total Scope 3 emissions excluding Category 11, where emissions increase or decrease significantly from year to year. Since the sales of engineering subsidiaries not included in the disclosure represent approximately 9% of the total sales of engineering business companies, the emissions are estimated to be 0.6 × 0.09 × 100 = approximately 5%.

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)

854,543

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)

25,614

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)

25,450

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)

23,612

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)

15,553

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)

6,670

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)

4,766

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 total engineering business leases construction equipment and vehicles, and, in some cases, the headquarters and other operating companies lease buildings and computers, but these are emissions associated with operations and are reported under Scope 1 and 2.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

In the engineering business, which accounts for 80% of the Group's sales, there is no downstream transportation because the primary business is to construct and deliver plants at customers' sites. Accordingly, it is determined that there is no relevance, as it is estimated to be less than 5% of scope 3 emissions.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

In the engineering business, which accounts for 80% of the Group's sales, there is no processing of products sold because the primary business is to construct and deliver plants at customers' sites. Accordingly, it is determined that there is no relevance, 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

Not disclosed because it is customer-specific information.

End of life treatment of sold products

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

19,569

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 from the operation of leased assets owned by the Company as a leasing business and leased to other companies are subject to the calculation, but, since the Group's main businesses are engineering and functional materials manufacturing, there are no businesses that fall into this category.

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

The Group's main businesses are engineering and functional materials manufacturing, and it does not engage in any business that falls into the category of franchise.

Investments

Evaluation status

Not relevant, explanation provided

Please explain

The Group's main businesses are engineering and functional materials manufacturing, and it does not engage in any business that falls into the category of investment businesses and 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, 2021

End date

March 31, 2022

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

525,899

Scope 3: Capital goods (metric tons CO2e)

20,596

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

22,183

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

5,528

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

23,964

Scope 3: Business travel (metric tons CO2e)

2,585

Scope 3: Employee commuting (metric tons CO2e)

3,990

Scope 3: Upstream leased assets (metric tons CO2e)

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

498

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)

41,094

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

Past year 2

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)

22,183

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)

161,496

Scope 3: Employee commuting (metric tons CO2e)

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

0.000000221

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

134,004

Metric denominator

unit total revenue

Metric denominator: Unit total

606,890,000,000

Scope 2 figure used

Location-based

% change from previous year

0.71

Direction of change

Decreased

Reason(s) for change

Other, please specify

Please explain

Compared to the previous year, Scope 1 decreased by about 6%, while Scope 2 increased by about 11%, and the absolute volume of Scope 1+2 increased slightly by 0.3%. On the other hand, sales as the denominator decreased by more than 41%, resulting in a decrease of approximately 30% 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/area/region.

Country/area/region	Scope 1 emissions (metric tons CO2e)
China	11,077
Thailand	196
Algeria	160
Saudi Arabia	424
Iraq	2,822
Japan	68,264

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)
Total Engineering Business	19,248
Functional Materials Manufacturing Business	63,683
Environmental Consulting Business	13

C7.5

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

Country/area/region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
China	9,393	9,393
Thailand	152	152
Algeria	79	79
Taiwan, China	3	3
Iraq	1,081	1,081
Japan	40,353	38,537

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)
Total Engineering Business	15,159	15,159
Functional Materials Manufacturing Business	35,841	34,022
Environmental Consulting Business	60	64

C7.7

(C7.7) Is your organization able to break down your emissions data for any of the subsidiaries included in your CDP response?

Yes

C7.7a

(C7.7a) Break down your gross Scope 1 and Scope 2 emissions by subsidiary.

Subsidiary name
JGC CORPORATION

Primary activity
Energy infrastructure construction

Select the unique identifier(s) you are able to provide for this subsidiary
No unique identifier

ISIN code – bond

ISIN code – equity

CUSIP number

Ticker symbol

SEDOL code

LEI number

Other unique identifier

Scope 1 emissions (metric tons CO2e)
14,679

Scope 2, location-based emissions (metric tons CO2e)
10,708

Scope 2, market-based emissions (metric tons CO2e)
10,708

Comment

Subsidiary name

JGC JAPAN CORPORATION

Primary activity

Energy infrastructure construction

Select the unique identifier(s) you are able to provide for this subsidiary

No unique identifier

ISIN code – bond

ISIN code – equity

CUSIP number

Ticker symbol

SEDOL code

LEI number

Other unique identifier

Scope 1 emissions (metric tons CO2e)

4,568

Scope 2, location-based emissions (metric tons CO2e)

956

Scope 2, market-based emissions (metric tons CO2e)

956

Comment

Subsidiary name

JGC Catalysts and Chemicals Ltd.

Primary activity

Inorganic base chemicals

Select the unique identifier(s) you are able to provide for this subsidiary

No unique identifier

ISIN code – bond

ISIN code – equity

CUSIP number

Ticker symbol

SEDOL code

LEI number

Other unique identifier

Scope 1 emissions (metric tons CO2e)

62,807

Scope 2, location-based emissions (metric tons CO2e)

25,059

Scope 2, market-based emissions (metric tons CO2e)

22,844

Comment

Subsidiary name

Japan Fine Ceramics Co., Ltd.

Primary activity

Inorganic base chemicals

Select the unique identifier(s) you are able to provide for this subsidiary

No unique identifier

ISIN code – bond

ISIN code – equity

CUSIP number

Ticker symbol

SEDOL code

LEI number

Other unique identifier

Scope 1 emissions (metric tons CO2e)

876

Scope 2, location-based emissions (metric tons CO2e)

10,782

Scope 2, market-based emissions (metric tons CO2e)

11,178

Comment

Subsidiary name

JAPAN NUS CO., LTD.

Primary activity

Other professional services

Select the unique identifier(s) you are able to provide for this subsidiary

No unique identifier

ISIN code – bond

ISIN code – equity

CUSIP number

Ticker symbol

SEDOL code

LEI number

Other unique identifier

Scope 1 emissions (metric tons CO2e)

13

Scope 2, location-based emissions (metric tons CO2e)

60

Scope 2, market-based emissions (metric tons CO2e)

64

Comment

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compared 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 in emissions	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=0/133,573×100=0%
Other emissions reduction activities	431	Increased	0.32	(Change from previous year in Scope 1 and 2 emissions) / (Scope 1 and 2 emissions in the previous fiscal year) ×100=431/133,573×100=0.32%
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=0/133,573×100=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=0/133,573×100=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=0/133,573×100=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=0/133,573×100=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=0/133,573×100=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=0/133,573×100=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=0/133,573×100=0%
Unidentified	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=0/133,573×100=0%
Other	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=0/133,573×100=0%

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	Yes
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	433,495	433,495
Consumption of purchased or acquired electricity		82	100,893	100,975

Consumption of purchased or acquired steam		0	2,141	2,141
Consumption of purchased or acquired cooling		0	4,158	4,158
Consumption of self-generated non-fuel renewable energy		0		0
Total energy consumption		82	540,687	540,769

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

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

Comment

Other biomass

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

Comment

Other renewable fuels (e.g., renewable hydrogen)

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

Comment

Coal

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

Comment

Oil

Heating value

HHV

Total fuel MWh consumed by the organization

34,529

MWh fuel consumed for self-generation of electricity

21,031

MWh fuel consumed for self-generation of heat

13,497

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

Comment

Gas

Heating value

HHV

Total fuel MWh consumed by the organization

398,968

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

240,635

MWh fuel consumed for self-generation of steam

158,333

MWh fuel consumed for self-generation of cooling

0

Comment

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

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

Comment

Total fuel

Heating value

HHV

Total fuel MWh consumed by the organization

433,497

MWh fuel consumed for self-generation of electricity

21,031

MWh fuel consumed for self-generation of heat

254,133

MWh fuel consumed for self-generation of steam

158,333

MWh fuel consumed for self-generation of cooling

0

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	20,828	20,828	0	0
Heat	254,078	254,078	0	0
Steam	158,333	158,333	0	0
Cooling	0	0	0	0

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.

Country/area of low-carbon energy consumption

Japan

Sourcing method

Retail supply contract with an electricity supplier (retail green electricity)

Energy carrier

Electricity

Low-carbon technology type

Hydropower (capacity unknown)

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

82

Tracking instrument used

Contract

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

Japan

Are you able to report the commissioning or re-powering year of the energy generation facility?

No

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

Comment

TEPCO Energy Partner's Menu A (using only electricity with zero adjusted emission factor, hydroelectric power, etc.)

C8.2g

(C8.2g) Provide a breakdown by country/area of your non-fuel energy consumption in the reporting year.

Country/area

Japan

Consumption of purchased electricity (MWh)

88,682

Consumption of self-generated electricity (MWh)

5,622

Consumption of purchased heat, steam, and cooling (MWh)

6,300

Consumption of self-generated heat, steam, and cooling (MWh)

362,148

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

462,752

Country/area

Algeria

Consumption of purchased electricity (MWh)

107

Consumption of self-generated electricity (MWh)

642

Consumption of purchased heat, steam, and cooling (MWh)

0

Consumption of self-generated heat, steam, and cooling (MWh)

0

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

749

Country/area

China

Consumption of purchased electricity (MWh)

11,470

Consumption of self-generated electricity (MWh)

958

Consumption of purchased heat, steam, and cooling (MWh)

0

Consumption of self-generated heat, steam, and cooling (MWh)

50,006

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

62,434

Country/area

Thailand

Consumption of purchased electricity (MWh)

256

Consumption of self-generated electricity (MWh)

791

Consumption of purchased heat, steam, and cooling (MWh)

0

Consumption of self-generated heat, steam, and cooling (MWh)

0

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

1,047

Country/area

Iraq

Consumption of purchased electricity (MWh)

457

Consumption of self-generated electricity (MWh)

11,362

Consumption of purchased heat, steam, and cooling (MWh)

0

Consumption of self-generated heat, steam, and cooling (MWh)

2

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

11,821

Country/area

Saudi Arabia

Consumption of purchased electricity (MWh)

0

Consumption of self-generated electricity (MWh)

1,453

Consumption of purchased heat, steam, and cooling (MWh)

0

Consumption of self-generated heat, steam, and cooling (MWh)

256

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

1,709

Country/area

Taiwan, China

Consumption of purchased electricity (MWh)

5

Consumption of self-generated electricity (MWh)

0

Consumption of purchased heat, steam, and cooling (MWh)

0

Consumption of self-generated heat, steam, and cooling (MWh)

0

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

5

C9. Additional metrics

C9.1

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

Description

Waste

Metric value

99

Metric numerator

Amount recycled (t)

Metric denominator (intensity metric only)

Total amount of industrial waste (t)

% change from previous year

1.01

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 analysed. The target value for FY2022 was 97%, continuing to meet the target value from the previous year. The achievement of this year’s target was largely due to the high recycling rate of concrete waste, asphalt shavings, wood waste, and construction sludge.

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, 2022

Period end date

March 31, 2023

% of total Scope 1 emissions covered by tax

82

Total cost of tax paid

19,728,296

Comment

Calculated by multiplying domestic fuel-derived CO_2 emissions (Scope 1) by the currently added Global Warming Countermeasure Tax (289 yen/tCO_2). 68,264t-CO_2×289 yen/t-CO_2＝19,728,296 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 the 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, so 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. For example, in order to reduce utility usage over the five years, including FY2022, the company is introducing low-emission construction equipment, promoting the cessation of idling/revving, conserving energy use, using solar power generation, carpooling for commuting, and introducing hybrid and electric vehicles and, in each fiscal year, the company analyses whether the carbon intensity target can be achieved and, when applicable, the causes of failure to meet the target.

Results: In FY2022, the carbon intensity from energy sources was 1.35 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 toward FY2025 and reduce the impact of the Japan Carbon Tax on the operations and activities of the Group.

C11.2

(C11.2) Has your organization cancelled any project-based carbon credits within the reporting year?

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 behaviour)

Details of engagement

Run an engagement campaign to educate suppliers about climate change

% of suppliers by number

45

% total procurement spends (direct and indirect)

45

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

Rationale for the coverage of your engagement

Total engineering business accounts for 90% of the sales of the Group. In the total engineering business of the Group, the Group works with subcontractors to develop construction plans for sites and to procure construction materials, equipment, and labour through subcontractors, so subcontractors play an important role on sites. We chose subcontractors as target in our engagement activities, because they are essential in our

supply chain, our production activities being impossible without them, and they play an equally important role in responding to climate change, including CO_2 reduction activities.
Since the cost of construction at the sites accounts for approximately 50% of the total engineering business, which accounts for 90% of the Group's sales, the ratio of subcontractor-related expenditure is calculated to be 100% x 0.9 x 0.5 = 45%, which is used as the coverage in terms of procurement costs. The same calculation was used for the percentage of the number of suppliers, which is assumed to be 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 between the Group and subcontractors, and the achievement of the target carbon intensity of 0.7 kg-CO_2/MH (emissions/unit working hours) at construction sites in Japan is regarded as a measure of success. As a specific example of the impact of this engagement, at large construction sites in Japan, the Group issues "Construction Site Environmental Management Plans" to subcontractors and provides environmental education, including environmental policies, to construction workers who enter the site. In addition, in accordance with the "Environmental Targets and Environmental Implementation Plan" also issued by the Group to subcontractors, environmental items are monitored and recorded using the "Checklist for Confirmation of the Status of Environmental Consideration around Site Offices and Construction Sites" and the "Low Emission Construction Equipment, Heavy Equipment, and Transport Vehicle Operation Rate Survey Chart and Idling Stop List." As a result of this engagement, daily operations and actions at construction sites have changed, including stopping idling/revving of engines and conserving energy, which enables the execution of construction work that leads to CO_2 emission reduction as well as activities that give consideration to the vicinity of construction sites. On the other hand, in FY2022, despite the implementation of the above initiatives, a coincidence of peaks in construction works at a number of large sites where large, heavy equipment consuming high volumes of fossil fuel was indispensable and reliance on generators was unavoidable due to lack of grid power supply, increased emissions, resulting in 1.35 kg-CO_2/MH, although a decrease from FY2021, still failing to achieve the target of 0.7 kg-CO_2/MH. We will continue this engagement to reduce CO_2 emissions at 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. We assumed the percentage of the number of customers is also 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, while gaining their understanding.

Impact of engagement, including measures of success

In response to the social issue of reducing greenhouse gas emissions by reducing the environmental impact of fossil energy and improving global energy efficiency, the Group is actively working to construct fossil energy plants with a smaller environmental impact and to improve energy efficiency and conservation at energy plants, while engaging in dialogue with customers, including proposals from the Group. The measure of success is the reduction of CO_2 emissions compared to before the proposal. As an impact of this engagement, in the reporting year, “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. Since large LNG plants emit a large amount of CO_2 during operation, we have actively considered adopting this technology. 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. In addition, joint studies and memoranda of understanding for collaboration in the implementation of carbon dioxide capture and storage (CCS) in several countries were signed.

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, or 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. We are, as well, strengthening cooperation with airlines, which are users of SAF, and relevant government agencies involved in aircraft fuel supply. In November 2022, a new joint venture company, SAFFAIRE SKY ENERGY, was established with two related companies (Cosmo Oil Co., Ltd. and REVO International Inc.) to manufacture and supply domestically produced SAF from waste cooking oil.
Result: Through these efforts, construction of a SAF production facility has begun at Cosmo Oil's Sakai Refinery in Sakai City, Osaka Prefecture, and is scheduled to be completed by the end of 2024, with operations scheduled to begin in the second half of FY2024 or early FY2025, and is expected to contribute to stable supply of SAF.

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

External engagement activities that could directly or indirectly influence policy, law, or regulation that may impact the climate

Yes, we engage directly with policy makers

Yes, our membership of/engagement with trade associations could influence policy, law, or regulation that may impact the climate

Yes, we fund organizations or individuals whose activities could influence policy, law, or regulation that may 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)

set_disclaimer_zeroemi_challenge.pdf

Describe the process(es) your organization has in place to ensure that your external engagement activities are consistent with your climate commitments and/or climate transition plan

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 its activities 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 Fuel Ammonia Promotion Council 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?

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

“Public-Private Fuel Ammonia Promotion Council”
Shaping of measures to achieve carbon neutrality by 2050

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

Low-carbon products and services

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

Alternative fuels

Policy, law, or regulation geographic coverage

National

Country/area/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 Fuel Ammonia Promotion Council" in October 2020. We participated as an initial member at the first meeting and continued to be a member in 2022. 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 on this policy, law, or regulation is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

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 manufacturing 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.

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

Low-carbon products and services

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

Alternative fuels

Policy, law, or regulation geographic coverage

National

Country/area/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

Our company is a member of the "Public-Private Council for the Promotion of Sustainable Aviation Fuels (SAF) Introduction" established in April 2022, where the Ministry of Economy, Trade and Industry (METI) and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) serve as the secretariat and the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the Ministry of the Environment (MOE) also participate as a member. At the first public-private council meeting held in April 2022, in addition to introducing our group's initiatives, we submitted three requests: "strengthening domestic resource recycling," "establishing a CO_2 reduction rate standard for SAF and providing incentives based on the reduction rate," and "providing support for capital investment." Through this council and others, we are working with the national and local governments to resolve technical and economic issues related to mass production 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 on this policy, law, or regulation is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

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

"GX League (led by the Ministry of Economy, Trade and Industry)"
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.

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

Carbon pricing, taxes, and subsidies

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

Carbon taxes
Emissions trading schemes

Policy, law, or regulation geographic coverage

National

Country/area/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. Furthermore, in the "Rule Formation for Market Creation," one of the GX League's initiatives to demonstrate a mechanism for rule formation in the public and private sectors, the "GX Business Working Group" was established with six leader companies and 73 member companies including our company, with Nomura Holdings, Inc. as the organizer. The purpose of this program is to establish a system whereby the opportunity aspect of Japanese companies' contribution to climate change (*e.g.*, emission reductions by products and services provided to the market) is appropriately assessed in order to achieve carbon neutrality for the world as a whole.

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 on this policy, law, or regulation is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

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

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

Low-carbon products and services

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

Alternative fuels

Policy, law, or regulation geographic coverage

National

Country/area/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 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 part of the "Development of Fuel Ammonia Utilization and Production Technology/Technology Development for Blue Ammonia Production," which was adopted as a project subsidized by the New Energy and Industrial Technology Development Organization (NEDO), the group has received order for and is promoting construction work for ground facilities related to the "Integrated Demonstration Test for Blue Hydrogen and Ammonia Production and Utilization" conducted by INPEX Corporation. The facility will produce 700 tons of hydrogen per year, with a portion of the hydrogen produced to be used for ammonia production and the remainder for hydrogen power generation. The CO_2 produced as a by-product of hydrogen and ammonia production is planned to be injected (CCUS) into a reservoir in the same area, where gas production has already been terminated, using the high-pressure regenerative CO_2 capture technology (HiPACT®*) owned by the Group and BASF, a German general chemical manufacturer.

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 on this policy, law, or regulation 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 is a member of, or 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 policy consistent with theirs?

Consistent

Has your organization attempted to influence their position in the reporting year?

Yes, we publicly promoted their current position

Describe how your organization's position is consistent with or differs from the trade association's position, and any actions taken to influence their position

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 (currency as selected in C0.4)

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

(Oil and Gas Climate Initiative)

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

Consistent

Has your organization attempted to influence their position in the reporting year?

Yes, we publicly promoted their current position

Describe how your organization's position is consistent with or differs from the trade association's position, and any actions taken to influence their position

Methane is one of the chief greenhouse gases and has a greenhouse effect 28 to 84 times that of CO_2. Efforts to reduce methane emissions are accelerating around the world because reducing high-impact methane emissions can have a significant effect on improving global warming.

OGCI is a CEO-led initiative of 12 companies, including the Saudi Arabian National Oil Company, ExxonMobil and Shell, that has been leading various activities to respond to climate change in the oil and natural gas industry since January 2014. Furthermore, the

initiative, launched in March 2022, aims to reduce methane emissions from the oil and natural gas industry to zero by 2030. Our group is the first Japanese company to participate in this initiative. The initiative currently involves more than 40 companies including companies in Europe and the U.S. that undertake measurement, reporting and verification (MRV) of methane and its reduction solutions, taking aggressive action to achieve zero emissions. In order to improve measurement technology capabilities through broad collaboration and realize more effective methane emission countermeasures, the Group has built a “methane emission measurement technology assessment facility” (simulating methane emissions from oil and natural gas related facilities) to provide a place for domestic and overseas measurement equipment manufacturers to assess detection capabilities and develop technologies for methane emission measurement, which is still in its infancy worldwide, in its Research & Development Centre (Oarai-machi, Higashi Ibaraki-gun, Ibaraki Prefecture).

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

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 policy consistent with theirs?

Consistent

Has your organization attempted to influence their position in the reporting year?

Yes, we publicly promoted their current position

Describe how your organization’s position is consistent with or differs from the trade association’s position, and any actions taken to influence their position

In order to achieve sustainable growth that balances energy and the environment, a significant reduction in greenhouse gas emissions, especially carbon dioxide emissions, is an urgent task, and many countries, including Japan, are accelerating their efforts to achieve carbon neutrality by 2050. In this context, fuel ammonia is showing increasing promise as an effective solution.

The fuel ammonia industry was listed as one of the 14 priority sectors in the “Green

Growth Strategy for Carbon Neutrality in 2050" formulated in December 2020, and the "Sixth Strategic Energy Plan" approved by the Cabinet in October 2021 included hydrogen and ammonia as 1% of the power supply mix in 2030.
While technological development for social implementation continues, the "Public-Private Council for Fuel Ammonia Introduction" was established in October 2020 to accelerate efforts toward social implementation of fuel ammonia through collaboration between the private sector, including consumers and suppliers, and the government, with the Clean Fuel Ammonia Association playing a central role in this effort to build a value chain from supply to use of fuel ammonia. In this context, a Senior Executive Officer of JGC HOLDINGS CORPORATION serves as Vice Chairman, and is engaged in technology development/assessment, economic assessment, policy recommendation, international collaboration, *etc*., with the aim of establishing a value chain from supply to utilization of CO_2-free ammonia.

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

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 or individuals in the reporting year whose activities could influence policy, law, or regulation that may impact the climate.

Type of organization or individual

Start-up company

State the organization or individual to which you provided funding

AmicaTerra Co., Ltd.

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

5,000,000,000

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. The total amount under management of the entire fund is 5 billion yen, which is distributed to several companies for investment. Amica Terra Co., Ltd., one of such companies, is a start-up that produces plant-derived plastic alternative materials. In recent years, marine and soil pollution by plastics has become a serious social issue. Increased carbon dioxide emissions from incineration of plastic waste are also an issue, and plastic resource recycling and de-plasticization are gaining momentum around the world. Against the backdrop of these issues, Amica Terra manufactures “modo-cell®,” a plastic substitute material made primarily from plant fibre (cellulose). modo-cell® is a material made by drying and powdering cellulose-containing plants and mixing them with starch and other substances, and is characterized by the fact that it can utilize conventionally unused resources such as bamboo from abandoned bamboo groves and plant residues from food and beverage factories without waste, and is biodegradable in the natural world. Through this investment, our group will cooperate in the basic design of modo-cell® manufacturing facilities and in the optimization of equipment selection and procurement, and will support the establishment of a modo-cell® mass production system. In addition, to promote the use of modo-cell®, we will collaborate with entities such as food companies, local governments, and restaurants that are interested in utilizing waste, and contribute to the realization of a carbon-neutral and recycling-oriented society through participation in the modo-cell® manufacturing business.

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

fy22_yukashoken.pdf

Page/Section reference

Governance: P48-71
Strategy: P11-17
Risks & opportunities: P18-21
Emissions figures & emission targets: P14

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

Publication

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

Status

Underway – previous year attached

Attach the document

JGCReport2022_j.pdf

Page/Section reference

Governance: P64-76
Strategy: P5-14, P27-64, P89-92
Risks & opportunities: P77-78, P89-92
Emissions figures & emission targets: P87

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

C12.5

(C12.5) Indicate the collaborative frameworks, initiatives and/or commitments related to environmental issues for which you are a signatory/member.

	Environmental collaborative framework, initiative and/or commitment	Describe your organization's role within each framework, initiative and/or commitment

Row 1	Task Force on Climate-related Financial Disclosures (TCFD) Other, please specify TCFD Consortium, GX League	As a supporting company of the TCFD, we disclose information in accordance with the TCFD. In addition, the company has been a member of the TCFD Consortium since January 2023 and participates in various events such as roundtables with investors. In addition, we belong to the “GX League” set up by the government with sights set on realizing Japan’s 2050 carbon neutrality target, where a “group of companies” actively engaged in GX take up the challenge of GX in collaboration with government, academia, and financial institutions, and unitedly discusses the transformation of the entire socio-economic system and puts measures into practice for the creation of new markets. In addition to working to reduce its own CO_2 emissions. Our Group also owns a consulting company concerning environment and energy that supports the system design, project formulation, and social implementation for the establishment of a decarbonized society. In addition, with the aim of achieving carbon neutrality for the world as a whole, we established the “GX Business Working Group” together with six leader companies and 73 member companies, Nomura Holdings, Inc. being the organizer, for the theme of “Rule Formation for Market Creation” (of which purpose is to demonstrate rule formation mechanism by public and private sectors), one of the initiatives under the GX League. The working group aims at establishing a framework in which the opportunity aspects of Japanese companies’ contributions to climate change (emission reductions by their products and services provided to the market) are adequately assessed and appreciated.

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 responsibility for biodiversity-related issues	Description of oversight and objectives relating to biodiversity
Row 1	Yes, executive management-level responsibility	In the total 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 impacts and dependencies of its value chain on biodiversity?

Impacts on biodiversity

Indicate whether your organization undertakes this type of assessment

Yes

Value chain stage(s) covered

Downstream

Tools and methods to assess impacts and/or dependencies on biodiversity

No biodiversity assessment tools/methods used

Dependencies on biodiversity

Indicate whether your organization undertakes this type of assessment

Yes

Value chain stage(s) covered

Downstream

Tools and methods to assess impacts and/or dependencies on biodiversity

No biodiversity assessment tools/methods used

C15.4

(C15.4) Does your organization have activities located in or near to biodiversity-sensitive areas in the reporting year?

Yes

C15.4a

(C15.4a) Provide details of your organization's activities in the reporting year located in or near to biodiversity -sensitive areas.

Classification of biodiversity -sensitive area

Other biodiversity sensitive area, please specify

Areas where special consideration for the richness of the natural environment, including biodiversity, is required.

Country/area

Canada

Name of the biodiversity-sensitive area

Kitimat, British Columbia

Proximity

Data not available

Briefly describe your organization's activities in the reporting year located in or near to the selected area

JGC CORPORATION, a total engineering company, is executing a project to construct an LNG plant.

Indicate whether any of your organization's activities located in or near to the selected area could negatively affect biodiversity

Yes, but mitigation measures have been implemented

Mitigation measures implemented within the selected area

Physical controls

Explain how your organization's activities located in or near to the selected area could negatively affect biodiversity, how this was assessed, and describe any mitigation measures implemented

The LNG Canada Project, which is currently under construction by the Group, requires particular attention to the rich natural environment, including biodiversity, and the Group is working to reduce environmental impact by changing river channels and improving the habitat for native fish species.

C15.5

(C15.5) 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

C15.6

(C15.6) 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	

C15.7

(C15.7) 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
In voluntary sustainability report or other voluntary communications		Integrated Report 2022: Recognition of "Protection of ecosystems and maintenance of biodiversity" as an issue in the materiality "E. Environmentally conscious society" (p. 33) 1
In voluntary sustainability report or other voluntary communications		Press Release: Investment in Biome Inc., a startup company that builds and operates a platform for visualization of biological distribution information, through our CVC (Corporate Venture Capital) 2

[1]JGCReport2022_j.pdf

[2]CVC ファンドを通じ、生物多様性モニタリングサービスを提供する バイオーム社へ出資 _ 2023 年ニュースリリース _ 日揮ホールディングス株式会社.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