

C0. Introduction

C0.1

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

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	April 1 2020	March 31 2021	No	<Not Applicable>

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

- Algeria
- China
- Japan
- Kuwait
- Thailand

C0.4

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

JPY

C0.5

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

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

C1. Governance

C1.1

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

Yes

C1.1a

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

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	The 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 addressing 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 addressing 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. The JGC Group's materiality, which identifies "Societies in harmony with environment" as one of its key management issues, has been reported to the Board of Directors. In addition, as an example of climate-related decision-making by the CEO in fiscal 2020, we merged a team with climate-related technology development functions into the Sustainability Co-Creation Department, which is working to commercialize technologies that contribute to solving climate change-related issues, so as to integrate relevant technology development and commercialization activities.

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	Scope of board-level oversight	Please explain
Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action	<Not Applicable>	The Board of Directors discusses the management strategies and the management goals of each Group company in light of environmental issues, including climate change. In fiscal 2020, the Board of Directors actively deliberated on environmental issues, including climate change, in the process of formulating the Medium-Term Business Plan to be launched in fiscal 2021 and the Long-Term Management Vision "2040 Vision," on which is the plan is based, and decided to focus on "Energy Transition" as its core business area, which contributes to the stable supply of energy and decarbonization. Regarding the Medium-Term Business Plan, the implementation progress will be reported to the Board of Directors, so that it will deliberate on the progress of the management strategy and its action plan with "Energy Transition" at the core.

C1.2

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

Name of the position(s) and/or committee(s)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Other C-Suite Officer, please specify (Senior Executive Officer of JGC CORPORATION)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	As important matters arise

C1.2a

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

The Senior Executive Officer of JGC CORPORATION, which is engaged in the comprehensive engineering business overseas in the JGC Group, has been appointed by the COO of JGC HOLDINGS to chair the "JHD HSSE Committee."

After the transition to a holding company structure in October 2019, the "JHD HSSE Committee" was set up in JGC HOLDINGS (JHD) as the highest organization to plan and coordinate HSSE (Health, Safety, Security, and Environment) of the entire Group. It is composed of members appointed from each operating company, and the Quality Assurance, Safety and Environment Department of the Holdings serves as the secretariat. The duties of the Committee include deliberating and deciding on basic matters related to the HSSE of the Group, including climate change-related issues; establishing, maintaining, and managing the HSSE management system; assisting in the development and maintenance of the HSSE action plan; auditing and managing the implementation of the plan; and assessing and monitoring risks and opportunities in the field. The Committee meets bimonthly, and subcommittees and working groups will meet as appropriate. Their results are reported regularly to the CEO, who chairs the Board of Directors, and other management. In January 2020, the Committee revised the "Environmental Policy" to explicitly include in it "reduction of greenhouse gas emissions" in office activities and construction project execution.

C1.3

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

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

C1.3a

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

Entitled to incentive	Type of incentive	Activity incentivized	Comment
All employees	Monetary reward	Emissions reduction project Energy reduction project	We have established an award system for individuals or teams of 7,600 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 works and related initiatives that contribute to climate-related issues are the mainstay of the business of the Group and are eligible for appreciation. We also state that CSV (Creating Social Value) factors, including contributions to addressing climate change, will be considered in the selection of themes. The recipients receive an award. In the reporting year, the President's Commendation was awarded to a team that proposed optimization of the operation of an existing LNG plant according to weather changes using the DX method and won two orders for actual work to improve the plant operation. The General Manager's Commendation was awarded to a team that established a method for assessing by LCA (Life Cycle Assessment) approach the environmental impact of businesses in which the Group is involved and a team that demonstrated the minimization of flare gas operations at an offshore LNG plant.

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 occur in case that climate change were to interfere with the continuation of projects in its mainstay comprehensive engineering business, including change in plans, cancellations, and suspension of the projects, resulting in a decrease in sales and profits. In addition, a substantive impact on our business strategy would occur in the form of a decrease in orders as a result of investment reduction by client companies or change of their business itself due to climate change. One of the criteria for the impact materiality to the Group, a listed company, in terms of monetary value, is the thresholds applied for timely disclosure as required by the Financial Instruments Exchange that, in terms of increase or decrease in the forecasted figures compared with the previous forecast, the latest forecast, or the actual figures for the current fiscal year, are 10% or more of consolidated net sales, 30% or more of consolidated operating income, consolidated ordinary income, and net income attributable to shareholders of the parent company, respectively. Applying the average value from fiscal 2016 to fiscal 2020, consolidated net sales were approximately 590 billion yen, of which 10% was 59 billion yen, and net income attributable to owners of the parent company was approximately 5.5 billion yen, of which 30% was 1.7 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 management of risks including climate-related risks, we recognize that appropriate management can reduce losses and lead to profits for the Group and strives to reduce and prevent risks from normal times by identifying and analyzing the risks of the entire Group and establishing, maintaining, and improving risk management systems. Furthermore, in the event that risks surface, we strive to minimize their impact and losses through prompt and appropriate responses. Specifically, 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 and, in accordance with the Regulation of the Group Risk Management Committee, it is operating a comprehensive risk management system to systematically identify short- to long-term risks not only in the direct operations of the Group but also in the entire value chain, including upstream and downstream operations, so as to further reduce the risks of the Group. The management of the business risks of the Group is carried out mainly by each operating company. Risks identified considering the business environment of each operating company are classified into a list of risk items, which are evaluated for each risk based on the criteria described in C2.1b prior to the biannual meetings of the Group Risk Management Committee, and countermeasures are discussed and determined therein. Then, the operating company takes the initiative in implementing them as appropriate, following eventual instructions from the department in charge of crisis management and the department in charge of compliance. Topics of importance are reported by the operating companies to the Group Risk Management Committee, which then deliberates at the committee meeting, and any major deficiencies or inadequacies in the risk management system are reported to the Board of Directors of the Group, as necessary, for deliberation on countermeasures.

[Case Study Applied to "Physical Risk or Opportunity"]

Situation: As global warming progresses due to the increase in cumulative greenhouse gas emissions, construction sites in the comprehensive engineering business and plants in the functional materials manufacturing business may be hit by unexpected natural disasters such as heavy rains and storms caused by climate change.

Task: It is necessary to identify specific physical risks, take countermeasures, and reduce the risks.

Action: As a result of examination by each operating company, there is a possibility that construction work may be interrupted or redone in the comprehensive engineering business as a physical risk. In the functional materials manufacturing business, there is a possibility of suspension of operation and reduction of production capacity at offices and plants.

Considering the criteria described in C2.1b, risks that could worsen the profitability of projects in the comprehensive engineering business and affect the business, financial position,

and operating results of the Group including the functional materials manufacturing business have been identified.

As a risk management response, the departments in charge of crisis management and compliance took a central role and sequentially implemented actions such as (1) prescribing response procedures in the event of a natural disaster at each of the headquarters, construction sites, offices, plants, etc. of each Group company, (2) introducing a safety confirmation system, (3) conducting disaster prevention drills, (4) collecting information on risks, (5) 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 delays and the additional costs caused 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 are risks of a decrease in the number of development projects and a decrease in prices due to intensification of competition with competitors over orders for limited projects. Considering the standards described in C2.1b, 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, in line with the policy, as a response to the risks, of formulating management strategies that focus on low-carbon and decarbonized businesses and further diversifying the business portfolio under the group management structure, in the reporting year, a cross-group task force was established with the Group Strategic Planning Department serving as the secretariat, and active discussions were held therein in order to appropriately incorporate this policy in the Long-Term Management Vision to be released in May 2021. We are also actively engaged in the development of technologies to reduce environmental impact, and the establishment of a value chain, to the same end, through collaboration with other companies that possess advanced technologies.

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 the Tax for Climate Change Mitigation of 289 yen/tCO ₂ e, but this tax may increase in the future in order to achieve Japan's CO ₂ emission reduction target. In the comprehensive engineering business of the Group, since fossil fuels are used for heavy construction equipment and transportation, any increase in the price of fossil fuels due to increased taxation in Japan will increase the cost of the domestic comprehensive engineering business. In the functional materials manufacturing business, since heat and electricity are used in the manufacturing plants in Japan, we recognize that an increase in tax will lead to an increase in manufacturing costs and pose a risk of reducing profits of the Group.
Emerging regulation	Relevant, always included	In the comprehensive engineering business of the Group, we recognize that the introduction of global carbon pricing will lead to a sharp rise in the cost of materials, equipment, and fuel, which will become a risk that will affect business costs in the future in the form of higher procurement prices for piping and equipment materials for construction, and diesel fuel used in the operation of heavy machinery and welding. In addition, we recognize that the introduction of carbon taxes, the establishment of carbon emission targets by each country, and other tightened regulations will reduce the number of new plant construction projects in the oil and gas sector, the current core business of the Group, through a decline in demand for fossil fuels, and thus pose the risk of fewer opportunities for orders.
Technology	Relevant, always included	To mitigate climate change, low-carbon technologies are expected to spread and become more advanced. The comprehensive engineering business of the Group has traditionally focused on the construction of oil and gas related plants, with oil refineries accounting for an important share 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, as we see this as an opportunity and are focusing on the development of technologies related to renewable energy and hydrogen, which are expected to become low-carbon energy sources in the future, we also recognize it a risk that this market will not expand in a timely manner.
Legal	Relevant, always included	In the event that the obligation to report emissions is strengthened, the comprehensive engineering business of the Group may be required by certain clients to disclose climate-related information as a legal requirement to participate in bidding for plant construction projects, and if we cannot respond, there is a risk of losing orders and deterioration of reputation.
Market	Relevant, always included	The shift to low-carbon energy is expected to be accompanied by a decline in coal- and oil-fired power generation, a long-term decline in gas-fired power generation, an expansion of the potential of nuclear power, an increase in renewable energy, and the introduction of CO ₂ -free fuels, including the use of hydrogen. In the comprehensive engineering business of the Group, there is a risk that opportunities for orders will decrease through a decrease in demand for oil and gas related plants. There is also a risk that the avoidance of fossil-fuel-related businesses by financial and capital markets may affect the materialization of projects.
Reputation	Relevant, always included	With the growing international momentum for decarbonization, companies whose main business is related to oil and gas are at risk of being criticized for the relevant activities. In addition, although the comprehensive engineering business of the Group has technological capabilities that contribute to climate change countermeasures, such as low-carbonization in oil and gas-related plants, construction of renewable energy facilities, and hydrogen-related initiatives as clean energy, if it fails 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.
Acute physical	Relevant, always included	In the event of an increase in extreme weather events, such as torrential rains, storms, typhoons, and floods, which are believed to be caused by global warming, in the comprehensive engineering business of the Group, we recognize that there is a risk of delays in construction work, including physical damage to materials, equipment, and facilities at construction sites and offices, human casualties among employees, and delays in procuring materials and equipment. In the past, a large plant construction site in the U.S. was damaged by flooding caused by a hurricane, resulting in delays in the construction schedule. In addition, there is a possibility that the business, financial position, and operating results of the Group may be affected by the suspension of operations or reduction in production capacity at offices and plants in the functional materials manufacturing business.
Chronic physical	Relevant, always included	In the comprehensive engineering business of the Group, there are many construction sites in the Middle East, Southeast Asia, and other regions where temperatures are conventionally high. Further increases in temperature may cause prolonged construction due to reduced labor productivity at construction sites in temperate and tropical regions. There is also concern that the increased costs of countermeasures and accident compensation due to increased occupational safety risks will have a long-term financial impact. In addition, if the sea level rises in coastal areas, there is a risk that ports will become unusable and transportation costs will rise due to the use of aircraft as an alternative. In addition, the risk of construction problems in the Arctic due to thawing permafrost can be presumed.

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
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Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

JGC HOLDINGS CORPORATION is the holding company for the JGC Group, whose main businesses are comprehensive engineering, functional materials manufacturing, and energy and environmental consulting. In the comprehensive engineering business, which covers plant and equipment design, procurement, construction, and maintenance, JGC CORPORATION handles the overseas business and JGC JAPAN CORPORATION handles the domestic business. 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 construction overseas, mainly handled by JGC CORPORATION.

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)

45,000,000,000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Over the three years from FY2017 to FY2019, the annual average sales of the oil and gas field (development of oil and gas resources, petroleum refining, LNG, chemical, etc.) was 450 billion yen. If the carbon tax, emissions trading system, and carbon border adjustment measures are strengthened, the potential financial impact, calculated on the assumption that the shift to low-carbon energy will reduce sales by 10% (the standard for timely disclosure by financial instruments exchanges), is 45 billion yen per year on average, which is 10% of 450 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: Considering the above situation, as businesses that utilize its process-related technologies and relationships with international oil companies and national oil companies, in the oil and gas sector, we are focusing on LNG and natural gas plants with CCS (CO2 capture and storage) facilities and developing hydrogen and ammonia-related businesses. Another task is to receive more orders for renewable energy (solar, wind, and biomass) facilities as a new business area.

Action: In the Medium-Term Business Plan announced in 2021, it is to be announced that the next generation business including these businesses is defined as "next-generation growth engines" and investment of a total of 80 billion yen over five years in business development for that is planned. An annual average of 16 billion yen is allocated to investment related to said business development.

Results: The risk of declining sales due to declining demand for fossil fuels is expected to be decreased.

Cost calculation

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

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Reputation	Other, please specify (Impact on trust in the Group of its stakeholders such as clients)
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Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

With the growing needs for decarbonization, companies whose main business is related to oil, and gas are at risk of being criticized for the relevant activities. The comprehensive engineering business of the Group has technological capabilities that contribute to climate change countermeasures, such as low carbonization in oil- and gas-related plants, construction of renewable energy facilities, and hydrogen-related and ammonia initiatives as clean energy. However, if we fail to maintain and improve such technologies and our reputation, our reputation with stakeholders such as international oil companies, domestic chemical and pharmaceutical manufacturers, oil refiners, and utilities such as electric power companies, which are our major customers, and even banks, may decline. As a result, there is a risk of a decrease in sales due to a decrease in opportunities to receive orders for construction of facilities, a decrease in execution capacity due to an outflow of human resources, and other negative effects in various aspects such as financing for project execution and securing human resources for corporate activities.

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)

45000000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Over the three years from 2017 to 2019, the annual average sales of the oil and gas field (development of oil and gas resources, petroleum refining, LNG, chemical, etc.) was 450 billion yen. If the carbon tax, emissions trading system, and carbon border adjustment measures are strengthened, the potential financial impact, calculated on the assumption that the shift to low-carbon energy will reduce sales by 10% (the standard for timely disclosure by financial instruments exchanges), is 45 billion yen per year on average, which is 10% of 450 billion yen in average sales over the past three years.

Cost of response to risk

16000000000

Description of response and explanation of cost calculation

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

Task: Our task is further diversification of the business portfolio through the formulation of a strategy focusing on low-carbon and decarbonized businesses and the transition to a group management approach, and promotion of initiatives in such areas as low-carbonization in the oil and gas sector, renewable energy, hydrogen/fuel ammonia, resource recycling, life sciences, healthcare, advanced functional materials, and industrial and urban infrastructure.

Action: In the Medium-Term Business Plan announced in 2021, it is to be announced that the next generation business including these businesses is defined as "next-generation growth engines" and investment of a total of 80 billion yen over five years in business development for that is planned. An annual average of 16 billion yen is

allocated to investment related to said business development.

Results: Reputation risk is expected to be decreased for companies that focus on oil and gas businesses.

Cost calculation

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

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Technology	Transitioning to lower emissions technology
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Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

To mitigate climate change, low-carbon technologies are expected to spread and become more advanced. Comprehensive engineering business of the Group has traditionally focused on the construction of oil and gas plants, with oil refineries accounting for the bulk of its sales. We recognize that the spread of electric and fuel cell vehicles poses the risk of reduced order opportunities and the sales through reduced demand for gasoline and reduced orders for oil refinery plants. The decline in the size of the petrochemical market due to the spread of decarbonized materials such as bioplastics will result in fewer orders for oil refinery plants. There is also a risk that the spread of high-performance batteries will lead to a shift to renewable energy, which will lead to a decrease in sales of existing oil and gas businesses. In fiscal 2020, 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)

45000000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Over the three years from 2017 to 2019, the annual average sales of the oil and gas field (development of oil and gas resources, petroleum refining, LNG, chemical, etc.) was 450 billion yen. If the carbon tax, emissions trading system, and carbon border adjustment measures are strengthened, the potential financial impact, calculated on the assumption that the shift to low-carbon energy will reduce sales by 10% (the standard for timely disclosure by financial instruments exchanges), is 45 billion yen per year on average, which is 10% of 450 billion yen in average sales over the past three years.

Cost of response to risk

16000000000

Description of response and explanation of cost calculation

Situation: To mitigate climate change, low-carbon technologies are expected to spread and become more advanced. Comprehensive engineering business of the Group has traditionally focused on the construction of oil and gas plants, with oil refineries accounting for the bulk of its sales. The spread of high-performance batteries is expected to accelerate the shift to renewable energy. We recognize that the spread of electric and fuel cell vehicles poses the risk of reduced order opportunities through reduced demand for gasoline and reduced orders for oil refinery plants. In fiscal 2020, 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: Our task is to promote the development of technologies related to renewable energy, hydrogen/fuel ammonia, which are expected to become low-carbon energy sources in the future.

Action: In the Medium-Term Business Plan announced in 2021, it is to be announced that the next generation business including these businesses is defined as "next-generation growth engines" and investment of a total of 80 billion yen over five years in business development for that is planned. An annual average of 16 billion yen is allocated to investment related to said business development.

Results: The risk of declining sales due to reduced demand for oil refining plants is expected to be decreased.

Cost calculation

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

Comment

C2.4

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

Yes

C2.4a

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

Identifier

Opp1

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Other, please specify (Entering in new markets)

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Our Group has a variety of solutions related to climate change. There are opportunities to increase earnings by focusing on meeting demand in the oil and gas plant attached with CCS (CO2 capture and storage) facilities, and expanding business in renewable energies such as solar, offshore wind, and biomass, SMRs (Small Modular Reactors), hydrogen/ammonia, and resource recycling.

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)

50000000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

In the Medium-Term Business Plan to be announced in 2021, we plan to define its next-generation businesses in clean energy and resource recycling, including hydrogen/fuel ammonia, as "next-generation growth engines," and we are to announce that we plan to increase sales in these fields to 50 billion yen by 2025.

Cost to realize opportunity

16000000000

Strategy to realize opportunity 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 and seeking low-carbon and decarbonization solutions. There are needs for focusing on meeting demand in the oil and gas plant attached with CCS (CO2 capture and storage) facilities, and expanding business in renewable energies such as solar, offshore wind, and biomass, SMRs (small modular reactors), hydrogen/ammonia, and resource recycling.

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

[Solar power]: We already have a long track record in Japan and overseas, and will further propose comprehensive energy management solutions, including integration with energy storage facilities and existing facilities, as well as power sharing among facilities.

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

[Hydrogen/fuel ammonia]: It plays a major role as an energy carrier that does not emit CO2 during combustion, and we ensure competitiveness by further strengthening technological and management capabilities.

Nuclear power generation: We plan to invest in a U.S. company that develops SMRs (Small Modular Reactors) with a view to entering the EPC business overseas of SMRs.

Action: In the Medium-Term Business Plan announced in 2021, it is to be announced that the next generation business including these businesses is defined as "next-generation growth engines" and investment of a total of 80 billion yen over five years in business development for that is planned. An annual average of 16 billion yen is allocated to investment related to said business development.

Results: More business opportunities to provide solutions to customers seeking to make their businesses low-carbon or decarbonized, and increased sales are expected.

Cost calculation

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

Comment**Identifier**

Opp2

Where in the value chain does the opportunity occur?

Direct operations

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

Solar power, offshore wind power, hydrogen/fuel ammonia, nuclear power, etc. are all areas that are extensions of or peripheral to the accumulated technologies of the Group and are central to the involvement of the Group in the international trend toward decarbonization. However, policy support, such as institutional development and subsidies by the authorities, is essential for dissemination.

When these are introduced, there is an opportunity to increase sales by developing the introduction of low-carbon and decarbonization solutions in a timely manner and realizing business opportunities in each business area of JGC Group of solar, offshore wind, hydrogen and fuel ammonia, and nuclear power generation. The Medium-Term Business Plan to be announced in 2021 estimates the potential impact in these areas to be approximately 50 billion yen per year. In addition, we plan to announce a Long-Term Management Vision with "energy transition" as our core business, including these fields.

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)

50000000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

In the Medium-Term Business Plan to be announced in 2021, we plan to define its next-generation businesses in clean energy and resource recycling, including hydrogen/fuel ammonia, as “next-generation growth engines”, and we are to announce that we plan to grow sales in these fields to 50 billion yen by 2025.

Cost to realize opportunity

16000000000

Strategy to realize opportunity 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 and seeking low-carbon and decarbonization solutions. Solar power, offshore wind power, hydrogen/fuel ammonia, nuclear power, etc. are all areas that are extensions of or peripheral to the accumulated technologies of the Group and are central to the involvement of the Group in the international trend toward decarbonization.

Task: Our task is to implement the following low-carbon and decarbonization solutions in society in a timely manner and to realize business opportunities when policy support such as institutional development and subsidies by authorities become widespread.

[Solar power]: We already have 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 we will enter this field by utilizing the knowledge we have accumulated through our EPC (engineering, procurement, and construction) business. We will also utilize our extensive experience in other fields to collaborate with other companies in the same industry overseas, as well as with heavy electric manufacturers in Japan and overseas.

[Nuclear power generation]: We plan to invest in a U.S. company that develops SMRs (Small Modular Reactors) with a view to entering the EPC business overseas of SMRs.

Action: In the Medium-Term Business Plan announced in 2021, it is to be announced that the next generation business including these businesses is defined as “next-generation growth engines” and plans to invest a total of 80 billion yen over five years in business development for that. An annual average of 16 billion yen is allocated to investment related to said business development.

Results: More business opportunities to provide solutions to customers seeking to make their businesses low-carbon or decarbonized, and increased sales are expected.

Cost calculation

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

Comment**Identifier**

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

The materiality of our 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 CO2 at combustion, is expected to expand in the future, and we are 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, we are working to expand its capacity and acquire new projects, covering a wide range of manufacturing methods, including green hydrogen, blue hydrogen (participation in a demonstration project in Saudi Arabia), waste-derived hydrogen, and use of byproduct hydrogen. In transportation, among the three major hydrogen carriers (liquid hydrogen, organic hydrides, and ammonia), we are 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 (we are participating in the Clean Fuel Ammonia Association). Demand for fuel ammonia in Japan alone is expected to grow from about three million tons per year as of 2030 to about 30 million tons per year by 2050, providing opportunities for our Group to increase sales.

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)

50000000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

In the Medium-Term Business Plan to be announced in 2021, we plan to define its next-generation businesses in clean energy and resource recycling, including hydrogen/fuel ammonia, as "next-generation growth engines", and we are to announce that we plan to grow sales in these fields to 50 billion yen by 2025.

Cost to realize opportunity

16000000000

Strategy to realize opportunity and explanation of cost calculation

Situation: As a trump card in a decarbonized society, hydrogen energy, which does not emit CO₂ at combustion, is expected to be widely used in the future. We are also engaged in a wide range of initiatives for social implementation. The supply chain for hydrogen energy is broadly divided into manufacturing, transportation (energy carrier), and utilization. In the manufacturing stage, we are working to expand its capacity and acquire projects by covering a wide range of manufacturing methods, including green hydrogen, blue hydrogen, waste-derived hydrogen, and the use of byproduct hydrogen. In transportation, among the three major hydrogen carriers (liquid hydrogen, organic hydrides, and ammonia), we are 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. Demand for fuel ammonia in Japan alone is expected to grow from about three million tons per year as of 2030 to about 30 million tons per year by 2050, from which it is expected to increase sales of the Group.

Task: In October 2018, in collaboration with the National Institute of Advanced Industrial Science and Technology (AIST), we 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 fueled by the synthesized ammonia. Our task is to develop and commercialize fuel ammonia production projects overseas in cooperation with various companies that make up the value chain in order to realize such businesses by utilizing various technologies including in-house ones.

Action: In the Medium-Term Business Plan announced in 2021, it is to be announced that the next generation business including these businesses is defined as "next-generation growth engines" and plans to invest a total of 80 billion yen over five years in business development for that. An annual average of 16 billion yen is allocated to investment related to said business development.

Results: More business opportunities to provide solutions to customers seeking to make their businesses low-carbon or decarbonized, and increased sales are expected.

Cost calculation

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

Comment

Identifier

Opp4

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 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 (Sustainable Aviation Fuel -next generation aviation fuel) produced from biomass materials and its exhaust gas in order to reduce CO₂ emissions, and the textile industry is also expected to expand its efforts to recycle resources due to the problem of mass disposal of clothing. We have the opportunity to increase sales in the future by acquiring technologies that address these issues (such as the EUP process for waste plastic gasification) and working proactively to commercialize them.

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)

50000000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

In the Medium-Term Business Plan to be announced in 2021, we plan to define its next-generation businesses in clean energy and resource recycling, including hydrogen/fuel ammonia, as "next-generation growth engines", and we are to announce that we plan to grow sales in these fields to 50 billion yen by 2025.

Cost to realize opportunity

16000000000

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 (Sustainable Aviation Fuel -next-generation aviation fuel) produced from biomass materials and its exhaust gas in order to reduce CO₂ emissions, and the textile industry is also expected to expand its efforts to recycle resources due to the problem of mass disposal of clothing. It is expected that we will increase sales in the future by acquiring technologies that address these issues and working aggressively to commercialize them.

Task: Our task is to implement the following low-carbon and decarbonization solutions in society in a timely manner and realize business opportunities.

[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 its value chain.

[SAF]: We will work to build a value chain to produce domestic SAF by hydrogenating used cooking oil.

[Waste fiber recycling]: We are planning to license chemical recycling technology for polyester with several partners.

Action: In the Medium-Term Business Plan announced in 2021, it is to be announced that the next generation business including these businesses is defined as "next-generation growth engines" and plans to invest a total of 80 billion yen over five years in business development for that. An annual average of 16 billion yen is allocated to investment related to said business development.

Results: More business opportunities to provide solutions to customers seeking to make their businesses low-carbon or decarbonized, and increased sales are expected.

Cost calculation

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

Comment

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes, and we have developed a low-carbon transition plan

C3.1a

(C3.1a) Is your organization's low-carbon transition plan a scheduled resolution item at Annual General Meetings (AGMs)?

	Is your low-carbon transition plan a scheduled resolution item at AGMs?	Comment
Row 1	No, and we do not intend it to become a scheduled resolution item within the next two years	

C3.2

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

Yes, qualitative

C3.2a

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

Climate-related scenarios and models applied	Details
RCP 2.6 RCP 6 Other, please specify (Stated Policy Scenario (STEPS) and Sustainable Development Scenario (SDS) in IEA World Energy Outlook 2020)	<p>1. How the selected scenarios were identified For the Group, whose main business field is the energy sector, the World Energy Outlook (WEO) published by the IEA is a document that we always refer to and is well known and widely referred to by the public. Considering this, the IEA WEO 2020 SDS was selected as a scenario of increased transition risk, and STEPS as a scenario of increased physical risk. Inputs used were values of current and future carbon price, GHG emissions, energy mix, energy demand, and demand for renewable energy generation, as well as future values based on more severe transition and physical risk scenarios, and quantitative analysis was used as the analysis method.</p> <p>2. Time horizon considered and the relevance to the business The time frame for the analysis was set to 2040, in line with the 2040 Vision, a Long-Term Management Vision under discussion within the Group during the reporting period. The reason why the time frame for the vision study was set to 2040 is that even if the IPCC 1.5°C scenario is considered, it is necessary to capture the transition process in order to examine the impact on business.</p> <p>3. Boundaries The areas considered were all areas, including overseas. The scope of business is five companies: JGC CORPORATION, JGC JAPAN CORPORATION, JGC Catalysts and Chemicals Ltd., Japan Fine Ceramics Co., Ltd., and JAPAN NUS CO., LTD. The scope of the company shall be within the scope of the consolidated financial statements.</p> <p>4. Summary of the results The introduction of carbon pricing, stricter carbon emission targets in various countries, and changes in the energy mix (reduction in fossil fuels/increase in renewable energy and nuclear power) and energy demand (decrease in demand for gasoline) may reduce demand for oil and gas plant construction, which is the mainstay of the comprehensive engineering business of the Group, and pose a risk of reduced opportunities for receiving orders. On the other hand, it is expected that the demand for facilities such as renewable power generation including offshore wind power generation, LNG with CCS (CO2 capture and storage), hydrogen energy including fuel ammonia, bio-based chemical industry, SMRs (Small Modular Reactors), and resource recycling will increase, and these will create big opportunities for the Group actually working on social implementation of these technologies. As for Oil & Gas plants, we will promote attachment of CCS facilities with a view to limit global warming effects. Working on renewable energy power generation, hydrogen, and ammonia fuel, etc., in view of energy transition, will be measures to enhance resilience against climate change.</p> <p>5. Case study Situation: Scenario analysis assumed a decline in demand for oil and gas plants due to increasing decarbonization needs. On the other hand, the diffusion of low-carbon technologies and the advancement of next-generation technologies may create new opportunities in the low-carbon energy market, such as hydrogen, CCUS (CO2 capture, utilization, and storage), bio-based chemistry, and decentralized utility supply. Task: It will be necessary to accelerate efforts in the low-carbon energy market. Action: Based on the results of the scenario analysis in which we are to promote CCS for construction of oil and gas plants with a view to limit global warming effects, and to work on renewable energy power generation, hydrogen, and ammonia fuel in view of energy transition. These will serve as a measure to enhance resilience against climate change. We define the main business area to be worked on in the future as "energy transition", which aims to achieve a stable energy supply and decarbonization, in the Long-Term Management Vision to be announced in May 2021, and make this the core business for the next five years in the Medium-Term Business Plan as well. Results: Increased sales is expected in carbon management, offshore wind, hydrogen/fuel ammonia, SMRs, and smart O&M (operations and maintenance) areas, which are expected to be growth engines.</p>

C3.3

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

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	<p>How the strategy in this area has been influenced by climate-related risks and opportunities: the growing need for decarbonization is expected to reduce demand for oil and gas plant construction, which is the current mainstay of the comprehensive engineering business of the Group. On the other hand, demand for low-carbon energy is expected to increase. This has led to the establishment of an "energy transition", in which a stable supply of energy and decarbonization are realized, as one of business areas to focus on, in both the Long-Term Management Vision to be announced in May 2021 and the Medium-Term Business Plan for the five years from fiscal 2021.</p> <p>Time Horizon: Medium to long term</p> <p>[Case Study of Strategic Decision Making]</p> <p>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 (CO2 capture and storage) facilities, hydrogen, bio-based chemistry, and SMRs (Small Modular Reactors).</p> <p>Comprehensive engineering business of the Group is currently dominated by the construction of oil and gas plants, and reduced opportunities for this business pose climate-related risks.</p> <p>Task: On the other hand, the energy transition will create great opportunities for the Group working on the social implementation of low carbon technologies. Therefore, it is necessary to develop a strategy to expand business by focusing on them.</p> <p>Action: This analysis influenced the formulation process of the Long-Term Management Vision announced in May 2021, and, as an example of strategic decision making, the main business domain was defined as "energy transition" to realize a stable energy supply and decarbonization in the Long-Term Management Vision. This is also defined as the core business in the Medium-Term Business Plan.</p> <p>Results: Increased sales is 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.</p>
Supply chain and/or value chain	Yes	<p>How the strategy in this area has been influenced by climate-related risks and opportunities: With the introduction of carbon pricing and stricter carbon emission targets in various countries, it is expected that the construction of gas production facilities 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 business of the Group. This was recognized as a climate-related opportunity and induced a review of the CCS business execution structure of the Group, including the establishment of a new Carbon Reduction and CCUS (CO2 capture, utilization, and storage) Unit at JGC CORPORATION from FY2021.</p> <p>Time Horizon: Short to medium term</p> <p>[Case Study of Strategic Decision Making]</p> <p>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 business of the Group.</p> <p>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.</p> <p>Task: It is necessary to integrate knowledge and information of CCS-related projects and establish an appropriate promotion system.</p> <p>Action: As an influence on strategic decision-making, the CCS business execution structure of the Group has been reviewed, and a new Carbon Reduction and CCUS Unit will be established in JGC CORPORATION from fiscal 2021 as part of the value chain strategy of the Group.</p> <p>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.</p>
Investment in R&D	Yes	<p>How the strategy in this area has been influenced by climate-related risks and opportunities: 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 decentralized utility supply. This has also affected the research and development investment strategy of the Group, shifting development themes from a focus on oil and gas to a focus on environment-related issues, including low-carbon and decarbonization technologies such as hydrogen and CCUS. In the Medium-Term Business Plan that is being formulated, we intend to substantially increase the investment in low- and decarbonization-related research and development.</p> <p>Time Horizon: Short to medium term</p> <p>[Case Study of Strategic Decision Making]</p> <p>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.</p> <p>Task: The technology development of the comprehensive engineering business of the Group to date has been mainly related to oil and gas, and it has been necessary to review the priority of research and development themes in order to create new business opportunities in the low-carbon energy market.</p> <p>Action: As an example of strategic decision making, oil and gas related research and development themes were substantially reviewed and shifted to environment-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 CO2 from associated gas during the EOR (Enhanced Oil Recovery) process using CO2. In the Medium-Term Business Plan that is being formulated, we intend to substantially increase the investment in research and development related to carbon reduction.</p> <p>Results: We expect to take advantage of climate-related opportunities and expand business in low-carbon energy markets.</p>
Operations	Yes	<p>How the strategy in this area has been influenced by climate-related risks and opportunities: As the need for decarbonization increases, the momentum for RE100 compliance is growing, especially in the manufacturing industry, and service business 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 structure of the departments in charge of commercializing carbon reduction technologies including the sales departments so as to meet a wide range of customer needs.</p> <p>Time Horizon: Short to medium term</p> <p>[Case Study of Strategic Decision Making]</p> <p>Situation: Due to the growing need for decarbonization, demand for oil and gas plant construction, the current mainstay of the comprehensive engineering business of the Group, is expected to decline. On the other hand, the momentum for RE100 compliance is growing, especially in the manufacturing industry, and service business for reducing greenhouse gas emissions for such industry can be expected as a new market.</p> <p>Task: It was necessary to develop new customers, especially in the manufacturing industry, and to strengthen our capability to propose carbon reduction solutions at an early stage.</p> <p>Action: As an example of strategic decision making, in order to understand the carbon reduction needs of customers, including RE100 compliance, and to propose solutions through dialogue with customers, we have strengthened the strategic efforts of the sales departments, which is the point of contact, including expansion of the range of customers to be addressed, 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 CO2 separation and other carbon reduction technologies, and established a system that can efficiently match a wide range of customer needs with research and development.</p> <p>Result: We have established an operational system that can provide integrated services close to our top management, from understanding the carbon reduction needs of customers to the response and social implementation, which is expected to speed up the commercialization and social implementation.</p>

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
Row1	Capital expenditures	<p>As the energy transition toward a low/zero carbon society progresses globally, there will be significant business opportunities in new fields such as carbon reduction in the oil and gas domain, renewable energy such as solar power, electricity storage, and biomass, as well as offshore wind power, hydrogen/fuel ammonia, and chemical recycling. Based on this, in the Long-Term Management Vision, we have identified "energy transition" as one of the business areas that will be the future growth engine. This has also affected the financial plan of the Medium-Term Business Plan to be announced in May 2021, and the necessary strategic investments will be made.</p> <p>[Case study of how climate-related risks and opportunities have influenced our financial planning]</p> <p>Situation: As the energy transition toward low/zero carbon society progresses, there will be significant business opportunities in new fields such as carbon reduction in the oil and gas domain, renewable energy such as solar power, electricity storage, and biomass, as well as offshore wind power, hydrogen/fuel ammonia, and chemical recycling.</p> <p>In the previous Medium-Term Business 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 during the plan period.</p> <p>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.</p> <p>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 the new Medium-Term Business Plan announced in May 2021 and resulted in the investment amount planned in the latter. Specifically, the plan calls for a strategic investment of 80 billion yen to establish future growth engines, including carbon management, offshore wind power, and hydrogen/fuel ammonia.</p> <p>Result: Significant business expansion is expected in the areas of clean energy and resource recycling.</p> <p>Time Horizon: Medium to long term</p>

C3.4a

(C3.4a) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

C4. Targets and performance

C4.1

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

Intensity target

C4.1b

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

Target reference number

Int 1

Year target was set

2016

Target coverage

Business division

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Intensity metric

Other, please specify (Metric tons CO₂e per unit hour worked)

Base year

2016

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

0.8

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

1.6

Target year

2020

Targeted reduction from base year (%)

12.5

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

0.7

% change anticipated in absolute Scope 1+2 emissions

-55.2

% change anticipated in absolute Scope 3 emissions

0

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

0.4

% of target achieved [auto-calculated]

400

Target status in reporting year

Achieved

Is this a science-based target?

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

Target ambition

<Not Applicable>

Please explain (including target coverage)

At energy plant construction sites in Japan supervised by JGC JAPAN CORPORATION, we have been promoting "Zero Emissions Initiative" as an environmental target from July 2016 to March 2021 and have set annual CO2 emission intensity targets. CO2 emission intensity in FY2020 was 0.4 kg-CO2/MH (emissions/unit hour worked), which was below the target of 0.7 kg-CO2/MH or less and achieved the target for the two consecutive years.

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

2015

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

2015

Figure or percentage in base year

94.3

Target year

2020

Figure or percentage in target year

98

Figure or percentage in reporting year

88.3

% of target achieved [auto-calculated]

-162.162162162162

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 (including target coverage)

At construction sites in Japan, the "Zero Emissions Initiative" sets a target for the recycling rate of industrial waste and analyzes the results; however, the target was not achieved in FY2020, and future improvements are planned.

Target reference number

Oth 2

Year target was set

2017

Target coverage

Business division

Target type: absolute or intensity

Intensity

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

Energy consumption or efficiency	Other, please specify (Crude Oil Equivalent kl)
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Target denominator (intensity targets only)

metric ton of product

Base year

2017

Figure or percentage in base year

100.9

Target year

2020

Figure or percentage in target year

98.7

Figure or percentage in reporting year

98.7

% of target achieved [auto-calculated]

100

Target status in reporting year

Underway

Is this target part of an emissions target?

No.

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

JGC Catalysts and Chemicals Ltd, an operating company engaged in the manufacturing of functional materials in the Group, is a Specified Business as stipulated in the Act on the Rational Use of Energy (Energy Conservation Act) and is required to reduce energy consumption intensity by an average of 1% or more per year in the medium to long term as a target of business operators. The average rate of change of intensity from FY2017 to FY2020(*) was 98.6%, achieving 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)
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Target denominator (intensity targets only)

unit revenue

Base year

2017

Figure or percentage in base year

101.6

Target year

2020

Figure or percentage in target year

109.6

Figure or percentage in reporting year

109.6

% of target achieved [auto-calculated]

100

Target status in reporting year

Underway

Is this target part of an emissions target?

No.

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

Japan Fine Ceramics Co., Ltd., an operating company engaged in the manufacturing of functional materials in the Group, is a Specified Business as stipulated in the Act on the Rational Use of Energy (Energy Conservation Act) and is required to reduce energy consumption intensity by an average of 1% or more per year in the medium to long term as a target of business operators. The average rate of intensity change from FY2017 to FY2020 was 105.2%, failing to achieve the relevant target. * In FY2020, the impact of the COVID-19 led to a decline in sales relative to energy consumption and an increase in emissions per intensity. In addition, due to ramping-up of new plants, energy consumption increased, and emissions per intensity increased, temporarily.

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

Please select

Target year for achieving net zero

2050

Is this a science-based target?

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

Please explain (including target coverage)

In the Long-Term Management Vision of the Group to be announced in May 2021, discussions are under way to declare commitment to carbon neutral by 2050. The target range is to be as follows.

- (1) Scope 1 and 2 CO2 emissions to be net zero by 2050
- (2) To achieve this goal, reduce CO2 emissions intensity of Scope 1 and 2 by 30% by 2030.
- (3) Reduce CO2 emissions of Scope 3 in collaboration with stakeholders.

C4.3

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

Yes

C4.3a

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	0	0
Implementation commenced*	0	0
Implemented*	2	1867
Not to be implemented	0	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)

163

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

15447582

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 under maintenance and management category, calling them EMS Office Activities, and reports the results of these activities monthly and annually. We achieved a reduction in energy consumption (electricity, cooling, and steam) compared to the previous fiscal year by implementing activities to reduce electricity consumption and heat and cooling consumption, such as turning off lights and air conditioning when returning home.

Initiative category & Initiative type

Company policy or behavioral change

Supplier engagement

Estimated annual CO2e savings (metric tonnes CO2e)

1704

Scope(s)

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, we have been promoting "Zero Emissions Initiative" as an environmental target from July 2016 to March 2021 and have set annual CO2 emission intensity targets. In FY2020, CO2 emissions from electricity, fuel, gas, and water use were reduced by 1,704 tons from the previous fiscal 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 electric demand leveling evaluation basic unit 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 CO2 membrane separation systems, etc. In the Medium-Term Business Plan currently being formulated, we intend to substantially increase our investment in research and development related to carbon reduction.
Employee engagement	The Yokohama Office of the Group has set environmental targets for each department in the EMS Office Activities and is implementing environmental improvements such as reducing electricity consumption, reducing heating, and cooling, and conserving resources, reducing waste, and recycling.
Internal incentives/recognition programs	We have established an award system for individuals or groups of employees who have made outstanding achievements in their work, to be recognized and praised by the Company and to serve as models for other employees. Since we have set "Societies in harmony with environment" as part of its materiality, construction projects and related initiatives that contribute to climate-related issues are the mainstream of the business of the Group and are subject to evaluation. We also state that CSV (Creating Social Value) will be considered in the selection of themes, including contributions to addressing 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) both 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 or do they enable a third party to avoid GHG emissions?**

Yes

C4.5a**(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.****Level of aggregation**

Group of products

Description of product/Group of products

Toward the "Societies in harmony with environment," which is the materiality of the Group, we are expanding the business field of renewable energy plants. We are actively working on construction of offshore wind, solar, and biomass power plants.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product and avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify (Renewable energy projects: power generation from renewable energy sources does not emit CO2 (including biomass classified as carbon neutral), which makes it possible to achieve a significantly lower carbon footprint than existing power generation using fossil fuels.)

% revenue from low carbon product(s) in the reporting year

8

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

We are expanding the business field of renewable energy plants in order to contribute to the realization of "Societies in harmony with environment" and the improvement of "Energy access", both of which constitute our materiality. The following achievements were made in the reporting year, all of which were designed and constructed by the Group which reduce greenhouse gas emissions of our customers.

- Delivery of one of Japan's largest biomass power plants (Murooran, 75 MW)
- Received an order for one of Japan's largest biomass-fired power plant construction projects in Aichi (Tahara, 75 MW)
- Received an order for a solar power generation project in Vietnam, and provided energy management solutions for Southeast Asia and island countries.
- Received an order for a large-scale solar power plant construction project in Mie (51 MW).
- Received an order for the first project in Mongolia to construct a solar power generation facility with an energy storage system.
- Received an order for biomass-fired power plant construction projects in Miyagi (112 MW)

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2). Scope 1

Base year start

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO₂e)

96125

Comment**Scope 2 (location-based)****Base year start**

April 1, 2020

Base year end

March 31, 2021

Base year emissions (metric tons CO₂e)

49138

Comment**Scope 2 (market-based)****Base year start****Base year end****Base year emissions (metric tons CO₂e)****Comment**

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

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)**

84325

Start date

<Not Applicable>

End date

<Not Applicable>

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 have cases of operations where we can access electricity supplier emission factors or residual emissions factors, but are unable to report 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**

48221

Scope 2, market-based (if applicable)

<Not Applicable>

Start date

<Not Applicable>

End date

<Not Applicable>

Comment

C6.4

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

Yes

C6.4a

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

Scope 1 and Scope 2 emissions made by overseas subsidiaries among our consolidated subsidiaries.

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

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

Please select

Explain why this source is excluded

The overseas subsidiaries' percentage of sales account for less than 20% of the sales of JGC CORPORATION, and CO2 emissions of JGC CORPORATION account for only 1/4 of the total of the Group. Based on this, where the emissions of overseas subsidiaries are estimated to be less than 5% of the total CO2 emissions of the Group, the relevance is not considered because the impact on the total CO2 emissions of the Group is insignificant.

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

Metric tonnes CO2e

332982

Emissions calculation methodology

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" for this reporting purpose.

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

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

0

Please explain

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

34772

Emissions calculation methodology

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.

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

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

Energy and energy-related activities are included in Scope 1 and 2.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

11833

Emissions calculation methodology

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.

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

0

Please explain

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

25074

Emissions calculation methodology

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.

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

0

Please explain

Business travel

Evaluation

status

Relevant, calculated

Metric tonnes CO2e

161495.666

Emissions calculation methodology

For JGC CORPORATION, CO2 emissions from the temporary return of construction site workers (by air) were recorded. The travel distance was calculated based on the statistics of the number of people working in the field, the average frequency of returning home, and the flight distance. Emission factors refer to IDEA v2.3. JGC JAPAN CORPORATION, JGC Catalyst and Chemicals Ltd., Japan Fine Ceramics Co., Ltd. and JAPAN NUS CO., LTD. are excluded from Scope 3.

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

0

Please explain

Employee commuting

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

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

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

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

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

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

Processing of sold products

Evaluation status

Relevant, not yet calculated

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

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

Use of sold products

Evaluation status

Relevant, not yet calculated

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

End of life treatment of sold products

Evaluation status

Relevant, not yet calculated

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

Not calculated, since evaluation method is yet to be developed and established.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

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

Franchises

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

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

Investments

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

No investments have been made.

Other (upstream)

Evaluation

status

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

Other (downstream) Evaluation status

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

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

3.05e-7

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
132547

Metric denominator
unit total revenue

Metric denominator: Unit total
43397000000

Scope 2 figure used
Location-based

% change from previous year
2

Direction of change
Decreased

Reason for change
CO2 emissions of Scope 1 and 2 decreased.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?
No

C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
China	3006
Thailand	2991
Algeria	9497
Kuwait	7462
Japan	61369

C7.3

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

C7.3a

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

Business division	Scope 1 emissions (metric ton CO2e)
JGC Holdings Corporation	0
JGC Corporation	22956
JGC Japan Corporation	1768
JGC Catalysts and Chemicals Ltd.	58925
Japan Fine Ceramics Co., Ltd. (JFC)	676
JAPAN NUS CO., Ltd.	0

C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam, or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam, or cooling accounted for in Scope 2 market-based approach (MWh)
China	2565.167		0	0
Thailand	695.714		0	0
Algeria	4233.718		0	0
Kuwait	0		0	0
Japan	40726.665		0	0

C7.6

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

By business division

C7.6a

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

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
JGC Holdings Corporation	3811	
JGC Corporation	7495	
JGC Japan Corporation	343	
JGC Catalysts and Chemicals Ltd.	27321	
Japan Fine Ceramics Co., Ltd. (JFC)	9188	
JAPAN NUS CO., Ltd.	63	

C7.9

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

Decreased

C7.9a

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

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	0	No change	0	$(\text{Change from previous year in Scope 1 and 2 emissions}) / (\text{Scope 1 and 2 emissions in the previous fiscal year}) \times 100 = 0/149866 \times 100 = 0\%$
Other emissions reduction activities	1839.406	Decreased	1.2	$(\text{Change from previous year in Scope 1 and 2 emissions}) / (\text{Scope 1 and 2 emissions in the previous fiscal year}) \times 100 = 1839/149866 \times 100 = 1.2\%$
Divestment	0	No change	0	$(\text{Change from previous year in Scope 1 and 2 emissions}) / (\text{Scope 1 and 2 emissions in the previous fiscal year}) \times 100 = 0/149866 \times 100 = 0\%$
Acquisitions	0	No change	0	$(\text{Change from previous year in Scope 1 and 2 emissions}) / (\text{Scope 1 and 2 emissions in the previous fiscal year}) \times 100 = 0/149866 \times 100 = 0\%$
Mergers	0	No change	0	$(\text{Change from previous year in Scope 1 and 2 emissions}) / (\text{Scope 1 and 2 emissions in the previous fiscal year}) \times 100 = 0/149866 \times 100 = 0\%$
Change in output	15480	Decreased	10.3	$(\text{Change from previous year in Scope 1 and 2 emissions}) / (\text{Scope 1 and 2 emissions in the previous fiscal year}) \times 100 = 15480/149866 \times 100 = 10.3\%$
Change in methodology	0	No change	0	$(\text{Change from previous year in Scope 1 and 2 emissions}) / (\text{Scope 1 and 2 emissions in the previous fiscal year}) \times 100 = 0/149866 \times 100 = 0\%$
Change in boundary	0	No change	0	$(\text{Change from previous year in Scope 1 and 2 emissions}) / (\text{Scope 1 and 2 emissions in the previous fiscal year}) \times 100 = 0/149866 \times 100 = 0\%$
Change in physical operating conditions	0	No change	0	$(\text{Change from previous year in Scope 1 and 2 emissions}) / (\text{Scope 1 and 2 emissions in the previous fiscal year}) \times 100 = 0/149866 \times 100 = 0\%$
Unidentified	0	No change		
Other	0	No change		

C7.9b

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

Location-based

C8. Energy

C8.1

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

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

C8.2

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

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	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	433428	433428
Consumption of purchased or acquired electricity	<Not Applicable>	0	669003	669003
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	0	2883	2883
Consumption of purchased or acquired cooling	<Not Applicable>	0	3986	3986
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	0	1109300	1109300

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.

Fuels (excluding feedstocks)

Kerosene

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

46

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

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

0.00076

Unit

metric tons CO2 per GJ

Emissions factor source

Emission factors in the calculation, reporting, and publication system of the Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

13486

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

2651

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

0

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

2.999

Unit

kg CO2e per liter

Emissions factor source

Emission factors in the calculation, reporting, and publication system of the Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)

Gas Oil

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

70267

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

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

2.585

Unit

kg CO2e per liter

Emissions factor source

Emission factors in the calculation, reporting, and publication system of the Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)

Other, please specify (A)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

521

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

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

2.71

Unit

metric tons CO2 per liter

Emissions factor source

Emission factors in the calculation, reporting, and publication system of the Act on Promotion of Global Warming Countermeasures

Comment

Fuels (excluding feedstocks)

Town Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

356408

MWh fuel consumed for self-generation of electricity

354348

MWh fuel consumed for self-generation of heat

2060

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling0

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

2.234

Unit

metric tons CO2e per m3

Emissions factor source

Emission factors in the calculation, reporting, and publication system of the Act on Promotion of Global Warming Countermeasures

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	354348	354348	0	0
Heat	0	0	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C9. Additional metrics

C9.1

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

Waste

Metric value

88.3

Metric numerator

Amount recycled (t)

Metric denominator (intensity metric only)

Total amount of industrial waste (t)

% change from previous year

1.04

Direction of change

Increased

Please explain

At construction sites in Japan, the rate of recycling of industrial waste is analyzed in "Zero Emissions Initiative". In fiscal 2020, sludge and mixed waste (stable type and management type), waste plastics, other rubble, and glass and ceramics, which have a low recycling rate, accounted for 37.1% of the total emissions, resulting in a reduction in the overall recycling rate. We will continue to monitor and improve the recycling of resources.

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, 2020

Period end date

March 31, 2021

% of total Scope 1 emissions covered by tax

73

Total cost of tax paid

17735612

Comment

Calculated by multiplying domestic fuel-derived CO2 emissions (Scope 1) by the currently added Global Warming Countermeasure Tax (289 yen/tCO2). 61,369 t-CO2 x 289 yen/t-CO2 = 17,735,612 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 on the operations and activities of the Group, it is necessary to reduce fuel consumption itself in the comprehensive engineering business and functional materials manufacturing business in Japan and to reduce fuel-derived CO2 emissions. For the former, we are promoting its own "Zero Emissions Initiative" and are working to reduce the amount of utilities used at domestic plant construction sites in order to reduce CO2 emissions; that is, to avoid the impact of the tax. [Case study of strategy implementation]

Situation: Currently, the Tax for Climate Change Mitigation is imposed indirectly on domestic fuel-derived CO2 emissions (Scope 1), and the tax may increase in the future.

Task: In order to reduce the impact of the Tax for Climate Change Mitigation on the operations and activities of the Group, it is necessary to reduce the amount of fuel used by the comprehensive engineering business and the functional materials manufacturing business in Japan, as well as to reduce fuel-derived CO2 emissions.

Action: Fuel-derived CO2 in the comprehensive 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 July 2016 to March 2021 and have set annual CO2 emission intensity targets. In order to reduce utility usage, we are working on introducing low-pollution construction equipment, promoting the stopping of engine idling and revving, reducing energy usage, and introducing carpooling and hybrid vehicles for commuting. Results: In FY2020, we achieved 0.40 kg-CO2/MH, far below our target of 0.7 kg-CO2/MH (emissions/unit hour worked). Continued implementation is expected to reduce the impact of the tax on the operations and activities of the Group.

C11.2

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

No

C11.3

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

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

C12. Engagement

C12.1

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

Yes, our suppliers

Yes, our customers

Yes, other partners in the value chain

C12.1a

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

Type of engagement

Engagement & incentivization (changing supplier behavior)

Details of engagement

Run an engagement campaign to educate suppliers about climate change

% of suppliers by number

% total procurement spend (direct and indirect)

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

for the coverage of your engagement

In the comprehensive engineering business of the Group, we work with cooperative companies (suppliers/subcontractors) to develop construction plans for sites and procure construction materials, equipment, and labor through such cooperative companies. The reason for such coverage of the engagement is that these cooperative companies are important suppliers/subcontractors in the supply chain and we conduct CO2 environment-related activities by involving the cooperative companies.

Impact of engagement, including measures of success

The reduction of CO2 emissions from construction sites can be achieved by introducing low-emission construction equipment, promoting the stopping of engine idling and revving, and reducing energy use. These will be implemented through cooperation between the Group and cooperative companies, and the target CO2 emissions intensity of 0.7 kg-CO2/MH (emissions/unit hour worked) was adopted as a measure of success. As an effect of this engagement, a "Construction Site Environmental Management Plan" is issued for large domestic construction sites, and environmental education including environmental policy is carried out for construction parties who enter the site. In accordance with "Environmental Targets and Environmental Action Plan", environmental items are monitored and recorded using "Checklist for Confirming Environmental Considerations in the Vicinity of Site Offices and Construction Sites" and "Survey Chart of Operation Rate of Low-Pollution Construction Equipment, Heavy Equipment, and Transportation Vehicles, and Idling Stop Chart". As a result, the CO2 emissions intensity at the sites in FY2020 was 0.4 kg-CO2/MH, achieving the target of 0.7 kg-CO2/MH.

Comment

C12.1b

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

Type of engagement

Collaboration & innovation

Details of engagement

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

Portfolio coverage (total or outstanding)

<Not Applicable>

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

Comprehensive engineering business accounts for 90% of the sales of the Group. Based on this, the percentage of the number of customers is assumed to be 90% disregarding the actual number.

The activities of these customers are the operation of energy and manufacturing plants we design and construct, and CO2 is emitted with their use of fuels, etc. during operation. Therefore, all customers are included in the coverage of engagement. From the perspective of reducing CO2 emissions from the use of heat and electricity during the operation period of such plants as LNG facilities designed and constructed by the Group, the Group proposes energy-saving measures to customers at the design stage as well as after the start of operation so as to reduce emissions in the operation phase as well.

Impact of engagement, including measures of success

In response to the social issue of reducing the environmental impact of fossil energy and reducing greenhouse gas emissions by improving energy efficiency worldwide, we are actively engaged in the construction of fossil energy plants with low environmental impact and in energy conservation and efficiency improvements at energy plants. The measure of success will be the amount of CO2 reduction compared to before the proposal.

As an example of this engagement, in the reporting year, flaring gas was reduced to zero by optimizing the operating conditions for LNG plant shipments of a certain customer, resulting in zero CO2 emissions during the loading, which used to be more than 80 tons per shipment until then.

C12.1d

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

Situation: In the aviation industry, the ICAO (International Civil Aviation Organization) has introduced the CORSIA system, which requires the purchase of CO2 emission credits, etc., and expectations are rising for the development and stable supply of SAF (sustainable aviation fuel), which is produced from biomass-derived raw materials such as municipal solid waste, vegetable and animal fats, used cooking oil, and 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, regarding SAF produced in Japan, there is an urgent need to establish a highly economical SAF production system and a stable supply chain from raw material procurement to delivery, as production 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 production 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 our EPC business.

Action: We are working with three affiliated companies on the establishment of specific supply chain, including a plan to procure used cooking oil as raw material, introduction of a production 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 production system and supply chain of SAF in Japan. We are also working to strengthen cooperation with aviation companies, which are the users of the fuel, and with government agencies involved in aviation fuel supply.

Results: Through these efforts, we expect to be able to contribute to the development and stable supply of SAF by realizing a business plan for the operation and full-scale commercialization of the SAF production facility, which is targeted for around 2025.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

- Direct engagement with policy makers
- Trade associations
- Funding research organizations
- Other

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Clean energy generation	Support	While Japanese government declared its intention to become carbon neutral by 2050, and measures to achieve this goal are under way, the Ministry of Economy, Trade, and Industry led the establishment of the "Public-Private Fuel Ammonia Promotion Council" in October 2020. We participate in it as a member since the first meeting. The activities of the Council include recommendations on legislative measures to enable the introduction of fuel ammonia, and we contributed to the formulation of the recommendations in terms of technical knowledge.	Use of fuel ammonia, a zero-emission fuel that does not emit carbon dioxide when burned.
Clean energy generation	Support	Participated in a demonstration project supported by the Ministry of Economy, Trade and Industry for the world's first blue ammonia transport.	Not only green ammonia, which is produced using electricity derived from renewable energy sources, but also blue ammonia, which is produced from fossil fuels and reduces CO2 emissions, generated as a byproduct, through CCS and other means, is expected to expand its use during the transition period. We are participating in a demonstration project for a supply network of blue ammonia to Japan in Saudi Arabia, promoted by the Institute of Energy Economics, Japan, and Saudi Aramco, and are contributing to the spread of this technology.

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

KEIDANREN (Japan Business Federation)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's 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.

How have you influenced, or are you attempting to influence their position?

As a top runner in the engineering industry, we support the measures set forth by Keidanren to realize a low-carbon society, and we actively participate in related meetings and councils to make contributions.

Trade association

Engineering Advancement Association of Japan

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

This Association was established in 1978 based on the idea that the activities of engineering companies lead to the development of a sustainable society. Since the Association considers addressing the issue of climate change to be an urgent issue, as a group of companies that provide solutions to that, the Association plans and implements projects in line with policies in close collaboration with government and academia.

How have you influenced, or are you attempting to influence their position?

From 2007 to 2009, the then chairman of JGC JAPAN CORPORATION served as the chairman of the Association, and the current chairman of JGC HOLDINGS CORPORATION is a member of the Board. The Association is currently preparing a report entitled "report on climate change" (a report which aims to provide recommendations on the direct impact of climate change on the management and operations of Japanese companies and the need for measures to prepare for such risks; scheduled to be published in June 2021), and we are heavily involved in its compilation work.

Trade association

Clean Fuel Ammonia Association (CFAA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The Association aims to establish a value chain from supply to utilization of CO₂-free ammonia as a form of hydrogen energy, and will conduct technology development/evaluation, economic evaluation, policy recommendation, international collaboration, etc.

How have you influenced, or are you attempting to influence their position?

An executive of the Group serves as vice chairperson of the Association. In addition, employees of the Group have been dispatched to the Association as permanent staff and are actively participating in the formulation of plans for the use of fuel ammonia.

C12.3d

(C12.3d) Do you publicly disclose a list of all research organizations that you fund?

No

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

The Group supports "Water Source Forest Conservation Program" of Kanagawa Prefecture and is actively participating in various conservation activities as a forest rehabilitation partner.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

When joining an outside organization, an "application for approval to join an external organization," which specifies the details of the business and the reason for joining, is drafted by the person in charge, and the decision is made after the approval of the general manager, director, vice president, president, and chairman. 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 the Group belongs 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 operating companies and divisions concerned of the Group. 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 strategy related to climate change.

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

fy20_yukashoken.pdf

Page/Section reference

Governance : P41-65

Strategy : P10-15

Risk & Opportunities : P16-19

Content elements

Governance

Strategy

Risks & opportunities

Comment

Publication

Other, please specify (Integrated Report)

Status

Underway – previous year attached

Attach the document

https://www.jgc.com/en/ir/ir-library/annual-reports/pdf/JGCReport2021_e.pdf

Page/Section reference

Governance P61-73

Strategy : P25-44

Risks & opportunities : P53-54、 P77-78

Emissions figures : P85

Content elements

Governance

Strategy

Risks & opportunities

Emissions figures

Comment

C15. 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.

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

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

Submit your response

In which language are you submitting your response?

Japanese

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission
I am submitting my response	Investors Customers	Public

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I have read and accept the applicable Terms