CDP Climate Change 2021 Questionnaire

C0 Introduction

C0.1

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

The Group is centered on the Obayashi Corporation, one of Japan's biggest construction companies, and consists of 94 subsidiaries and 26 affiliated companies, with about 1.77 trillion yen in total sales and 15,000 employees. Since its founding by Yoshigoro Obayashi in Osaka in 1892 and until today, the Group has engaged in numerous major projects in Japan and abroad, building on its DNA of "an attitude of sincere manufacturing" and "technological power." Making use of technologies and knowhow that we have cultivated since the beginning, we have recently gone beyond our main construction business to engage in new businesses like the renewable energy business, actively working to realize a low carbon society.

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
From: [01/04/2020]	To: [31/03/2021]	No

C0.3

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

Japan

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

Domestic (non-consolidated)

C-CN0.7/C-RE0.7

(C-CN0.7/C-RE0.7) Which real estate and/or construction activities does your organization engage in?

Answer specifically, e.g. new construction and large-scale alterations of buildings, other real estate and construction activities

New businesses like civil engineering, real estate development, and renewable energy

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
President	At the Obayashi Corporation, the Board of Directors, which comprises all directors, oversees climate-related risks and opportunities as a priority matter for our businesses. The person with ultimate responsibility for climate-related matters at the Obayashi Corporation is Representative Director and President, who is a member of the Board of Directors and chairman of the CSR Committee. The following are the Obayashi Corporation's main policies, measures, and organizations that are relevant to the climate-related matters for which Representative Director and President has responsibility. 1. Basic Principles and Environmental Policy of the Obayashi Corporation The Basic Principles of the Obayashi Corporation is based on the spirit of the Three Pledges (Quality, Value, and Efficiency) that go back to the founding of the company. Our Corporate Philosophy defines our social mission, and our Code of Conduct stipulates guidelines for achieving that. As a leading sustainability company, our Corporate Philosophy specifies that we "care for the global environment and create solutions to social challenges as a good corporate citizen." The Code of Conduct promotes "fostering an environmentally responsible society" as one way to "fulfill our social mission." Moreover, in addition to the Obayashi Corporation's Basic Principles, the President formulates an Environmental Policy whose explicit basis is that "The Obayashi Corporation will engage in independent initiatives to address

	environmental issues as a good corporate citizen that cares for the global environment, promote continuous improvement as a key task in our businesses, and envision an ideal future society through all our business activities, thereby contributing to building a sustainable society." 2. Obayashi Sustainability Vision 2050 At the Obayashi Corporation, matters are discussed by an expert committee that consists of external experts and several Obayashi Group directors, chaired by the President. Considering various social trends and changes in the business environment surrounding the Obayashi Group, the committee developed the Obayashi Green Vision 2050 from 2011 into the Obayashi Sustainability Vision 2050 in June 2019, incorporating ESG as a foundation of its business and achievement of SDGs as well as simultaneously pursuing the sustainability of "the planet, society, and people" and of the Obayashi Group. The Obayashi Sustainability Vision 2050 redefines our Vision in 2050 as the realization of sustainability of "the planet, society, and people" and defines "2040-2050 targets," including "decarbonization," to achieve that Vision. 3. Medium-Term Business Plan 2017 Considering the aim of "realizing a sustainable society" as defined in our Corporate Philosophy, the Obayashi Group has formulated a Medium-Term Business Plan that envisions the future we want for our 150th founding anniversary (2042) and identifies the goals and measures we should achieve in the first five years of our road map toward that. Moreover, we defined six ESG key tasks after revising our initiatives based on the Obayashi Basic Principles from an ESG standpoint. In addition to incorporating these ESG key tasks in our business measures from the Medium-Term Business Plan and conducting activities in relation to the SDGs, we aim to realize medium- and long-term growth for the Obayashi Group as well as a sustainable society. Furthermore, one of the ESG key tasks is establishing an environmentally responsible society. Our action plans for this task of "establishing an environmentally responsible society" include "promoting renewable energy businesses" and "promoting decarbonization." We check the progress of KPIs set for each action plan on an annual basis and proceed with PDCA cycles. 4. The Board of Directors The Obayashi Corporation has a Board of Director that consists of all directors, including Representative Director and President and the executive officer responsible for the environment (Representative Director and Executive Vice President). The Board of Directors convenes about 15 times a year and oversees climate-related risks and opportunities. In FY2021.3, the board deliberated on and adopted the KPIs "Direct contribution of CO2 emission reductions rate* (vs. FV2013.3)" and "Indirect contribution of CO2 emission reduction rate** (vs. FV2013.3)" for the action plan "promoting decarbonization" that relates to the ESG key task "establishing an environmentally responsible society," as a climate-related matter relevant to concrete initiatives and KPIs about ESG that were incorporated into the management plan. *Direct contributions＝A＋B－C

	A Fuel consumption and power purchased at construction sites and in offices (scope 1 + scope 2) B Transportation of construction materials and waste, commuting of employees and workers (categories 4, 7, 9 in scope 3) C Emissions corresponding to power generated in renewable energy businesses **Indirect contributions＝a＋b－c a Annual emissions for buildings in operation and in common use for 35 years after completed construction by us b Production of construction materials (category 1 in scope 3) c Reduction effect by adoption of energy-saving and low-carbon materials 5. CSR Committee To conduct CSR activities throughout the corporation from an ESG standpoint based on the Obayashi Basic Principles, the Obayashi Corporation has a CSR Committee consisting of several directors and several executives, including the executive officer responsible for the environment (Representative Director and Executive Vice President), which is chaired by Representative Director and President. The CSR Committee meets once a year and formulates the basic policy on CSR, including activities for climate-related matters, proposes policies and concrete activity plans, and reviews how they are implemented. In July 2020, the CSR Committee deliberated on and decided to announce our support for the Task Force on Climate-Related Financial Disclosures (TCFD) and implemented scenario analysis of four major businesses in Japan (building construction, civil engineering, real estate development, new businesses) in order to understand the medium- to long-term impact of climate-related issues on businesses. Based on those results, information was disclosed based on the TCFD proposal in November 2020.

C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
All meetings (planned)	●Reviewing and guiding strategy ●Reviewing and guiding major plans of action	The following are the meetings in the Obayashi Corporation where climate-related matters are on the agenda and which are attended by officers including the chief executive Representative Director and President and/or the executive officer responsible for the environment (Representative

	●Reviewing and guiding risk management policies ●Reviewing and guiding annual budgets ●Reviewing and guiding business plans ●Setting performance objectives ●Monitoring implementation and performance of objectives ●Overseeing major capital expenditures, acquisitions and divestitures ●Monitoring and overseeing progress against goals and targets for addressing climate-related issues	Director and Executive Vice President). These meetings are scheduled 1-15 times a year. 1. Board of Directors The Obayashi Corporation has a "Board of Directors" that consists of all directors. The board meets 15 times a year and oversees climate-related risks and opportunities. 2. CSR Committee It clarifies the Obayashi Corporation's basic stance on CSR (corporate social responsibility, including activities for environmental preservation and climate-related matters) and promotes CSR activities throughout the corporation. The President chairs the committee and it consists of the executive officer responsible for the environment and other officers. In terms of climate-related matters, it engages in "reviewing and instructing strategy," "reviewing and instructing major action plans," "reviewing and instructing risk management policy," "monitoring how goals are implemented and achieved," and "setting goals for addressing climate-related issues and monitoring their progress," which has allowed it to contribute to the supervision of climate-related matters by revising the Obayashi Green Vision 2050, which was formulated as a medium- to long-term environment vision in 2011, into the Obayashi Sustainability Vision 2050 in FY2020.3 by incorporating not only E (environment) but also S (society) and G (governance) elements, as well as disclosing information based on the TCFD proposal. 3. Environmental Management Expert Committee This is an organization under the CSR Committee that is in charge of "matters of proposing and implementing measures for the operation of the environmental management system," "matters of grasping how measures for the operation of the environmental management system are implemented," and "matters of gathering and reconciling the opinions of relevant departments for the promotion of measures for the operation of the environmental management system." It is chaired by the executive officer responsible for the environment and consists of environment managers from each business division. It reviews and instructs strategies and action plans based on environment-related data gathered and analyzed from the whole corporation, defines performance goals, and monitors how they are implemented and achieved. In terms of climate-related matters, it engages in "reviewing and instructing major action plans," "reviewing and instructing risk management policies," "defining performance goals," "monitoring how the goals are implemented and achieved,"

		and "supervising the progress toward goals for addressing climate-related issues," which has allowed it to contribute to the supervision of climate-related matters by holding management reviews twice a year to approve the setting and revising of environment goals as well as issue reviews and instructions about environmental preservation activities to the overall environmental manager and environmental managers in the corporation and all our branches. 4. Liaison Conference for All Branch Environmental Managers This is an organization under the Environmental Management Expert Committee that promotes instructions of the CSR Committee and the Environmental Management Expert Committee. It is attended by the executive officer responsible for the environment, the overall environmental manager, and the environmental managers in the corporation and all our branches. In terms of climate-related matters, it engages in "reviewing and instructing major action plans," "defining performance goals," "monitoring how goals are implemented and achieved," and "setting goals for addressing climate-related issues and monitoring their progress," which has allowed it to contribute to the supervision of climate-related matters by reviewing and analyzing the achievements of environmental preservation activities in the corporation and all our branches.

C1.2

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

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
President	Both assessing and managing climate-related risks and opportunities	Half-yearly
Chief Risks Officer (CRO) 1	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Corporate responsibility committee 2	Both assessing and managing climate-related risks and opportunities	Annually

1 Executive officer responsible for the environment
2 CSR Committee

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 Obayashi Corporation has a CSR Committee that consists of several directors and executives, including the executive officer responsible for the environment (Representative Director and Executive Vice President), chaired by the Representative Director and President. The committee is tasked with clarifying the Obayashi Corporation's basic stance on CSR (corporate social responsibility, including activities for environmental preservation and climate-related matters) as well as promoting CSR activities throughout the corporation through "1. matters of formulating the corporation's basic policy on CSR," "2. matters of proposing policies to promote CSR activities," and "3. matters of evaluating the implementation of CSR activities." When it comes to climate-related matters, the committee makes annual reports about the results of monitoring CO2 emissions based on reports submitted by the Environmental Management Expert Committee (chairman: executive officer responsible for the environment: Representative Director and Executive Vice President), which is a subordinate organization. From this, the CSR Committee (chairman: Representative Director and President) has final responsibility for evaluating and monitoring climate-related matters.

The following are the organizations that engage in climate-related matters with the involvement of the Representative Director and President as well as the responsibilities of those organizations.

・Members of the Board of Directors

The Obayashi Corporation has a Board of Directors that consists of all directors. The board meets 15 times a year and oversees climate-related risks and opportunities.

・Members of the CSR Committee

The following are the organizations that engage in climate-related matters with the involvement of the executive officer responsible for the environment (Representative Director and Executive Vice President) as well as the responsibilities of those organizations.

・Members of the Board of Directors

The Obayashi Corporation has a Board of Directors that consists of all directors. The board meets 15 times a year and oversees climate-related risks and opportunities.

・ Members of the CSR Committee

The Obayashi Corporation has a CSR Committee that consists of several directors and executives, including the executive officer responsible for the environment (Representative Director and Executive Vice President), chaired by the Representative Director and President. The committee is tasked with clarifying the Obayashi Corporation's basic stance on CSR (corporate social responsibility, including activities for environmental preservation and climate-related matters) as well as promoting CSR activities throughout the corporation through "1. matters of formulating the corporation's basic policy on CSR," "2. matters of proposing policies to promote CSR activities," and "3. matters of evaluating the implementation of CSR activities." When it comes to climate-related matters, the committee makes annual reports about the results of monitoring CO2 emissions based on reports submitted by the Environmental Management Expert Committee (chairman: executive officer responsible for the environment: Representative Director and Executive Vice President), which is a subordinate organization.

- Members of the Environmental Management Expert Committee

The Obayashi Corporation has an Environmental Management Expert Committee that is chaired by the executive officer responsible for the environment (Representative Director and Executive Vice President) and is subordinate to the CSR Committee. Moreover, the Obayashi Corporation has an "environmental management system" in place to be able to contribute to building a society where sustainable development is possible, by minding the environmental impact of all our business activities and working to preserve the environment. The expert committee is in charge of the following matters: "1. matters of proposing and implementing measures for the operation of the environmental management system," "2. matters of grasping how measures for the operation of the environmental management system are implemented," "3. matters of gathering and reconciling the opinions of relevant departments for the promotion of measures for the operation of the environmental management system" and "4. matters of providing affiliated companies with instruction and cooperation regarding the aforementioned matters as needed." The executive officer responsible for the environment, who chairs this expert committee, is responsible for taking various actions with regard to the Obayashi Corporation's environmental management system, including addressing climate-related matters (such as evaluation, supervision, etc.). With regard to climate-related matters, the expert committee receives reports about energy usage collected and tallied on a semi-annual basis and CO2 emissions calculated from those figures from the "overall environmental manager" (General Manager of the Environmental Management Department of the Safety, Quality & Environment Division in the Head Office [environment/sustainability manager]) as well as monitors these activities.

(References) "overall environmental manager" "environmental managers"

Moreover, the Obayashi Corporation has an "environmental management system" in place to be able to contribute to building a society where sustainable development is possible, by minding the environmental impact of all our business activities and working to preserve the environment. The General Manager of the Environmental Management Department of the Safety, Quality & Environment Division in the Head Office (environment/sustainability manager) is appointed as "overall environmental manager." The overall environmental manager follows the instructions of the Environmental Management Expert Committee, which is an organization under the CSR Committee, and works to establish, implement, and maintain the environmental management system in all branches. Moreover, the head of construction at each branch (environment/sustainability manager) is also appointed "environmental manager" of that branch. The environmental manager follows the instructions of the overall environmental manager and works to establish, implement, and maintain the environmental management system in their branch. Further, the overall environmental manager and the environmental managers have various obligations regarding actions associated with the Obayashi Corporation's environmental management system, including addressing climate-related matters. With regard to climate-related matters, the overall environmental manager leads the Environmental Management Department of the Safety, Quality & Environment Division as the administration office in tallying energy use based on semi-annual reports from the branch environmental managers as well as monitoring the situation together with the CO2 emissions calculated from those figures. Reports about all branches and their results are also given at the Liaison Meeting for All Branch Environmental Managers, which is held twice a year.

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	The Obayashi Corporation provides incentives to manage climate-related matters. More concretely, there are incentives for all employees and incentives for the executive officer responsible for the environment. Management of climate-related matters at the Obayashi Corporation includes "reducing CO2 emissions at the design and construction stages," which is one of our EMS environment goals.

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
Chief Risk Officer (CRO)	Monetary reward	Emissions reduction project	Our progress with regard to "reducing CO2 emissions at the design stage" and "reducing CO2 emissions at the construction stage," which are environmental goals in the Obayashi Corporation's EMS, affects the evaluation and monetary rewards of the executive officer responsible for the environment as they are the chairman of the Environmental Management Expert Committee, which proposes and implements EMS measures as well as oversees that implementation.
All employees	Monetary reward	Emissions reduction project	The Obayashi Corporation has an "environmental commendation" system that recognizes especially meritorious and otherwise exemplary activities in three of our environment-related initiatives (low carbon, recycling, coexistence with nature). The judgment criteria of the "environmental commendation" include environmental impact (reduce greenhouse gas emissions, reduce energy use, improve efficiency, etc.). As part of the commendation, the awardee is presented with a certificate as well as prize money or a prize item.
All employees	Monetary reward	Emissions reduction project	One of the items in the employee performance review is "has performed work in consideration of the environment," which is reflected in each employee's salary. "Work in consideration of the environment" includes activities relevant to reducing CO2 emissions at the design and construction stages, which is an EMS environment goal of the Obayashi Corporation.

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?

Time horizon	From (years)	To (years)	Comment
Short-term	0	1	
Medium-term	1	3	
Long-term	3	31	

C2.1b

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

Substantive financial or strategic impact is defined as follows. The evaluation criteria for importance/impact are impact in case of occurrence, risk of occurrence in the short, medium, and long terms (frequency), impact on consolidated operating income as an indicator of financial impact, and qualitative evaluation of consistency with the Obayashi Corporation's Basic Principles, business activities, and business strategy. Rising construction costs in our construction business, which is our core business and accounts for more than 90% of net sales, is tantamount to rising cost of goods sold, which has a negative impact on consolidated operating income. Changes in consolidated operating income are an element that causes a considerable financial impact when we identify and assess risks and opportunities. Moreover, our consolidated operating income was 123.2 billion yen as of March 2021, but fluctuations in domestic construction demand are having a short-term impact on our building construction business and a medium- to long-term impact on our civil engineering business.

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

The Obayashi Corporation incorporates techniques for identifying, evaluating, and managing complex and society-wide risks and opportunities in the organization's processes as part of overall risk and opportunity management, thereby identifying, evaluating, and managing climate-related issues.

As part of the Obayashi Corporation's methods for identifying, evaluating, and managing complex and society-wide risks and opportunities, the CSR Committee examines impact on the entire supply chain, including the whole group, suppliers, and clients, and what the corporation needs the most in the short, medium, and long terms, through which they are able to identify and evaluate risks and opportunities and finally determine ESG Materialities, including climate-related ones. The CSR Committee chaired by the President oversees two other committees, namely the Public Relations Expert Committee and the Environmental Management Expert Committee. It receives reports on the identification and evaluation of various risks and opportunities from these two committees and manages them from a comprehensive standpoint. Twice a year, the Environment Management Department identifies and evaluates short-term risks and opportunities that are already manifesting and that affect the group and value chain as a whole. The Environmental Management Expert Committee, which meets twice a year and is chaired by the executive for environmental actions, likewise reviews key measures in environmental management, makes minor adjustments to target levels, and ensures that the latest information is reflected and evaluated. The results of their deliberations are reported to the CSR Committee, which is the supreme decision-making body for environmental measures.

When it comes to risks and opportunities that affect the group and value chain as a whole in the medium to long terms, the ESG expert department extracts 22 "ESG tasks" from 300 tasks in ESG areas, evaluates them according to stakeholder interest and business strategic and financial importance and impact for the Obayashi Group, and ranks them accordingly. The CSR Committee then narrows it down to six items after considering the Obayashi Corporation's Basic Principles and business strategies. One of these ESG Materialities is "forming a society that cares about the environment."
In its efforts to address climate-related risks and opportunities, the CSR Committee develops ESG Materiality action plans and KPIs (numerical targets), incorporates them into business plans, and asks the departments to reflect them in their key measures.
The ESG expert department conducts performance reviews twice a year and a detailed analysis once a year to measure progress toward departmental numerical targets, all of

which is evaluated by the CSR Committee once a year.

[Processes for identifying and evaluating climate-related risks and opportunities]
Also with regard to methods for identifying and evaluating climate-related risks and opportunities, we identify and evaluate the materiality of risks and opportunities according to definitions and indicators for serious impact, and define risk responses and rankings in the same way as for the aforementioned risks and opportunities that affect the entire value chain.

The evaluation criteria for importance/impact are impact in case of occurrence, risk of occurrence in the short, medium, and long terms (frequency), impact on consolidated operating profit as defined for serious financial impact, and qualitative evaluation of consistency with the Obayashi Corporation's Basic Principles, business activities, and business strategy.

The Obayashi Sustainability Vision 2050, which was revised and announced on June 24, 2019, explains how to manage long-term risks and opportunities of three years or more until 2050 by taking into account various social trends and changes in the business environment of the Obayashi Group as well as by conducting revisions and control with management and external experts. At the intermediate target years of 2030 and 2040, we will set the targets for 2040-2050 as well as consider the need for revising the Vision. Moreover, we have implemented scenario analyses for our four main domestic businesses in 2030 based on the TCFD proposal, identifying and evaluating risks and opportunities to understand the mid- and long-term impact of climate-related challenges on the businesses.

[Processes for responding to climate-related risks and opportunities]
For methods to respond to climate-related risks and opportunities, we rank the identified risks and opportunities as follows according to the identification and evaluation results from the aforementioned [Processes for identifying and evaluating climate-related risks and opportunities]. They are managed by also considering and reflecting financial impact on the medium-term business plans formulated every three to five years. The responsible departments formulate their own priority implementation plans based on the response measures adopted. These response measures are then developed into specific measures for which progress is reported along with action plans and KPIs to the CSR Committee once a year.

・Tasks with high importance, impact, and response for the Obayashi Group as well as high stakeholder interest and response from other companies
[Risks] Responding with control measures[Opportunities] Responding by strengthening priority initiatives
・Tasks with high importance, impact, and response for the Obayashi Group as well as low stakeholder interest and response from other companies
[Risks] Responding with reduction measures [Opportunities] Responding by actualizing priorities and communicating importance
・Tasks with low importance, impact, and response for the Obayashi Group as well as high stakeholder interest and response from other companies
[Risks] Responding with transfer measures [Opportunities] Responding by proposing and implementing responses and measures
・Tasks with low importance, impact, and response for the Obayashi Group as well as

low stakeholder interest and response from other companies
[Risks] Responding with acceptance measures [Opportunities] Responding by observing trends and ascertaining opportunities

■Case study: short- and medium-term risks that accompany physical changes "average temperature increase due to higher summer maximum temperature" "increased severity and frequency of abnormal weather, including cyclones and floods" (Situation) The Obayashi Corporation had 203 cases of heatstroke in FY2021.3, of with 24 involved at least one day off. The working environment in construction is often very hot, such as a place in direct sunlight, somewhere lacking air conditioning, a closed space with little ventilation, or somewhere with hot materials and machines. If the working environment becomes worse due to higher temperatures, this can lead to more cases of heatstroke on construction sites, concomitant decreases in work efficiency, more days off, and higher accident risk.

At the same time, abnormal weather has become more frequent in recent years due to climate change, with concentrated bouts of heavy rain becoming more common, such as more days with 100 mm or more of rainfall and hours with 50 mm or more. As a result, the capacity of rivers and waterways are frequently exceeded.
(Challenge) Heat stress, changes in weather patterns, and intensifying abnormal weather creates challenges in the form of potential productivity decreases at construction sites due to heavy rain and risks of higher construction costs due to additional repairs and mending after flooding and typhoon damage. Moreover, there is a need to respond to suspended supply chains due to abnormal weather and preparing BCP responses to meet stipulated deadlines becomes an important task.
(Actions) The ESG expert department has assessed that heat stress, heavy rain countermeasures, and flood and typhoon damage risk affecting business performance in an excessively competitive construction market because price adjustments are not possible because they directly lead to higher construction costs. In the mid- to long-term scenarios, the CSR Committee assessed that heatwaves, heavy rain, and other aspects of climate change can have a serious financial impact, assuming that they are frequent and consolidated operating profit is estimated to drop as much as 5%. It was also assessed that these risks should be addressed with control measures for tasks with high importance, impact, and response for the Obayashi Group as well as high stakeholder interest and response from other companies. In FY2021.3, the ESG expert department developed measures to improve the productivity and safety of measures against heatwaves, heavy rain, and other aspects of climate change and to promote innovative technological development for improving the working environment. Based on these considerations, the CSR Committee evaluated business impact based on the TCFD proposal and decided on the aforementioned measures in June 2020.
(Results) Strategies based on the results of analyzing the risks and opportunities for our businesses caused by climate change are being reflected in the upcoming medium-term business plan as well as managed with action plans and KPIs. There was a 4.4% performance increase for KPI "construction business productivity increase by at least 10% by FY2022.3 (vs. FY2017.3)" for action plan "use technological capabilities to further enhance productivity" in FY2021.3.

■Case study: Short- and medium-term risks that accompany changes (transitions) in the external environment (introduction of carbon tax, higher energy costs)
(Situation) The main business of the Obayashi Corporation is construction, which has a

major dimension of a so-called assembly industry, where workers mount secondary products like raw materials, components, and equipment at the construction site, so raw material costs makes up a big part of cost of goods sold. Moreover, large amounts of energy are consumed with the use of heavy machinery during construction.
(Challenges) The addition of carbon tax to material costs and rising energy costs directly lead to higher construction costs.
(Actions) The ESG expert department has assessed that the addition of carbon tax to material costs and rising energy costs risk affecting business performance in an excessively competitive construction market because price adjustments are not possible because they directly lead to higher construction costs. In the mid- to long-term scenarios, the CSR Committee assessed that the introduction of a carbon tax, coupled with rising power prices, can have a serious financial impact, assuming that this is moderately probable and consolidated operating profit is estimated to drop by about 10%. It was also assessed that these risks should be addressed with control measures for tasks with high importance, impact, and response for the Obayashi Group as well as high stakeholder interest and response from other companies.
More concretely, the policy is to promote energy-saving measures during construction, use recycled and low-carbon materials, and decarbonize construction machinery. The Environmental Management Expert Committee, which convened at the Corporation in May 2020, decided to set a CO2 reducing target of 15%, to be compared with the 15% target for FY2020.3, for the construction phase at construction sites in FY2021.3, basing this on the environmental expert department's analytical results of quantitative data monitored twice in FY2020.3. The CSR Committee, subsequently convened in June 2020, approved the construction CO2 reduction target of 15% as proposed by the Environmental Management Expert Committee.
(Results) The Environmental Management Expert Committee instructed the environmental managers of the Corporation and all branches to achieve this environment goal as a revision of earlier instructions. To achieve this target, the construction sites started using LED for temporary work lighting, fuel-saving heavy machinery, fuel-saving operating practices, and other detailed initiatives, thereby improving the energy efficiency during construction and achieving a 28% reduction of CO2 in FY2021.3.

C2.2a

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

Risk type	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Since a broader scope and higher level of current regulations (Building Energy Efficiency Act) would mean a loss of design and construction orders, which make up about 60% of orders, for the Obayashi Corporation in case our energy-saving design technology decreases, we accumulate insufficient know-how from new technological development, and our ability to come up with solutions goes down, we need to perceive this as a short-term risk that is currently materializing. These issues are identified by the environment expert department every half a year, while the Environmental Management Expert Committee, which also

		convenes once every half a year, reflects this in their revisions of key measures and minor adjustments of target levels. The revised Building Energy Efficiency Act enacted in April 2021 is expected to expand the obligation to adhere to energy efficiency standards from large buildings of 2,000 m^2 or more to medium-sized buildings of 300 m^2 or more, as well as further raise the regulation level in the future. Unless we develop and expand low-emission construction and services, this will reduce our ability to build and offer services through design and construction methods that utilize our technological and managerial abilities to contribute to reducing CO2 emissions, which will decrease demand for our products and services, thereby cutting profits. There is a fear that we may lose design and construction orders if we accumulate insufficient know-how and our ability to come up with solutions goes down, due to various shortages in energy-saving design technologies and delays in new technological development.
Emerging regulation	Relevant, always included	Emerging regulations (e.g., the introduction of full-scale carbon taxes in Japan) are considered a medium-term risk that increases construction costs, for example via raw materials, as a large part of our emissions are Scope 1 emissions. A detailed analysis of this is conducted about every three years based on progress toward the numerical targets from our Obayashi Green Vision 2050, which is reflected in revisions of how we see the business environment around the Obayashi Group in the medium-term business plans we formulate every three to five years, the formulation of business foundation strategies, and revisions of action plans based on the Obayashi Green Vision 2050. There is a risk that construction costs, for example via raw materials, will increase in the future due to the introduction of carbon taxes, etc.
Technology	Relevant, always included	The influence of technology (e.g., new technological trends in renewable energy) is considered a medium-term risk of 1-3 years as it might damage the Obayashi Corporation's comprehensive competitiveness as a contractor when the number of new competitors increases, the technological competition becomes more intense, and our technology becomes obsolete when national social infrastructure policy and energy strategy comes to use renewable energy, such as solar power, offshore wind power, geothermal power, and biomass, and hydrogen. A detailed analysis of this is conducted about every three years based on progress toward the numerical targets from our Obayashi Green Vision 2050, which is reflected in revisions of action plans based on the medium-term business plans we formulate every three to five years and the Obayashi Green Vision 2050. There is a risk that the Obayashi Corporation loses its technological advantage and our comprehensive competitiveness as a contractor due to new technological trends.
Legal	Relevant, always included	Legal constraints (e.g., the Act on Rational Use and Proper Management of Fluorocarbons) are considered a short-term risk that is currently materializing due to the risk of lawsuits relating to compliance, including climate change measures. These issues are identified by the environment expert department every half a year, while the Environmental Management Expert Committee, which also convenes once every half a year, reflects this in their revisions of key measures for environmental management. The results of their deliberations are reported to the CSR Committee, which is the

		supreme decision-making body for environmental measures. The Act on Rational Use and Proper Management of Fluorocarbons requires the constructor to explain to the client whether there is applicable equipment when demolishing the building, while the owner of that equipment is required to have fluorocarbons from the scrapping be properly recycled, which might increase procedural costs and lead to lawsuits if an obligation to warn the client is not fulfilled.
Market	Relevant, always included	The market (e.g., trends in "building energy-saving functionality," etc., for which there is social and client demand) is considered a medium-term risk of 1-3 years as expectations on ZEB and other low-carbon buildings are increasing. A detailed analysis of this is conducted about every three years based on progress toward the numerical targets from our Obayashi Green Vision 2050, which is reflected in revisions of how we see the business environment around the Obayashi Group in the medium-term business plans we formulate every three to five years, the formulation of business foundation strategies, and revisions of action plans based on the Obayashi Green Vision 2050. Depending on what standards are in demand, we might have to cooperate with other makers or develop new technologies. Moreover, as a construction company, the Obayashi Corporation consumes large volumes of energy when using heavy machinery during construction. Since higher energy costs directly lead to higher construction costs, the inability to shift prices in an excessively competitive construction market risks affecting business performance, so it is because of this relation that it is included in the evaluation.
Reputation	Relevant, always included	Reputational risks, which include external recognition of CDP, external recognition of climate change measures, recognition of recent ESG initiatives, and agreement with the TCFD final report, are considered a short-term risk that is materializing as they might lead to decreased "external recognition" and higher financial costs depending on our environmental measures. These issues are identified by the environment expert department every half a year, while the Environmental Management Expert Committee, which also convenes once every half a year, reflects this in their revisions of key measures for environmental management. The results of their deliberations are reported to the CSR Committee, which is the supreme decision-making body for environmental measures. As an example, lower "external recognition" might lead to higher financial costs, so it is because of this relation that it is included in the evaluation.
Acute physical	Relevant, always included	Acute physical risks (e.g., more storms due to typhoons, etc.) are considered a short-term risk that is materializing because they might cause delays in construction at our offices and construction sites across Japan. These issues are identified by the environment expert department every half a year and then annually evaluated by the CSR Committee, which is the supreme decision-making body for risk management. These decisions are reflected in revisions of key measures for risk management. More "storms due to typhoons, etc." risks delaying construction in western Japan where we have many important clients, and in recent years, this risk has begun expanding to all of Japan.

Chronic physical	Relevant, always included	Chronic physical influences (e.g., "rising highest temperatures") are considered a short-term risk that is materializing as they decrease work efficiency and increase labor costs by making working environments worse, forcing construction site staff and other employees and workers to endure harsh working conditions. Regarding these issues, the safety expert department monitors the incidence of heatstroke every month and the safety expert department identifies environment data every half a year. The Environmental Management Expert Committee, which also convenes once every half a year, reflects those data in their revisions of key measures for environmental management. The results of their deliberations are reported to the CSR Committee, which is the supreme decision-making body for environmental measures. Worsening working environments risk decreasing work efficiency and increasing labor costs, so it is because of this relation that it is included in the evaluation.

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.

ID

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type and Primary climate-related risk driver

Chronic physical

Rising mean temperatures

Primary potential financial impact

Decreased revenues due to reduced production capacity

Company- specific description

The working environment in construction is often very hot, such as a place in direct sunlight, somewhere lacking air conditioning, a closed space with little ventilation, or somewhere with hot materials and machines. The Obayashi Corporation has many important clients in western Japan as the corporation was founded in Osaka, and more than 80% of domestic construction projects carried out by us in FY2021.3 took place in the Kanto region and westward where the number of days with temperatures of 30 degrees or higher was very high. Worsening working environments due to higher temperatures risks lowering productivity at sites to the west of Kanto as it leads to more

cases of heatstroke at construction sites, concomitant decreases in work efficiency and more days off for workers as well as higher risk of accidents. The Obayashi Corporation recorded 3 cases of heatstroke in FY2021.3, with 24 employees taking at least one day off. When temperatures exceed reference values at a construction site and there is an increased risk of heatstroke, work is temporarily suspended. This has a financial impact of lowering site productivity by about 16 million yen. This creates a risk of relatively minor financial impact when identifying and evaluating risks based on the definition of severe financial impact.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

15,955,200

Potential financial impact figure -minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact figure

When temperatures exceed reference values at a construction site and there is an increased risk of heatstroke, work is temporarily suspended. This has a financial impact of lowering site productivity.
The maximum of heatstrokes that we have had in recent years was in 2013 (277 cases) x 2 days (assumed number of days off per case) x correponding daily wages (24,000 yen) = 13,296,000 yen (13.296 million yen). Let's say the number of cases increases by 20% due to higher temperatures caused by global warming. That gives 13,296,000 yen x 0.2 = 2,659,200 yen (2.6592 million yen).

The cost increase from employees taking days off due to heatstroke becomes 13,296,000 yen + 2,659,200 yen = 15,955,200 yen (15.9552 million yen).

Cost of response to risk

1,317,000,000

Description of response and explanation of cost calculation

(Situation) The following three items of our Health and Safety Policy were established based on the basic principle of "valuing everyone we come in contact with in our business."
1. Comply with the Industrial Safety and Health Act, other relevant laws, and Obayashi Corporation's internal rules.

2. Appropriately implement and use Obayashi's Occupational Health and Safety Management System.
3. Help improve the independent health and safety management efforts of suppliers.
In accordance with this policy, Central Guidelines for Health and Safety Measures along with priority measures are formulated under the leadership of the top management every year, based on which each branch makes their own "guidelines for health and safety measures" and implement their own concrete measures. In the "heatstroke prevention measures" of the Central Guidelines for Health and Safety Measures, each construction site is asked to measure WBGT values (heat index) as well as inform workers about these values and warn them about the heatstroke risk. Moreover, if the reference values are exceeded or may be exceeded, they should make sure to implement prevention measures, such as securing ventilation and changing work tasks and workplace. These are based on the Guidelines for Basic Measures to Prevent Heatstroke in the Workplace of the Ministry of Health, Labour and Welfare.

(Challenges) In order to prevent heatstroke accidents, we need to keep track of WBGT values and implement corresponding countermeasures. Another likely solution is to keep track of each worker's physical condition, such as heart rate.

(Actions) In February 2015, we worked together with NTT Communications to develop workwear using the functional material hitoe. Wearing this allows you to measure employees' heart rate and other vital signs in real time as they work at an actual construction site. Monitoring these together with WBGT measurements has allowed us to evaluate the utility of hazard prediction, etc. In June 2015, we also developed the Heat Index Watcher, a system that allows the office to centrally manage information from consecutive measurements of WBGT (heat index) at multiple locations of a construction.

(Results) In July 2019, we updated the Envital system that manages worker safety by centrally managing the health of workers at construction sites and the conditions of their workplace. We greatly improved convenience and utility, for example by switching the biosensors making up the system from shirt-type to wristband-type heart rate sensors, obtaining position information to improve management functionality, and adding an emergency alert function. At the same time, we decided to launch the Heat Index Watcher full-scale, introducing it at about 300 active construction sites across Japan. As a result of continuously introducing the Envital system and the Heat Index Watcher also in FY2021.3, the number of heatstroke cases in FY2021.3 was 60 fewer than in FY2020.3.

Based on the FY2021.3 environmental accounting, the management costs are included in the indirect expenses related to research and development: approx. 1,127 million yen + "monitoring and measurement costs": 158 million yen + "environmental damage provisions and insurance costs": 32 million yen = 1,317,000,000 yen (1,317 million yen).

Comment

ID

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type and Primary climate-related risk driver

Acute physical

Increased severity and frequency of extreme weather events such as cyclones and floods

Primary potential financial impact

Increased direct costs

Company- specific description

Sudden typhoons and floods are a major risk in the construction business, which is the Obayashi Corporation's primary business, that can lead to landslides in developed land, flooding and inundation of underground construction sites, damage to buildings, structures, materials, and construction equipment, as well as construction delays.
Big typhoons hit locations across Japan in 2017 and 2018, causing damage to all our domestic bases, but the biggest damage was done in the Kansai area. The Obayashi Corporation is one of the development contractors and builders working on the Umekita 2nd Project (provisional name), for which construction started in December 2020, so typhoon damage is a major risk. If physical risks such as sudden typhoons or floods occur and their severity increases, it might be necessary to pay for repairs to storm damage or hire more staff to make up for construction delays, thus increasing capital costs causing a financial impact of about 2.6 billion yen. This creates a risk of severe financial impact when identifying and evaluating risks based on the definition of severe financial impact.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

2,600,000,000

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact figure

If physical risks such as sudden typhoons or floods occur and their severity increases, it might be necessary to pay for repairs to storm damage or hire more staff to make up for construction delays, thus increasing capital costs causing a financial impact.

Damage repair and construction delay recovery expenses amount to the Obayashi Corporation's FY2021.3 domestic civil engineering sales at 342.2 billion yen x 0.2% = 648,400,000 yen (approx. 0.7 billion yen) and the Obayashi Corporation's FY2021.3

domestic building construction sales at 964.7 billion yen x 0.2% = 1,929,000,000 yen (approx. 1.9 billion yen).
[0.2% = reflects impact of large-scale natural disasters on GDP in a developed country (source: Tokio Marine Nichido global warming seminar, The Role of Finance and Insurance against Climate Change material, November 18, 2008)], civil engineering damage repair and construction delay recovery expenses at 0.7 billion yen + construction damage repair and construction delay recovery expenses at 1.9 billion yen = 2,600,000,000 yen (2.6 billion yen)

Cost of response to risk

190,000,000

Description of response and explanation of cost calculation

(Situation, challenges) If physical risks such as sudden typhoons or floods occur and their severity increases, it might be necessary to pay for repairs to storm damage or hire more staff to make up for construction delays, thus increasing capital costs causing a financial impact.

(Actions) The Obayashi Corporation addresses risks with regard to disasters at construction sites using the following methods: (1) prediction and prevention, (2) avoiding and minimizing damages, and (3) risk-shifting.
(1) Prediction and prevention (ordinary times): Establish a typhoon countermeasures headquarters in the head office and every branch to gather detailed information about typhoons and bomb cyclones from the Japan Meteorological Agency and private data companies. When Typhoon Haishen, which formed in the Ogasawara sea on September 1, 2020, approached Okinawa and Kyushu, the disaster countermeasures headquarters received detailed typhoon reports 1-4 from private data companies, anticipated multiple patterns of risk size depending on how the typhoon approaches, and decided on stand-by staff and location-specific support organizations according to the relevant patterns.
(2) Avoiding and minimizing damages (typhoon approaching or after passing): Measures were taken to prevent materials and equipment from flying off at the construction sites of the Kyushu branch, using check sheets prepared in advance. Measures such as putting staff in stand-by were taken at construction sites according to the above patterns under the leadership of the Kyushu Branch's construction project departments. In case of damage to buildings that were completed or under construction, they were reported to the head office and support was provided to buildings in need of material or personnel support through the aforementioned support organizations, based on designated procedures. After the typhoon passed, information about damages and clients was collected and aggregated according to the above procedures.
(3) Risk-shifting: Standard construction contracts will have the client (orderer) bear risks relating to serious damage due to natural disaster, but our construction insurance, etc. provided compensation that allowed us to shift and reduce risk.

(Results) (1) Prediction and prevention, (2) avoiding and minimizing damages, and (3) risk-shifting were implemented against the physical risks of Typhoon Haishen.

Based on the FY2021.3 environmental accounting, the management costs are included in "monitoring and measurement costs": 158 million yen + "environmental damage

provisions and insurance costs": 32 million yen = 190,000,000 yen (190 million yen).

Comment

ID

Risk 3

Where in the value chain does the risk driver occur?

Upstream

Risk type and Primary climate-related risk driver

Emerging regulation

Carbon pricing mechanisms

Primary potential financial impact

Increased direct costs

Company- specific description

Large volumes of energy are consumed during construction in the construction business. The Obayashi Corporation consumed about 42,000 KL in diesel fuel and 115,000 MWh in power during construction in FY2021.3. Moreover, steel, cement, and other principal materials consume large volumes of energy during production. The CO2 emitted to produce the steel and cement used by the Obayashi Corporation in FY2021.3 was 1,380,000 tons. Material procurement costs might increase if carbon taxes are levied on these materials and since higher procurement costs are directly linked to higher construction costs, there is a risk that it may affect business performance when price pass-through is not possible in an excessively competitive construction market. Transitional risks for the Obayashi Corporation's supply chains amount to about 1.55 billion yen in additional construction costs if carbon taxes are introduced, energy costs increase, and the taxes are levied on the principal materials. This creates a risk of severe financial impact when identifying and evaluating risks based on the definition of severe financial impact.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1,550,000,000

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact figure

Transitional risks for the Obayashi Corporation's supply chains consist of additional construction costs if carbon taxes are introduced, energy costs increase, and the taxes are levied on the principal materials. The CO2 emitted to produce the steel and cement used by the Obayashi Corporation in FY2021.3 was 1,380,000 tons. If price pass-through of raw material costs to construction costs is not possible, this will increase the construction cost price and impact revenue.
The CO2 emitted by the Obayashi Corporation's energy consumption during construction is about 170,000 tons x added global warming tax 1,000 yen/t-CO2 = 170,000,000 yen (170 million yen). The CO2 emitted during production of steel and cement used by the Obayashi Corporation in FY2021.3 was about 1.38 million tons x 1,000 yen/t-CO2 = 1,380,000,000 yen (1.38 billion yen).

The added carbon tax is 170,000,000 yen (170 million yen) + 1,380,000,000 yen (1.38 billion yen) = 1,550,000,000 yen (1.55 billion yen).

Cost of response to risk

6,100,000,000

Description of response and explanation of cost calculation

(Situation) As a construction company, the Obayashi Corporation is able to directly reduce CO2 emissions at our own discretion by decarbonizing our facilities and building low-carbon structures.

(Challenges) The Obayashi Corporation has a target of reducing CO2 emissions by 85% by 2050 (2013 baseline) through technological development that contribute to rationalizing and increasing the productivity of construction and introducing innovative solutions in the field, thereby reducing energy consumption.

(Actions) As an example of technological development that contributes to increased productivity, we have developed the world-first Energy-saving Shield Construction Method, which combines high-speed construction with reduced power usage when constructing tunnels by digging underground with a large cross-section shield machine, thereby realizing a highly efficient digging method that is about 25% faster and combines about 30% less energy than conventional methods. Other ways we are solidly achieving our targets for reducing CO2 emissions are switching the temporary lighting at sites to LED, introducing highly efficient heavy machinery for construction, and training workers to drive fuel-efficiently, thereby reducing the risk of higher production costs due to changes in investment prices.

(Results) In FY2021.3, our target was to reduce emissions by 15.0% compared to FY2014.3, and we reduced them by 28.3%.

Based on the FY2021.3 environmental accounting for the Obayashi Corporation alone, the management costs are included in R&D expenses during design: about 5 billion

yen + indirect expenses relating to R&D: about 1.1 billion yen = about 6,100,000,000 yen (6.1 billion yen).

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.

ID

Opp1

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

In light of the Japanese government's policy target of carbon neutrality by 2050, reducing CO2 emissions is generally considered an urgent global challenge. One third of Japanese CO2 emissions come from houses and buildings, so the Obayashi Corporation's role in reducing GHG emissions is extremely important since the domestic construction business is its primary business and accounts for three quarters of total sales. We are also working harder for our own facilities to meet demand for new energy-saving buildings that keep down CO2 emissions as well as energy-saving improvements, such as increasing facility efficiency and enhancing buildings' insulation. Eco-Navi, which is a simulation software for identifying the most effective combinations of energy-saving techniques to accommodate client budgets and building information, has continued to evolve in parallel with progress in buildings and facilities since its creation in 1998. In addition to clinic and school versions, a new version is being developed to handle building renovation and meet a variety of needs. The Thermal Shield Method, which uses paint that has high sunlight reflectivity to keep surface temperature from

rising, reflects the infrared sunlight that shines on rooftops and such to reduce the air conditioning load through thermal insulation and contribute to energy conservation. We are certain that we can increase the opportunities for the Obayashi Corporation to receive orders also through our accumulated know-how and ability to propose solutions through a variety of other energy-saving construction methods, energy-saving design technologies, and new technological development. By developing and expanding low-emission construction and services, we hope to boost our ability to build and offer services through design and construction methods that utilize our technological and managerial abilities to contribute to reducing CO2 emissions, which will increase demand for our products and services, thereby increasing profits. We estimate the financial impact from this "opportunity" to be 330 billion yen in "increased construction and services sales in construction design." This constitutes an opportunity with tremendous financial impact when identifying and evaluating opportunities based on the definition of severe financial impact.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

329,900,000,000

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact figure

By developing and expanding low-emission construction and services, we hope to boost our ability to build and offer services through design and construction methods that utilize our technological and managerial abilities to contribute to reducing CO2 emissions (which will increase demand for our products and services, thereby increasing profits).

We estimate the financial impact from this "opportunity" to be "increased construction and services sales in construction design."We estimate an increase of 321.9 billion yen in orders per year: 321,900,000,000 yen increase in construction and design sales

[321.9 billion yen = (2020 construction sales: 1.1621 trillion yen, of which 55.4% was from construction design) x 50% (estimated part contributing to orders received)] 8,000,000,000 yen (8 billion yen) increase in design and other services; "increased construction and services sales in construction design" = 321,900,000,000 yen (321.9 billion yen) + 8,000,000,000 yen (8 billion yen) = 329,900,000,000 yen (329.9 billion yen)

Cost to realize opportunity

5,895,000,000

Strategy to realize opportunity and explanation of cost calculation

(Situation) The Obayashi Corporation receives orders by convincing our clients of the excellence of our energy-saving technologies and meeting demand for energy-saving buildings.

(Challenges) To do this, we must continue to work to develop technologies that can meet society's energy-saving needs, identify demand, increase opportunities for orders, and boost order accuracy. Moreover, we must provide clients with high-performance, eco-friendly facilities through ZEB (net-zero energy buildings: making the facilities themselves carbon-neutral without relying on emissions trading, etc.) in order to secure orders for building new energy-saving buildings and making energy-saving improvements, such as increasing facility efficiency and enhancing building thermal insulation.

(Actions) To do this, we engaged in technological development as described under (1) to (4) below.
(1) (Competitive product planning as a comprehensive construction company) In 2011, the Techno-Station (in the main building of Obayashi Technical Research Institute (Kiyose City, Tokyo) completed its basic plan to become a ZEB (zero energy building) with net-zero energy consumption by covering the energy needs using the facilities' own renewable power generation. Moreover, in the Harumi 2-Chome Project, for which the Obayashi Corporation is involved in the construction, we have developed and implemented ZEB technology, including external heat load control and optimization of facilities and equipment using operational data from existing Obayashi Group buildings.
(2) (Enhancing our business promotion system to increase opportunities for orders together with their accuracy) Using our accumulated construction track record, we manage and maintain clients' building history databases as well as manage and support the maintenance, management and operation of real estate, thereby "identifying" and "securing" needs with regard to building and improving energy-saving buildings while communicating with our clients. In April 2020, we established a Marketing Division at the main office to achieve further enhancements.
(3) (Introducing and collecting records of consulting services relating to energy conservation for clients) Since the 1990s, we have been developing the system Eco-Navi, which is a software for simulating effective building energy-saving techniques based on a record of the performance and energy use of clients' existing facilities, to provide clients with consulting services about energy needs and cost-effectiveness. Additionally, in compliance with the Revised Energy Conservation Act, we have developed Raku-Eco, a support software for managing energy usage by using cloud computers, for use in client services and our own facilities.
(4) (Enhancing our ability to propose designs and technological ability) In addition to the record of the use of the above Eco-Navi and Raku-Eco, we make suggestions for reducing CO2 emissions using CASBEE, which is a technique for "designs that are kind on the environment," in our design work. In 2016, we developed Eco-Navi® (city version), which is an energy system design support tool that can optimize wide-area energy usage and create networks between multiple building groups in smart cities, and then updated it in FY2021.3.

(Results)
(1) The Techno-Station in the main building of Obayashi Technical Research Institute (Kiyose City, Tokyo) has become a ZEB (zero energy building) (*1) with net-zero energy consumption by covering the energy needs using the facilities' own renewable power generation, using FY2015.3 operational performance, and remains so in FY2021.3. The Harumi 2-Chome Project is expected to gain ZEB Ready certification without introducing any special energy-saving devices.
(2) In FY2021.3, orders received in private non-manufacturing for construction went up by 15% compared to FY2020.3.
(3) In FY2021.3, there was an increase in the number of matters where "Eco-Navi" and "Raku-Navi" were applied.
(4) CASBEE evaluation in FY2021.3 allowed us to reduce operational CO2 emissions reduction rate by 23% compared to a standard building.

Based on FY2021.3 environmental accounting, the realization costs included "R&D costs": (3,860 million yen) + "environment-related departmental costs": (312 million yen) + "environment-friendly design costs": (1,723 million yen) = (5,895,000,000 yen (5,895 million yen)).

Comment

ID

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity drive

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

Primary potential financial impact

Increased revenues through access to new and emerging markets

Company-specific description

If the construction business, which is the Obayashi Corporation's primary business, is affected by a considerable contraction of the construction market due to an economic downturn in Japan or overseas, it might impact the group's performance as it receives fewer orders. The Obayashi Corporation works to improve sales strengths, procurement ability, and productivity in accordance with medium- to long-term market trends, but it is also working to diversify revenue sources by expanding business domains. As part of this, the entire Obayashi Group is promoting "renewable energy businesses" as an action plan for the sake of realizing a "decarbonized" society, which is a concrete initiative in the long-term Obayashi Sustainability Vision 2050. By accessing new and emerging markets for solar power generation, wind power generation, and other "renewable energy businesses" and promoting them as a group-wide effort, we expect

increases in profit from selling power to power companies in the long term based on feed-in tariff system for renewable energy. We had 44 power plants producing renewable energy in 30 locations across Japan as of March 2021, generating a maximum of 153 MW. As part of our investments in projects for building, maintaining, and operating wind power stations in recent years and for Mitanehamada wind power station, which commenced operation in November 2017, we developed the Wind Lift method that allows assembly of a wind turbine without the need for lifting with a large crane. This high level of technological ability was recognized with the 2020 Outstanding Civil Engineering Achievement Award of the Japan Federation of Construction Contractors. By accessing new and emerging markets for solar power generation, wind power generation, and other "renewable energy businesses" and promoting them in cooperation with Obayashi Group companies, we expect increases in profit from selling power to power companies in the long term based on feed-in tariff system for renewable energy. Specifically, we expect a financial impact from this "opportunity" that amounts to 660 million yen in profits from renewable energy price fluctuations. This is an opportunity that can have a moderate financial impact when identifying and evaluating opportunities according to the definition of "severe financial impact."

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

663,740,000

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact figure

By accessing new and emerging markets for solar power generation, wind power generation, and other "renewable energy businesses" and promoting them as a group-wide effort, we expect increases in profit from selling power to power companies in the long term based on the feed-in tariff system for renewable energy. The FY2021.3 sales of the Obayashi Clean Energy Corporation, which includes affiliated subsidiaries engaged in renewable energy businesses, were 9,482,000,000 yen (9.482 billion yen). Profits from renewable energy price fluctuations = Obayashi Clean Energy Corporation FY2021.3 sales x anticipated future power price rate of increase = 9,482,000,000 yen

(9.482 billion yen) x 7% anticipated future power price rate of increase = 663,740,000 yen (663.74 million yen)

Cost to realize opportunity

106,000,000

Strategy to realize opportunity and explanation of cost calculation

(Situation) We have decided to implement a project for constructing, maintaining, and operating fixed-bottom type offshore wind power stations as Japan's first commercial large-scale offshore wind power generation business at Akita and Noshiro Ports in Akita Prefecture, working jointly with other companies through Akita Offshore Wind Corporation, a special purpose company that we invested in in July 2016. This project aims at constructing, maintaining, and operating offshore wind power stations with total capacity of about 140,000 kW and sell power to Tohoku Electric Power based on the feed-in tariff system for renewable energy over 20 years starting with the commencement of operations in 2022.

(Challenges) The total project cost is about 100 billion yen, so the risk of the Obayashi Corporation having to foot the whole investment was a challenge.

(Actions) As such, we hoped to procure low-cost development capital by issuing our own green bonds for our own "renewable energy businesses." The green bonds issued by the Obayashi Corporation in October 2018 were to be used to promote solar power generation, wind power generation (onshore, offshore), and other renewable energy businesses. Through these green projects, we sought to diversify the Obayashi Corporation's power sources and revenue base.

(Results) New Obayashi Corporation sustainability bonds were issued in June 2019. Part of the capital procured through these sustainability bonds was used to fund renewable energy businesses such as a hydrogen production plant demonstration experiment as well as the Otsuki Biomass Power Plant and the Kamikita Ogawara Onshore Wind Power Plant (planned). Otsuki Biomass is already operating and construction started on the Kamikita Ogawara Wind Power Generation Business, which is the Obayashi Corporation's second onshore wind power generation project, in September 2020.

The procurement costs are green bond issuance costs 53 million yen + sustainability bond issuance costs 53 million yen = 106,000,000 yen (106 million yen).

Comment

ID

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of climate adaptation, resilience and insurance risk solutions

Primary potential financial impact

Increased revenues resulting from increased production capacity

Company-specific description

The Obayashi Corporation's civil engineering business is one of our specialities where we competitively construct structures for storing water underground in urban areas, which requires advanced construction technology, and restore large-scale infrastructure, for instance with dam reconstruction.

According to the Japan Meteorological Agency's Japan's Climate Change, global warming has caused an increase in days in which at least 100 mm of rain falls and short periods of heavy rain where at least 50 mm falls in recent years. As a result, the capacity of rivers and waterways are frequently exceeded. Preparing temporary underground water storage functions in urban areas and dredging rivers and dams are effective ways to prevent this flood damage, which we consider an opportunity. In particular, our evaluation is that order opportunities for the Obayashi Corporation's domestic civil engineering will increase because the typhoons have been impacting not just western Japan, where we have a rich construction track record, but all of Japan in recent years. This access to new markets is expected to expand our opportunities for receiving orders and earning revenue, as we possess advanced construction technology and have an advantage in terms of bidding price. We classify construction of underground rivers and reservoirs, river repairs and improvements, river dredging, and construction of seawalls to be climate-adaptation civil engineering. If we propose new solutions to such climate-adaptation needs that are accepted and lead to more orders and higher revenue per year, we define that as a financial impact. We consider the financial impact of this "opportunity" to be a maximum of 3,000,000,000 yen (about 3 billion yen) in more climate-response civil engineering orders per year as a result of developing climate-adaptation solutions. This constitutes an opportunity with tremendous financial impact when identifying and evaluating opportunities based on the definition of severe financial impact.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

3,000,000,000

Potential financial impact figure - maximum (currency)

20,000,000,000

Explanation of financial impact figure

Climate change is making situations where the capacity of rivers and drainage are exceeded more frequently. These flood damages are increasing the need to make the national land more resilient. Consequently, the government has made a cabinet decisions to add more than 3 trillion yen to the budget to maintain key infrastructure functions during disasters through three-year emergency measures for national land resilience until 2020, thus expanding the disaster civil engineering construction market. Especially effective climate change-adaptation technologies include preparing temporary underground water storage functions in urban areas and dredging rivers and dams, so we are seeing the emergence of a new market for public works as local governments are wanting to build drainage and rainwater trunk lines using small- and medium-sized cross-section shield technology. This access to new markets is expected to expand our opportunities for increased revenue (sales), as we possess advanced construction technology and have an advantage in terms of bidding price. If we propose new civil engineering solutions to such climate-adaptation needs that are accepted and lead to more orders and higher revenue per year, we define that as financial impact.
[We classify construction of underground rivers and reservoirs, river repairs and improvements, river dredging, and construction of seawalls to be climate change-adaptation civil engineering, and anticipate three to four such projects (about 1-5 billion yen per project) per year in urban areas.]
We estimate that developing solutions for climate change adaptation can earn us an annual 3,000,000,000 yen (about 3 billion yen) to 20,000,000,000 yen (20 billion yen) in climate change-adaptation civil engineering orders.
At least 1 billion yen per project x 3 projects + 5 billion yen x 0 =3,000,000,000 yen (3 billion yen); at most 1 billion yen per project x 0 + 5 billion yen x 4 projects = 20,000,000,000 yen (20 billion yen).

Cost to realize opportunity

4,172,000,000

Strategy to realize opportunity and explanation of cost calculation

(Situation) The Obayashi Corporation is developing and improving technologies with "Increase in awareness of disaster readiness and mitigation against the threat of damage from natural disasters and demand for clean energy" in mind, as defined in the 2017 medium-term business plan. The Obayashi Corporation possesses a wealth of technologies for digging, shield tunneling, and dam construction to prepare underground water storage functions and dredge rivers and dams, considering this one of our specialty areas.

(Challenges) When conducting shield tunneling, in places where the groundwater from the layers closer to the shield tunnel is used, there has been a growing need for environment-friendly solutions in recent years due to fears of the risk that tail grease

might leak into the water. Moreover, accurately placing the concrete molds needed to build gravity dams takes a great deal of time and effort even from highly trained workers, so automating and reducing the manpower need for moving and installing concrete molds is an important challenge for increasing productivity in the future.

(Actions) The Obayashi Corporation developed SEALNOC BD, which is a high-performance tail seal material for shields that is also environment-friendly, in cooperation with ENEOS in September 2020. Moreover, in November 2020, we applied the mold automatic slide system, which is one of the technologies integrated in the dam computerization construction technologies ODICT™, at the main body of Kawakami Dam (Iga City, Mie; client: Japan Water Agency).

(Results) SEALNOC BD is an improvement of conventional tail seal materials that prevent contamination of the groundwater during shield tunneling. It uses a biodegradable material to minimize its environmental impact and was the first to be awarded an eco mark in Japan. Moreover, the development of the mold automatic slide system combined elevator scaffolds with an automatic climbing function and a measurement system to check mold location, thereby enabling full automation of all tasks from demounting a mold from the formed layer and sliding it vertically to deciding placement and installation by using a tablet.
Based on FY2021.3 environmental accounting, the realization costs are included in "R&D costs": (3,860 million yen) + "environment-related departmental costs": (312 million yen) = (4,172 million yen).

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 and quantitative

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 8.5 ●IEA Sustainable development scenario ●Other, please specify Stated Policy Scenario （STEPS） by the IEA	Based on the emission goals by sector (e.g., reduction from 429 million tons to 401 million tons in the industrial sector) for the target of "reducing energy source CO2 by 25% compared to FY2014.3 by FY2031.3" in "Japan's draft agreement," which details the reduction targets (NDCs) submitted by Japan for the Paris Agreement, the Obayashi Corporation collates the relevant areas of our businesses (e.g., emissions from construction and material production fall under production departments, while emissions from our own facilities and building management fall under administration departments) and checks the upper limit for emissions compared to FY2014.3 from our business activities and sets CO2 emissions targets for 2030 by categorizing and accumulating direct contributions from decarbonizing our own facilities and building low-carbon structures as well as indirect contributions from developing and disseminating low-carbon technologies and materials and proposing and designing energy-saving construction. Moreover, the target of "an 80% reduction by 2050" in the national Plan for Global Warming Countermeasures for 2050, is cited for the total 80% reduction goals by sector in 2030 in the aforementioned "Japan's draft agreement" when checking the upper limit for 2050 emissions from our business activities and setting our targets. The targets in the "Japan's draft agreement" are designated and recorded as consistent with the RCP2.6 2℃ target in the IPCC Fifth Assessment Report, so you could say that we have selected an equivalent scenario. In this way, consistency with the deadline for national targets (baseline FY2014.3, targets FY2031.3 and FY2051.3) is valid in terms of sharing the direction and scale of climate-related responses in domestic businesses within the corporation and with stakeholders as well as confirming activity results. We have also calculated and defined short- and medium-term numerical targets based on 2030 and 2050 targets. Moreover, the Obayashi Corporation has affirmed the proposal for the Task Force on Climate-Related Financial Disclosures (TCFD) in July 2020, analyzed the following scenarios in November 2020, and disclosed climate-related information according to the TCFD proposal based on the results of the analysis. We have conducted the following scenario analysis. - Based on the TCFD proposal, we have identified and evaluated climate-related risks and opportunities, anticipating and analyzing our four primary domestic businesses in 2030 (building construction, civil engineering, development, and new businesses) to understand the

	medium- and long-term impact of climate-related challenges on businesses. ・For the analysis, we used 4℃ scenarios that anticipate a global temperature increase of about 4℃ compared to pre-industrial revolution by 2100 as well as 2℃ scenarios that anticipate a 2℃ increase. We analyzed policies and market trends (transition risks and opportunities) as well as material changes due to disasters, etc. (material risks and opportunities) for each scenario. The following are the most representative of the scenarios used. [Principal scenarios used to analyze transition risks and opportunities] ・4℃ scenario: Stated Policy Scenario (STEPS) by the IEA (*2) ・2℃ scenario: Sustainable Development Scenario (SDS) by the IEA [Principal scenarios used to analyze physical risks and opportunities] ・4℃ scenario: RCP8.5 by the IPCC (*5) ・2℃ scenario: RCP2.6 by the IPCC The reason for choosing the above scenarios was that we determined that we can effectively analyze and implement measures needed for the company and understanding social trends by anticipating the "progress" after a 4℃ increase compared to pre-industrial revolution at the end of the 21st century in the absence of effective climate-change measures as described in the IPCC Fifth Assessment Report as well as the "proactive transition" to a 2℃ increase that follows sufficient climate-change measures. Considered especially important from a variety of perspectives, the transition risks increasing costs as carbon taxes are introduced to keep down greenhouse gas emissions in the 2℃ scenario (SDS), while we might see an increase in orders from relevant technological applications for expanded energy-saving and energy recycling needs. Risks due to material changes include effects on construction time due to worsening working conditions from rising summer temperatures while opportunities include an increase in orders that apply our technologies to make the national land more resilient to prevent and protect against intensifying natural disasters, which we consider important for both 4℃ scenarios (RCP8.5) and 2℃ scenarios (RCP2.6). The scenario analysis is used to anticipate 2030 on the basis of consistency with national target years as well as relatively certain predictive information for business environment and social circumstances to consider business impact. That information is then used to examine concrete measures. Based on the scenario analysis, we rated impact on our four primary businesses as major, medium, or minor. [Transition risks] ◎Introduction of a carbon tax: Overview) ・Cost increase when levied on CO2 from business activities ・Procurement cost increase from higher prices on construction

	materials with high energy consumption 2030 impact) 4℃ scenario = minor, 2℃ scenario = major Measures) ・Promoting energy conservation during construction (fuel efficiency, power saving) ・Promoting zero emissions, increasing recycling ratio of construction waste, utilizing recycled and low-carbon materials ・Establishing design and construction technologies and creating supply chains for wooden medium- and high-rise structures ・Decarbonization of construction machinery through supply chain collaboration [Transition opportunities] ◎Expanding needs for energy-saving and renewable energy technologies Overview) ・Increasing superiority in ZEB (net zero energy buildings) and energy-saving technologies that meet society's needs ・Switching from existing energy to renewable energy ・Expanding office demand for green building certification 2030 impact) 4℃ scenario = medium, 2℃ scenario = major Measures) ・Promoting development and practical applications of ZEB technologies that realize commercial viability and convenience ・Increasing value of existing facilities and enhancing sales for energy-saving remodeling ・Promoting renewable energy businesses ・Providing high value-added buildings with excellent environmental functions [Physical risks] ◎Rising summer temperatures Overview) ・Increasing health risks for workers at construction sites, including heatstroke ・Deepening worker shortages due to worsening working environments at construction sites 2030 impact) 4℃ scenario = major, 2℃ scenario = major Measures) ・Increasing productivity and construction safety by using labor-saving technologies and ICT ・Developing innovative technologies to improve the working environments at construction sites

	◎Intensifying natural disasters including typhoons, heavy rain and floods Overview) ・Increasing risks such as damages to buildings under construction, suspended work, and damages to construction material suppliers due to storms and floods ・Decreasing value of real estate in areas with high flood risk 2030 impact) 4℃ scenario = medium, 2℃ scenario = medium Measures) ・Enhancing BCP responsiveness in case of a disaster through network solidification with supply chains ・Promoting redevelopment projects that increase environmental functions, disaster management, and business continuity [Physical opportunities] ◎Initiatives to increase national land resilience Overview) ・Expanding demand for construction, maintenance, and repairs of infrastructure to prevent and decrease disaster risk and increase national land resilience 2030 impact) 4℃ scenario = major, 2℃ scenario = major Measures) ・Promoting development and practical applications of technologies to prevent and decrease disaster risk and increase resilience ・Enhancing sales for constructing, maintaining, and repairing infrastructure ・Promoting an integrated business using ICT from surveys and inspections to evaluations, diagnosis, repairs, and reinforcement construction Based on the above scenario analysis results, the Obayashi Corporation confirmed the need to considerably reduce Scope 1 and 2 as well as revise long-term emissions targets. The following are concretely anticipated cases that can impact business strategy based on the scenario analysis results.

It has become clear that we need to reduce use of fuel and power for construction much more than before as well as promote business strategies in the form of increasing the ratio of renewable energy, purchasing low-carbon and decarbonized power, and increasing the decarbonization and efficiency of construction equipment.
Furthermore, we are reflecting the analysis results in the measures of our business departments by promoting the introduction of ZEB to considerably reduce power used to manage buildings in our value chains, and we predict that we will be able to contribute to the transition to a decarbonized society.
For the urgent task of reducing CO2 emissions, we are "Promoting energy conservation during construction (fuel efficiency, power saving)" as described under transition risks, increasing our direct

contributions to a 67% reduction of emissions in FY2021.3 (58% in FY2020.3).
The Obayashi Corporation has developed the medium- to long-term Obayashi Green Vision 2050, advancing environmental measures that we have long considered important and promoting activities to achieve the aforementioned targets for direct and indirect contributions to realize a decarbonized society. In 2019, we developmentally revised it into the long-term Obayashi Sustainability Vision 2050 by adding a broad ESG perspective. When doing so, we followed the "Japan's draft agreement" on reducing CO2 emissions by reaffirming our targets with FY2014.3 as the baseline according to the aforementioned 2℃ target (RCP2.6) from the IPCC Assessment Report. When revising the vision, we sought to make it consistent and connected with our Medium-Term Business Plan 2017 for the 2017-2021 period, making "ESG initiatives" a business foundation strategy and promoting them as business measures by identifying "forming a society that is kind to the environment" as one of the six ESG priorities and defining action plans and KPIs. The action plans and KPIs are formulated according to our long-term visions, and the same is true for reducing CO2 emissions. We consider these ESG initiatives as part of our business foundation strategy and they influence our financial plans through our business activities.

C3.3

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

Business area	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	The main products and services offered by the Obayashi Corporation are building construction and design. Design and construction make up the main part of the construction industry, but the management of buildings as products (when used after delivery) is associated with considerable greenhouse gas emissions, so it is important to work to keep those emissions down in the same way that we do during the construction stage. In the current situation, we need to reduce greenhouse gas emissions considerably by strengthening regulations and through other measures in accordance with the Japanese national policy for the Paris Agreement in 2015 ("Japan's draft agreement") and the 2050 Carbon Neutrality Declaration of the Japanese government in September 2020. We assume that similar measures are needed on the construction market. The national Energy Basic Plan also states that "we shall aim to realize ZEB on average for all new constructions by 2030, including new public buildings by 2020." More concretely, we need to implement measures that reduce greenhouse gas emissions at the management stage to fight climate change, and it is likely that we will see an increase in orders for ZEB (zero

		energy buildings) that aim to eliminate such emissions. As part of this, we need to possess technologies and know-how to construct buildings that can meet client needs or we will risk missing more orders and see a drop in sales. Meanwhile, if we do secure superior technologies and know-how, we should see more orders and increases in sales as we expect it to have an impact on the construction and development businesses. In the Obayashi Corporation's TCFD scenario analysis, the growing importance of ZEB and energy-saving technologies in response to social needs from expanded demand for energy-saving and renewable energy technologies was identified as a transition opportunity, to which we aim to respond by "promoting the development and practical application of ZEB technology that provides comfort and is business-feasible." The above suggests the need to supply the market with buildings that emit less greenhouse gases as well as the need for solutions in the form of 1) developing and possessing technologies for buildings that accommodate regulations and needs and 2) concomitant strengthening of our competitiveness and ability to present technologies. In this, we consider 1) the regulations and needs to be shaped by Japan's draft agreement, which is why we have calculated upper limits for emissions from building management in 2030 by collating that draft with our business size and contents. We are calculating and reflecting a total reduction rate for emissions so that they do not exceed those limits. Thus, we set emissions reduction targets in line with national regulations and work together with our technological development departments to achieve them, thereby enabling us to acquire the technological ability to supply the market with buildings that can meet demands. Moreover, in terms of measures for 2) strengthening of our competitiveness and ability to present technologies, we use CASBEE (Comprehensive Assessment System for Built Environment Efficiency) to assess design and construction jobs and set numerical targets for CO2 emissions reduction per unit of floor space managed in "relevant buildings" (buildings with specifications as designed by us) as compared to "reference buildings" (buildings with average specifications defined by CASBEE). This allows us to strengthen our competitiveness through our ability to present technologies by promoting the introduction of energy-saving technologies. Regarding 1), we are continuing our activities with a medium- to long-term target of -25% in FY2031.3 compared to FY2014.3 for

		our reduction rate of indirect contributions to emissions. In FY2021.3, it was -21% compared to FY2014.3. Regarding 2), it was -23% in FY2021.3 in terms of emission intensity during management of CASBEE reference buildings (annual, per unit of floor space). As CASBEE is regularly revised, we always aim to achieve better total environmental performance than for buildings and infrastructure with standard specifications, with the reference buildings of that year as an index, continuing our activities working toward the aforementioned reduction rate for emissions output during management. The management emissions of buildings supplied to the market is one of the principal components of the "indirect contributions to emissions" which is the basis for calculating 1) according to the corporation's divisions. As this is an accumulation of annual emissions during management for our design and construction jobs as calculated from the results of 2), so supplying buildings with high environmental performance (low emissions) to the market may be considered contributing to reducing greenhouse gas emissions from products and services. The corporation considers "establishing an environmentally responsible society" an ESG Materiality and conducts activities with action plans for "promoting environment-friendly businesses" and "promoting decarbonization" as well as KPIs. ESG initiatives were identified as business foundation strategy in the Medium-Term Business Plan 2017. Moreover, the Medium-Term Business Plan is based on the long-term Obayashi Sustainability Vision 2050 and strategically important decision-making. These activities are having effects on business strategies in the construction and development businesses. The Medium-Term Business Plan 2017 covers the five years from 2017 and 2021, while the long-term Obayashi Sustainability Vision 2050 covers the period until 2050.
Supply chain and/or value chain	Yes	The Obayashi Corporation's supply and value chains can be broadly divided as having to do with either the production and procurement of materials for construction (raw materials, secondary products, equipment, etc.) or the labor at the construction sites (workers). We also need to take into consideration the greenhouse gas emissions from materials production and construction, as they impact the market via Paris Agreement-related national regulations in the same way that products and services do. The national policy for the 2015 Paris Agreement ("Japan's draft agreement") also indicates FY2031.3 emission goals by sector,

		with materials production and on-site construction falling under production departments and materials transportation falling under transportation departments, so we need to make reductions as appropriate for these. More concretely, measures to reduce greenhouse gas emissions to fight climate change are expected to increase costs through the levying of carbon taxes and additional equipment investments as regulations are strengthened to keep down emissions during materials production and on-site construction. Rising costs can lead to lower competitiveness, missing out on orders, and reduced profitability, so it can have an impact in terms of decreasing sales and revenue. Meanwhile, development of materials that minimize greenhouse gas emissions during production can increase competitiveness, expand orders, and have an impact in terms of boosting sales. The Obayashi Corporation also identifies higher prices and procurement costs for energy-consuming construction materials with the introduction of a carbon tax as transition risks in our TCFD scenario analysis, and intends to counter this by "establishing designs and construction technologies for building wooden medium- and high-rise buildings as well as creating relevant supply chains." Moreover, considering that slight temperature increases at construction sites are unavoidable even if we fight climate change, we will see lower work efficiency as working outdoors will be restricted during hot hours (more time for rest needed, etc.), thus leading to new costs as project timelines are extended and work has to be conducted outside regular hours such as when temperatures are lower, which in turn is expected to decrease sales and revenue. The Obayashi Corporation also identifies increased health risks for workers, such as the risk of heat stroke at construction sites when it is hot in summer, and deepening manpower shortages due to worsening working environments as physical risks in our TCFD scenario analysis, and intends to counter this by "further increasing productivity and construction safety using labor-saving technology and ICT" and "developing innovative technologies to improve working conditions at construction sites." The above factors are thought to impact both the construction business and the development business. For materials production, we need to choose and develop low-carbon materials and collaborate with partner companies with regard to this, as well as implement measures to improve fuel efficiency of vehicles during materials transportation. As for labor at construction sites, we need to mechanize, improve equipment, and develop technologies to increase work

		efficiency, as well as collaborate with partner companies in the same way as for materials production. We aim to resolve the various challenges by reliably implementing measures such as these. The corporation identifies "conducting responsible supply chain management" as an ESG priority, has selected "promoting CSR procurement" as an action plan, and defined KPIs. For our activities, we have formulated the Obayashi Group CSR Procurement Policy, and we also expect our supply chains to act in accordance with CSR Procurement Guidelines that are based on the aforementioned policy. As part of this, we are asked to "promote business activities that preserve the environment and reduce the environmental load." Decarbonizing materials production and increasing transportation fuel efficiency belong to the aforementioned initiatives promoted, while in terms of labor, the implementation of energy-saving construction by increasing work efficiency also falls under there. Moreover, to steadily yield results in our development of low-carbon materials and highly efficient construction methods, we select R&D themes with due consideration from the initial stage and anticipate the possibility of collaborating in open innovation, including with our supply chains. The corporation calculates the CO2 emissions of materials production as category 1 "purchased goods / services" of Scope 3 and CO2 emissions of materials transportation as category 4 "transportation and delivery (upstream)," which are included in the calculation of the corporation's "indirect contributions" and "direct contributions" respectively, to evaluate total reduction rate. Moreover, labor refers to activities at construction sites, so that Scope 1 and 2 energy-saving activities influence CO2 emissions and it is calculated as "direct contributions." We connect the green procurement rate for construction materials with emissions reductions by encouraging material choices that take KPIs and environmental load into account. In terms of the emission reduction rate for indirect contributions, we set a medium- to long-term target of -25% compared to FY2014.3 by FY2031.3 and achieved -21% compared to FY2014.3 in FY2021.3. In terms of the emission reduction rate for direct contributions, we set a medium- to long-term target of -85% compared to FY2014.3 by FY2031.3 and achieved -67% compared to FY2014.3 in FY2021.3. The green procurement rate for construction materials was 47%.

		This is tied in with our ESG priorities and associated action plans and KPIs. ESG initiatives were identified as business foundation strategy in the Medium-Term Business Plan 2017. Moreover, the Medium-Term Business Plan is based on the long-term Obayashi Sustainability Vision 2050 and strategically important decision-making. The above ESG Materialities "conducting responsible supply chain management" and the action plan "promoting CSR procurement" influence our business strategies for construction and development. The Medium-Term Business Plan 2017 covers the five-year period from 2017 to 2021, while we aim to realize the long-term Obayashi Sustainability Vision 2050 by 2050.
Investment in R&D	Yes	The primary business of the Obayashi Corporation is the construction business, so technologies relevant to construction and buildings and infrastructure have a major impact. The current Medium-Term Business Plan 2017 has as one of its technology strategies "developing technologies that contribute to business by aligning with customer needs, stimulating new demand, and reading the markets and the times." Whether we are able to develop technologies that resonated with market needs and opportunities that have to do with climate change measures will have a major impact on our business. We have to reduce greenhouse gas emissions in accordance with the national policy in the 2015 Paris Agreement as well as other laws and regulations, which also means that we need to develop and possess technologies that match corresponding social needs. Concrete challenges include developing technologies for supplying energy-saving construction and energy-saving buildings. The national policy for the 2015 Paris Agreement ("Japan's draft agreement") also defines emission goals for FY2031.3 by sector, with the management of buildings and infrastructure falling under administration departments, materials production and on-site construction under production departments, and materials transportation under transportation departments, so as to anticipate reductions that suit the targets set for each sector. Moreover, the national Energy Basic Plan states that it aims to realize ZEB on average for new public structures by 2020 and for other new structures by 2030, so we anticipate that we need to reduce greenhouse gas emissions accordingly. In the Obayashi Corporation's TCFD scenario analysis, the growing importance of ZEB and energy-saving technologies in response to social needs from expanded demand for energy-saving and renewable energy technologies was identified as a transition opportunity, to which we aim to respond by "promoting

		the development and practical application of ZEB technology that provides comfort and is business-feasible." More concretely, as keeping down greenhouse gas emissions to fight climate change becomes a social need, we expect to see more orders for ZEB (zero energy buildings) that strive to eliminate greenhouse gas emissions during the management stage of buildings and infrastructure. As part of this, we need to possess technologies and know-how that can meet client needs or we will risk missing more orders and see a drop in sales. On the other hand, if we secure advantages in technologies and know-how, this may increase sales by providing more orders. As regards materials production, the costs of materials when keeping down greenhouse gas emissions during manufacturing affect competitiveness, while the costs of additional equipment to counter rising temperatures during on-site construction can also affect competitiveness. If clients are not happy with the added value that accompany the rising costs, there is a risk that the drop in competitiveness will cause us to lose orders, while securing competitive advantages by curbing costs can lead to expanded orders. Whether we possess such technological ability, technologies, and know-how will impact our construction and development businesses. Research themes are selected annually, and we continuously make technological development investments as appropriate by carefully investigating and reflecting national policy, laws and regulations, and social needs. Environment-related R&D expenses are calculated according to the environmental accounting every year and disclosed. R&D is many times carried out over several years, so it can be difficult to evaluate results on a one-year basis, which is why we are looking into techniques for analyzing the effects of adopting our new development technologies in construction and implementing them in buildings and infrastructure by measuring them as indicators of emissions from our direct and indirect contributions. Our environment-related R&D expenses were 4,987 million yen in FY2021.3. In terms of the emission reduction rate for indirect contributions, we set a medium- to long-term target of -25% compared to FY2014.3 by FY2031.3 and achieved -21% compared to FY2014.3 in FY2021.3. In terms of the emission reduction rate for direct contributions, we set a medium- to long-term target of -85% compared to FY2014.3 by FY2031.3 and achieved -67% compared to FY2014.3 in FY2021.3. Our reduction-rate targets for emissions from direct and indirect

		contributions were defined in the medium- to long-term Obayashi Green Vision 2050 formulated in 2011, were reaffirmed with the developmental revision into the long-term Obayashi Sustainability Vision 2050 in 2019, and are still used on the basis of strategically important decision-making. Moreover, the Medium-Term Business Plan 2017, which is a business strategy, is based on the long-term Obayashi Sustainability Vision 2050, and it is thought to impact our construction and development businesses since it includes R&D investments. The Medium-Term Business Plan 2017 covers the five-year period from 2017 to 2021, while we aim to realize the long-term Obayashi Sustainability Vision 2050 by 2050.
Operations	Yes	The primary business of the Obayashi Corporation is the construction business, so accurately managing climate change measures that have to do with construction will impact our performance. In order to carefully examine the impact of climate-related risks and opportunities in our business activities and reflect them in our measures, our challenge is to create organizational and standardized mechanisms to be used in our management. We are promoting our business activities with the environment as a principal management item alongside conventional safety and quality. If the activity procedures and targets are insufficiently specified in our management, this will reduce the efficacy of our activities to reduce greenhouse gas emissions at construction sites and we will not be able to achieve sufficient reduction effects, which we expect leads to the aforementioned risks under "Products and services," "Supply and value chains," and "R&D investments." On the other hand, if the management is conducted sufficiently, this can allow us to achieve reduction in the various domains as previously explained. These initiatives have an especially major impact on the construction business, but it is important to see them as affecting all businesses and departments since they are the basis of all our business activities. The Obayashi Corporation's TCFD disclosure item "Governance" states that, "Obayashi's CSR Committee was put in place to promote business activities based on the Obayashi Basic Principles and Group-wide CSR activities with an ESG perspective. It is headed up by the Representative Director and President and has a membership consisting of General Managers of divisions and other executive officers. Meeting

		once a year, the CSR Committee sets basic CSR policies that include initiatives on climate problems, drafts policies and specific action plans, and reviews achievements of initiatives. The ESG & SDGs Department of the Corporate Strategy Division serves as secretariat for the CSR Committee. It drafts, promotes, and monitors the progress of measures to promote ESG management and SDG achievement, disseminates information, instills relevant practices within the Group, and promotes Group-wide initiatives." We have publicized a schematic of our change-related governance structure and organizational overviews of each organization, as well as our activities. The Obayashi Corporation has the aforementioned CSR Committee chaired by the President deliberate on and confirm climate-related risks and opportunities. The Environmental Management Expert Committee, which is a subordinate organization, then revises and promotes measures and implementation plans with environment-related data that have been collected according to the Obayashi Environmental Management System (EMS). The committee also monitors and reviews the setting, implementation, and performance of targets. Furthermore, concrete activities based on the implementation plans and targets defined by the Environmental Management Expert Committee are promoted by the environment departments at the main office, the branches, and group companies. The CSR Committee also reports to the Board of Directors, with the board overseeing all climate-related risks and opportunities. Operational effects are evaluated on the basis of progress toward EMS targets and accompanying factor analysis as well as feedback for next-year activities based on that analysis. The EMS targets are defined based on the action plans and KPIs of the ESG Materialities that are linked with the Medium-Term Business Plan. As an example, the action plan "promote decarbonization" has "direct contribution of CO2 emissions reduction rate" as a KPI and a FY2031.3 target of -85% compared to FY2014.3. We conduct business activities to achieve this target by setting "CO2 emissions reduction rate during construction (FY2014.3 baseline)" as annual targets. The FY2021.3 target was -15% and we achieved -28.3%. This is "emissions from construction," which we classify as "direct contributions," so it is a mechanism for reflecting the results of our activities. We ensure the efficacy of our greenhouse gas emission reductions by setting the targets with EMS and having individual business departments manage them.

		ESG initiatives (ESG Materialities, action plans, and KPIs) were identified as business foundation strategy in the Medium-Term Business Plan 2017. Moreover, the Medium-Term Business Plan is based on the long-term Obayashi Sustainability Vision 2050 and strategically important decision-making. Considering the aforementioned connection with the ESG initiatives, EMS is based on the business strategy of the Medium-Term Business Plan and how well it is managed will have an impact on our businesses. The Medium-Term Business Plan 2017 covers the five-year period from 2017 to 2021, while we aim to realize the long-term Obayashi Sustainability Vision 2050 by 2050.

C3.4

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

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs	[Direct costs] Material costs, labor costs (personnel costs), and direct expenses (utilities costs) fall under direct costs in construction. Material costs include the procurement of construction materials that make up the buildings and affect their environmental specifications. The construction materials procured have a climate effect through the CO2 emitted when they are produced in the factories and transported to the construction sites. The national policy for the 2015 Paris Agreement (the "Japan's draft agreement") indicates FY2031.3 emission goals by sector, with materials production and on-site construction falling under the industry sector and materials transportation falling under the transportation sector, so we need to make reductions as appropriate for these. Moreover, the emissions from the construction work are supply chain emissions from the client's perspective, so we expect calls for reductions there for the same reasons. If costs increase even if we plan the application of materials and equipment with a small environmental load, there will be a higher risk of losing orders as construction costs go up and we lose advantages. Conversely, if we can keep costs from going up, this will allow us to secure advantages in terms of construction costs and obtain more orders. The Obayashi Corporation is promoting ESG initiatives as a business foundation strategy in our Medium-Term Business Plan 2017 for FY2018.3 to FY2022.3.

		As part of this, we have defined the action plan "promoting CSR procurement" and the KPI "construction materials green procurement rate" for the ESG Materiality "Conducting responsible supply chain management," and are working to apply materials and equipment with a small environmental load. Green procurement refers to initiatives to select and procure materials and equipment with a small environmental load. The indicator that is the green procurement rate reflects how big a part of construction material and equipment procurement costs consists of materials and equipment with a small environmental load, so a higher procurement rate means a smaller environmental load. Achieving the aforementioned KPI, which is a strategic target, means increasing the proportion of construction work that meets the need of smaller environmental load when receiving orders, as we are working to reach the sales and profit targets outlined by the business indicator targets in the Medium-Term Business Plan 2017. Furthermore, the Obayashi Corporation has Green Procurement Guidelines for Office Supplies and Construction Materials and Machinery, thus encouraging the procurement of materials and equipment with a small environmental load in all our business activities. In our procurement, we pay attention to the following aspects of environmental load reduction and environmental conservation. 1) Promoting energy and resource conservation, 2) cutting CO2 emissions, 3) minimizing waste, 4) promoting recycling, 5) minimizing use of hazardous substances, and 6) preserving surrounding environments and ecosystems. Moreover, when selecting items, we take into consideration if they reduce the environmental load, if they must be procured in great amounts, and if they still have a major environmental load reducing effect, regardless of the amount to be procured, because they come from our own R&D, based on the contents of "designated procurement items" in the Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Green Purchasing Act). The principal "designated procurement items" among our construction materials are soil from construction, asphalt concrete, cement, concrete, and steel. Our target for the indicator green procurement rate is 55% by FY2022.3, and we reached 47.5% in FY2021.3. This target is reflected in EMS (Environmental Management System). [Revenue] The Obayashi Corporation's primary businesses are the construction, development, and green energy businesses. We need to reduce greenhouse gas emissions considerably by strengthening regulations and through other measures as well as implement similar measures on the construction market in accordance

		with the Japanese national policy for the Paris Agreement in 2015 ("Japan's draft agreement") and the 2050 Carbon Neutrality Declaration of the Japanese government in September 2020. More concretely, we need to reduce CO2 emissions during management, which indicates building performance, and during construction, which requires us in our construction and development businesses to possess construction technologies and know-how for realizing design that accommodate environmental specifications in demand as well as construction that yields as little emissions as people wish to see. Moreover, our green energy business, which centers around the renewable energy business, is subject to an important growth strategy for securing diverse revenue sources as we aim to stably supply CO2-free power. We are already operating 44 power plants in 30 locations as we are advancing commercialization centering on solar and biomass power generation, with a capacity of producing about 154 MW. We are also engaging in large-scale offshore wind power generation, which is currently difficult to commercialize. In the construction and development businesses, there is a higher risk of fewer orders and reduced revenue and profit if we do not possess technologies and know-how for designing and constructing buildings that meet client needs. We also expect opportunities in the form of more orders and increased revenue and profit if we secure advantages with aforementioned technologies and know-how. Whether we are able to research and develop technologies as well as acquire know-how that accord with climate change-related social and market needs and opportunities will have a major impact on our businesses. The Medium-Term Business Plan 2017 includes targets for revenue and business profit as business indicators targets. The plan covers the period from FY2018.3 to FY2022.3. The ESG initiatives are our foundational business strategy for achieving those targets, so we are promoting initiatives to solve global environmental problems by defining the action plan "promoting decarbonization" and the indicator KPIs "direct contribution of CO2 emissions reduction rate" and "indirect contribution of CO2 emissions reduction rate" for the ESG Materiality "Establishing an environmentally responsible society." As defined below, "direct contributions" refers to reducing emissions at construction sites while "indirect contributions" refers to reducing emissions from the management of the buildings we design, so we promote the possession and the improvement of technologies and know-how through our business foundation strategy. As previously mentioned, the possession of technologies and know-how

		impacts revenue and profit, so we aim to improve them for the sake of achieving our business indicator targets. Moreover, we are steadily increasing power generation to reach our targets by continuously investing in our renewable energy business. Direct and indirect contributions are defined as follows. Direct contributions = A + B - C A: Fuel consumption and power purchased at construction sites and in offices (scope 1 + scope 2) B: Transportation of construction materials and waste, commuting of employees and workers (categories 4, 7, 9 in scope 3) C: Emissions corresponding to power generated in renewable energy businesses Indirect contributions = a + b - c a: Annual emissions from operating buildings designed and constructed by the Obayashi Corporation for 35 years after completion b: Production of construction materials (category 1 in scope 3) c: Reduction effect by adoption of energy-saving and low-carbon materials The indicators, targets, and FY2021.3 results for CO2 emission reduction and financial planning are as follows. Construction Work Indicator: direct contributions Target: 85% reduction by FY2031.3 (FY2014.3 baseline) FY2021.3 results: 67% reduction Design Indicator: indirect contributions Target: 25% reduction by FY2031.3 (FY2014.3 baseline) FY2021.3 results: 21% reduction Renewable energy business Indicator: annual power generation Target: at least 370,000 MWh → CO2 emission conversion 174,000 t-CO2 by FY2022.3 FY2021.3 results: 267,202 MWh → CO2 emission conversion 125,000 t-CO2 Sales Indicator: Medium-Term Business Plan 2017 Target: about 2 trillion yen by FY2022.3

		FY2021.3 results: 1,766.8 billion yen Operating profit Indicator: Medium-Term Business Plan 2017 Target: about 100 billion yen by FY2022.3 FY2021.3 results: 98.7 billion yen The investments and initiatives in our construction and development businesses are as follows. Construction business Investments: Construction technology R&D (total of 100 billion yen in the FY2018.3-FY2022.3 plan, 90.7 billion yen in FY2018.3-FY2021.3 results) Initiatives: ・Providing buildings with high environmental performance (ZEB, etc.) ・Promoting energy-saving construction ・Introducing low-carbon materials (applying clean-crete, green procurement, etc.) ・Introducing energy-saving construction machinery ・Realizing autonomous and automatic construction, etc. Development business Investments: Sustainable investments (target of at least 90% of real estate rental business investments, about 94% achieved in FY2021.3) Initiatives: ・Providing green buildings ・Energy-saving investments, etc. Green energy business Investments: Investments into the renewable power generation business, etc. (total of 100 billion yen in the FY2018.3-FY2022.3 plan, 50.5 billion yen in FY2018.3-FY2021.3 results) Initiatives: ・Solar power generation business ・Biomass power generation business ・Onshore wind power generation business ・Geothermal and micro hydroelectric power generation business, etc. Moreover, despite some effects of the COVID-19 pandemic on the construction and development businesses in FY2021.3, most of the

		targets from the Medium-Term Business Plan were achieved, and we are clearly making progress in addressing climate change and securing revenue and profit.

C3.4a

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

As stated in the Obayashi Corporation's TCFD disclosure item Governance, we establish a CSR Committee consisting of division heads and other executive officers, chaired by the Representative Director and President, for the purpose of promoting CSR activities throughout the corporation from an ESG perspective and implement corporate activities based on the Obayashi Basic Principles. The CSR Committee convenes once a year to formulate our basic policy on CSR, including activities to address climate-related challenges, propose measures and concrete activity plans, and review activity performance. The ESG & SDGs Department of the Corporate Strategy Division serves as the secretariat of the CSR Committee, drafting measures to promote ESG management and achieving the SDGs, keeping track of progress in promotion and implementation, and communicating information and relaying it inside the corporation, thereby promoting initiatives in the corporation as a whole. We are promoting activities in accordance with this schematic of our climate change-related governance structure and these organizational overviews of each organization.

The Obayashi Corporation formulates its business strategies and targets according to the short term (every year), the medium term (-2021), and the long term (-2050). The subordinate Environmental Management Expert Committee and the environmental manager liaison councils of all branches (convene 1-2 times a year) discuss our activities and targets, check our progress, and incorporate CSR Committee's decisions into our business strategies. Through this decision-making, our business activities are made to reflect the (1) long-term and (2) short- and medium-term concrete actions, target, and activities (1)-4)) relating to climate-related issues. The details are as follows.

(1) For the long term, we have further developed the Obayashi Green Vision 2050, which was an environmental vision formulated in 2011, by revising it into the Obayashi Sustainability Vision 2050, which recognizes various social trends and changes in the business environment around the Obayashi Group, includes ESG as our business foundation and contributing to solving social issues with a focus on the SDGs, and aims to have the Obayashi Group as a whole pursue both "the planet, society, and people" and our own sustainability. We are advancing our business strategies in accordance with this mission. This vision encompasses our initiatives to realize a "low-carbon, recycling-oriented, and nature-friendly" society centering on our construction business until this point as well as promotes the deepening and expansion of our businesses to achieve decarbonized society, provide spaces and services of value for the happiness of all people and the co-creation of sustainable supply chains with everyone involved in our businesses.

The CO2 emissions from construction are a factor with a major impact on climate-related issues in the Obayashi Corporation's business activities. Moreover, we also consider CO2 emissions from the operation of buildings after handover to the owners an indirect impact factor. In our action plans for the ESG Materiality "Establishing an environmentally responsible society," we divide the numerical targets for realizing a decarbonized society into direct contributions that come from decarbonizing our own facilities or implementing low-carbon construction and indirect contributions that come from developing and disseminating low-

carbon technologies and materials or proposing and designing energy-saving construction. We set KPIs (numerical targets) for each and conduct our activities in order to achieve those targets.

With regard to "Risk types" under C2 "Risks and opportunities," we define action plans and conduct activities for the effects of new regulations and technologies on low-carbon construction as direct contributions, for the effects of technologies and the upstream on the development and dissemination of technologies and materials, and for the effects of current regulations and the downstream on proposing and designing energy-saving designs. Furthermore, we reflect measures based on the scenario analysis results from the TCFD under C3.2a in the business measures of each business division.

The targets for our direct contribution action plans are a reduction of 85% compared to FY2014.3 by 2030 and 2050, and for our indirect contribution action plans a reduction of 25% compared to FY2014.3 by 2030 and of 45% by 2050.

The following are the action plans that have been implemented in individual business areas since FY2021.3 for the sake of achieving those targets.

1) Promote environmentally friendly businesses

・Promote ZEB (buildings with net-zero energy consumption during operations thanks to "energy conservation" and "energy generation" from renewable energy): indirect contributions by providing buildings that produce less emissions during operations

・Promote environmentally friendly development business: indirect contributions by providing buildings that produce less emissions during operations

・Promote smart cities: indirect contributions by providing energy systems that minimize emissions from operations at a city block level and city blocks that produce less emissions during operations

2) Promote renewable energy business

・Promote renewable energy business: contributions by generating zero CO2 emission power from solar, wind, and wood biomass power generation

・Initiatives in hydrogen energy service business: contributions by generating renewable energy

3) Promote decarbonization

・Promote energy conservation during construction: direct contributions by keeping down emissions from constructions, for example by using fuel-efficient heavy machinery and making all lighting LED

・Promote use of environment-friendly concrete: indirect contributions by applying materials from low-carbon production

4) Contribute to realizing a recycling-oriented society

・Restore and extend lifespan of infrastructure: direct contributions by reducing emissions through dismantling and reconstruction for repairs to extend lifespan

(2) For the short and medium terms, we have defined climate change-related targets and strategies for individual years and until 2021, breaking down the aforementioned vision, including the environment aspects. These targets and strategies are included in the Environmental Management System (EMS), which the whole corporation uses, and are promoted and managed by the Environmental Management Expert Committee, which is headed by the executive officer responsible for the environment.

The following are the concrete targets for CO2 emissions.

1) Reduction rate for CO2 emissions during construction (FY2014.3 baseline)

Short-term (FY2021.3) target: 15.0%　　Medium-term target (until FY2022.3): 8.0% annually

2) Reduction rate for CO2 emissions during construction (CASBEE standard baseline)

Short-term (FY2021.3) target: 25% Medium-term target (until FY2022.3): 25%

C4 Targets and performance

C4.1

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

Absolute target

Intensity target

C4.1a

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

Target reference number

Abs 1

Year target was set

2021

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Base year

2014

Covered emissions in base year (metric tons CO2e)

229,000

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

97.8

Target year

2021

Targeted reduction from base year (%)

15

Covered emissions in target year (metric tons CO2e) [auto-calculated]

194,650

Covered emissions in reporting year (metric tons CO2e)

163,898

% of target achieved[auto-calculated]

189.5254730713

Target status in reporting year

Achieved

Is this a science-based target?

Yes, we consider this a science-based target, but it has not been approved by the Science-Based Targets initiative

Target ambition

2°C aligned

Please explain (including target coverage)

The targets are set on a business year basis.

Short-term target: "15% reduction compared to FY2014.3 in FY2021.3 (April 1, 2020-March 31, 2021)" formulated by the Environmental Management Expert Committee

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Target reference number

Abs 2

Year target was set

2017

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Base year

2014

Covered emissions in base year (metric tons CO2e)

229,000

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

97.8

Target year

2022

Targeted reduction from base year (%)

8

Covered emissions in target year (metric tons CO2e) [auto-calculated]

210,680

Covered emissions in reporting year (metric tons CO2e)

163,898

% of target achieved[auto-calculated]

355.3602620087

Target status in reporting year

Is this a science-based target?

Yes, we consider this a science-based target, but it has not been approved by the Science-Based Targets initiative

Target ambition

2°C aligned

Please explain (including target coverage)

The targets are set on a business year basis.
Medium-term target: "8% reduction compared to FY2014.3 in FY2022.3 (April 1, 2021-March 31, 2022)" formulated by the Environmental Management Committee, which was the predecessor of the Environmental Management Expert Committee, to match the Medium-Term Business Plan.

Target reference number

Abs 3

Year target was set

2019

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Base year

2014

Covered emissions in base year (metric tons CO2e)

402,000

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

97.8

Target year

2051

Targeted reduction from base year (%)

85

Covered emissions in target year (metric tons CO2e) [auto-calculated]

60,300

Covered emissions in reporting year (metric tons CO2e)

294,000

% of target achieved[auto-calculated]

31.6066725198

Target status in reporting year

Underway

Is this a science-based target?

Yes, we consider this a science-based target, but it has not been approved by the Science-Based Targets initiative

Target ambition

Well-below 2°C aligned

Please explain (including target coverage)

The targets are set on a business year basis.

Long-term target: "85% reduction compared to FY2014.3 in FY2051.3 (April 1, 2050-March 31, 2051)" formulated in the long-term Obayashi Sustainability Vision 2050.

C4.1b

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

Target reference number

Int 1

Year target was set

2021

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Intensity metric

Other, please specify

t-CO2/construction sales (100 million yen)

Base year

2014

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

21

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

97.8

Target year

2021

Targeted reduction from base year (%)

15

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

17.85

% change anticipated in absolute Scope 1+2 emissions

-6.07

% change anticipated in absolute Scope 3 emissions

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

14

% of target achieved[auto-calculated]

222.2222222222

Target status in reporting year

Achieved

Is this a science-based target?

Yes, we consider this a science-based target, but it has not been approved by the Science Based Targets initiative

Target ambition

2°C aligned

Please explain (including target coverage)

The targets are set on a business year basis.

Short-term target: "15% reduction compared to FY2014.3 in FY2021.3 (April 1, 2020-March 31, 2021)" formulated by the Environmental Management Expert Committee

Target reference number

Int 2

Year target was set

2017

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Intensity metric

Other, please specify

t-CO2/construction sales (100 million yen)

Base year

2014

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

21

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

97.8

Target year

2022

Targeted reduction from base year (%)

8

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

19.32

% change anticipated in absolute Scope 1+2 emissions

-29.4

% change anticipated in absolute Scope 3 emissions

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

14

% of target achieved[auto-calculated]

416.6666666667

Target status in reporting year
Achieved

Is this a science-based target?
Yes, we consider this a science-based target, but it has not been approved by the Science Based Targets initiative

Target ambition
2°C aligned

Please explain (including target coverage)
The targets are set on a business year basis.
Medium-term target: "8% reduction compared to FY2014.3 in FY2022.3 (April 1, 2021-March 31, 2022)" formulated by the Environmental Management Committee, which was the predecessor of the Environmental Management Expert Committee, to match the Medium-Term Business Plan.

Target reference number
Int 3

Year target was set
2019

Target coverage
Company-wide

Scope(s) (or Scope 3 category)
Scope 1+2 (market-based)

Intensity metric
Other, please specify
t-CO2/construction sales (100 million yen)

Base year
2014

Intensity figure in base year (metric tons CO2e per unit of activity)
36

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure
97.8

Target year
2051

Targeted reduction from base year (%)

85

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

5.4

% change anticipated in absolute Scope 1+2 emissions

-29.4

% change anticipated in absolute Scope 3 emissions

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

24.6

% of target achieved[auto-calculated]

37.2549019608

Target status in reporting year

Underway

Is this a science-based target?

Yes, we consider this a science-based target, but it has not been approved by the Science Based Targets initiative

Target ambition

2°C aligned

Please explain (including target coverage)

The targets are set on a business year basis.
Long-term target: "85% reduction compared to FY2014.3 in FY2051.3 (April 1, 2050-March 31, 2051)" formulated in the long-term Obayashi Sustainability Vision 2050.

C4.2

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

Net-zero target(s)

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

Not applicable

Target year for achieving net zero

2050

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Please explain (including target coverage)

The long-term Obayashi Sustainability Vision 2050 from 2019 carries on the targets of the earlier Obayashi Green Vision 2050 (formulated in 2011), but we are considering redefining the targets by carefully comparing how they were defined with SBT standards.

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.

Stage of development	Number of initiatives	Total estimated annual CO2e savings in metric tons CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	0	0
Implementation commenced*	0	0
Implemented*	3	10,337
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 and Initiative type

Energy efficiency in production processes
Machine/equipment replacement

Estimated annual CO2e savings (metric tons CO2e)

2,290

Scope(s)

Scope 2 (market-based)

Voluntary/ Mandatory

Voluntary

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

81,957,000

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

60,000,000

Payback period

4-10 years

Estimated lifetime of the initiative

21-30 years

Comment

LED
Light emitting diode

Initiative category and Initiative type

Energy efficiency in production processes

Process optimization

Estimated annual CO2e savings (metric tons CO2e)

7,469

Scope(s)

Scope 1

Voluntary/ Mandatory

Voluntary

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

315,555,000

Investment required (unit currency – as specified in C0.4)
0

Payback period
No payback

Estimated lifetime of the initiative
16-20 years

Comment
Fuel-efficient operations

Initiative category and Initiative type
Other, please specify

Other, please specify

Purchasing low-carbon energy

Estimated annual CO2e savings (metric tons CO2e)
578

Scope(s)
Scope 2 (market-based)

Voluntary/ Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
5,562,216

Investment required (unit currency – as specified in C0.4)
0

Payback period
<1 year

Estimated lifetime of the initiative
6-10 years

Comment
New energy purchasing performance

C4.3c

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

Method	Comment

Dedicated budget for energy efficiency	Budget for developing technologies to strengthen buildings' energy conservation standards.
Internal incentives/recognition programs	We have an "environmental award" system for initiatives on environmental effects (reducing greenhouse gas emissions, reducing energy usage, increasing efficiency) that constitute activities of remarkable merit or that are otherwise exemplary. Moreover, the personnel evaluation of employees include items on environment-related initiatives, which are reflected in salaries.
Dedicated budget for other emissions reduction activities	Budget for promoting the renewable energy business of the Obayashi Corporation and Group companies. Includes business review budget and technological development budget for solar and biomass power generation, hydrogen use, and so forth.

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

Company-wide

Description of product/ Group of products

Low-carbon products: We are developing low-carbon products mainly for construction materials, such as Clean-Crete (low-carbon) that reduces CO2 considerably compared to conventional products, by using blast furnace by-products as cement submaterials. Additionally, we possess technologies and know-how that can reduce CO2 emissions during construction, for example by establishing technologies for evaluating and minimizing the degradation of existing frames when they are reconstructed for reuse.

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

JIS

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

1.7

Comment

Level of aggregation

Company-wide

Description of product/ Group of products

Third-party greenhouse gas emission reductions... "Other" calculation methods: We are constructing buildings that can reduce CO2 emissions during operations after being handed over to the client by using specifications that conform with CASBEE standards when constructing buildings using our own designs.

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

CASBEE

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

41.17

Comment

C5 Emissions methodology

C5.1

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

Scope 1

Base year start

1 April, 2013

Base year end

31 March, 2014

Base year emissions (metric tons CO2e)

145,315

Comment

・Since FY1999.3, we have tracked use of electricity, diesel, kerosene, and gas at our offices and construction sites based on the calculation criteria in the Guidelines for Environmental Accounting in Construction (JFCC) with regard to Scope 1 and 2 emissions. ・The tallying procedures are as follows. 1) For construction sites, tally and calculate emissions for energy use based on EMS and CO2 emission tallying systems. 2) For permanent departments, tally energy use and calculate emissions for store facilities, equipment centers, etc., based on EMS and other surveys.

Scope 2 (location-based)

Base year start

1 April, 2013

Base year end

31 March, 2014

Base year emissions (metric tons CO2e)

90,558

Comment

・Since FY1999.3, we have tracked use of electricity, diesel, kerosene, and gas at our offices and construction sites based on the calculation criteria in the Guidelines for Environmental Accounting in Construction (JFCC) with regard to Scope 1 and 2 emissions. ・The tallying procedures are as follows. 1) For construction sites, tally and calculate emissions for energy use based on EMS and CO2 emission tallying systems. 2) For permanent departments, tally energy use and calculate emissions for store facilities, equipment centers, etc., based on EMS and other surveys.

Scope 2 (market-based)

Base year start

1 April, 2013

Base year end

31 March, 2014

Base year emissions (metric tons CO2e)

91,066

Comment

・Since FY1999.3, we have tracked use of electricity, diesel, kerosene, and gas at our offices and construction sites based on the calculation criteria in the Guidelines for Environmental Accounting in Construction (JFCC) with regard to Scope 1 and 2 emissions.

・The tallying procedures are as follows.

1) For construction sites, tally and calculate emissions for energy use based on EMS

and CO2 emission tallying systems.

2) For permanent departments, tally energy use and calculate emissions for store facilities, equipment centers, etc., based on EMS and other surveys.

C5.2

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

Other, please specify

Guidelines for Environmental Accounting in Construction (Japan Federation of Construction Contractors)

C5.2a

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

・Since FY1999.3, we have tracked use of electricity, diesel, kerosene, and gas at our offices and construction sites based on the calculation criteria in the Guidelines for Environmental Accounting in Construction (JFCC) with regard to Scope 1 and 2 emissions.

・The tallying procedures are as follows.

1) For construction sites, tally and calculate emissions for energy use based on EMS and CO2 emission tallying systems.

2) For permanent departments, tally energy use and calculate emissions for store facilities, equipment centers, etc., based on EMS and other surveys.

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)

113,835

Comment

C6.2

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

row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

C6.3

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

Reporting year

Scope 2, location-based

60,675

Scope 2, market-based (if applicable)

56,625

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?

No

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 tons CO2e

1,940,700

Emissions calculation methodology

Materials x CO2 emission intensity during material production

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

100

Please explain

The corporation constantly monitors records of purchases and procurement from material makers during construction, doing so via our internal systems. We use this to

calculate how much principal construction materials (steel beams, rebar, cement, ready-mixed concrete) were used in FY2021.3. CO2 emission intensity during material production takes into account lifecycle assessments and uses the LCI database IDEA v2.

Capital goods

Evaluation status

Relevant, calculated

Metric tons CO2e

3,922

Emissions calculation methodology

Principal acquired capital good (sum of money) x CO2 emission intensity per capital good This follows the calculation method 3) in the Basic Guidelines on Calculating Greenhouse Gas Emissions through Supply Chains of the Ministry of the Environment and the Ministry of Economy, Trade and Industry. (Category 2, emission intensity per fixed asset price (construction))

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

100

Please explain

This is independently computed by the Obayashi Corporation.

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

Evaluation status

Relevant, calculated

Metric tons CO2e

25,503

Emissions calculation methodology

The corporation's total energy used x "average emission intensity of all power sources based on content analysis of energy greenhouse gas composition" emission intensity conforms with the Basic Guidelines on Calculating Greenhouse Gas Emissions through Supply Chains of the Ministry of the Environment and the Ministry of Economy, Trade and Industry.

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

100

Please explain

The Obayashi Corporation by itself. Calculated based on our total energy use from our ISO14001: Environmental Management System (EMS) as well as "average emission intensity of all power sources based on content analysis of energy greenhouse gas

composition."

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tons CO2e

10,968

Emissions calculation methodology

Principal materials x average transportation distance x CO2 emission intensity
This is calculated using the "ton-kilometer method" in conformance with the Basic Guidelines on Calculating Greenhouse Gas Emissions through Supply Chains of the Ministry of the Environment and the Ministry of Economy, Trade and Industry.

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

100

Please explain

Independently computed by the Obayashi Corporation. The corporation constantly monitors records of purchases and procurement from material makers during construction, doing so via our internal management systems. We calculated the weights for each principal material based on our construction and procurement records from FY2020.3. Referencing the survey results of the former Environmental Load Expert Committee of the BCS (present-day Japan Federation of Construction Contractors), we estimate the average transportation distance for each material and use emission intensity from the fuel use intensity of the ton-kilometer method.

Waste generated inoperations

Evaluation status

Relevant, calculated

Metric tons CO2e

109,465

Emissions calculation methodology

[Waste emissions from new construction x CO2 emission intensity from processing and disposal] + [waste emissions from new construction x average transportation distance x CO2 emission intensity from fuel use]

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

100

Please explain

Independently computed by the Obayashi Corporation.

According to the Basic Guidelines on Calculating Greenhouse Gas Emissions through Supply Chains of the Ministry of the Environment and the Ministry of Economy, Trade and Industry, "CO2 emissions from construction waste transportation can optionally be included in Category 5 (waste from business)." We count it as emissions from waste transportation under a separate item for emission sources called [Downstream transportation and distribution].

Business travel

Evaluation status

Relevant, calculated

Metric tons CO2e

1,717

Emissions calculation methodology

This is calculated based on the "emission intensity per employee" in the Basic Guidelines on Calculating Greenhouse Gas Emissions through Supply Chains of the Ministry of the Environment and the Ministry of Economy, Trade and Industry. [Number of employees x CO2 emission intensity per employee]

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

100

Please explain

Independently computed by the Obayashi Corporation.

Employee commuting

Evaluation status

Relevant, calculated

Metric tons CO2e

17,784

Emissions calculation methodology

Based on the Basic Guidelines on Calculating Greenhouse Gas Emissions through Supply Chains of the Ministry of the Environment and the Ministry of Economy, Trade and Industry, we calculate construction worker commutes [travel distance / fuel x CO2 emission intensity from diesel] and employee commutes as [travel allowance according to traffic zone x emission intensity per travel allowance according to traffic zone].

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

100

Please explain

Independently computed by the Obayashi Corporation.
Based on the Basic Guidelines on Calculating Greenhouse Gas Emissions through

Supply Chains of the Ministry of the Environment and the Ministry of Economy, Trade and Industry,

1. we calculate CO2 emissions from construction worker commutes by multiplying the CO2 emission coefficient by the amount of diesel used from average commute distance, number of persons traveling together, and fuel, converted using the total number of workers from labor safety management data.
2. CO2 emissions from employee commutes is calculated multiplying allowance for commuting by train, bus, ferry, taxi, or private car by emission intensity per travel allowance according to traffic zone.

Upstream leased assets

Evaluation status

Relevant, calculated

Metric tons CO2e

50

Emissions calculation methodology

Company-owned car and car lease x average transportation distance x CO2 emission intensity

This is calculated using the "ton-kilometer method" in conformance with the Basic Guidelines on Calculating Greenhouse Gas Emissions through Supply Chains of the Ministry of the Environment and the Ministry of Economy, Trade and Industry.

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

100

Please explain

We include CO2 emissions from the transportation of construction machinery and provisional materials at construction sites that correspond to lease assets (upstream) in Scope 1 of the annual environmental report.

At present, we are including this by calculating it from gasoline use surveyed and tallied from supply chains through our Tokyo head office and branches (15 locations) in ISO14001 and EMS (Environmental Management System).

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tons CO2e

44,314

Emissions calculation methodology

Waste emissions from new construction and dismantling x average transportation

distance x CO2 emission intensity

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

100

Please explain

See entry for mission source [Waste generated in operations].

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

As a construction company, we consider buildings to be finished products. As such, we do not sell intermediate products, so this is not relevant.

Use of sold products

Evaluation status

Relevant, calculated

Metric tons CO2e

398,186

Emissions calculation methodology

Construction area by building usage x CO2 emission intensity

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

100

Please explain

Independently computed by the Obayashi Corporation. We tallied and calculated the construction area of our construction jobs in FY2021.3 by building usage (including department store, supermarket, store, restaurant, hotel, hospital, school, apartments), using our construction information system. Energy consumption intensity from area by building usage conforms with the Structure Energy Consumption Survey Report (2019) of the Building Energy Manager's Association of Japan. For the CO2 emission intensity for each type of energy use, we use the CO2 conversion coefficient defined for FY2021.3 reports of the calculation, report, and publication system.

End of life treatment of sold products

Evaluation status

Relevant, calculated

Metric tons CO2e

42,516

Emissions calculation methodology

Waste emissions from dismantling x CO2 emission intensity from processing and disposal

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

100

Please explain

CO2 emissions accompanying construction and building dismantling are calculated according to the case, including structure and usage.Moreover, for buildings designed by us, we include CO2 emissions during dismantling when calculating LCCO2 with CASBEE (Comprehensive Assessment System for Built Environment Efficiency). However, the buildings we construct will not necessarily be dismantled by ourselves in the future. Moreover, as buildings' years of durability and destruction period differ greatly between decades because of methods of operations, maintenance, and management, so it is impossible to predict how and when our structures will be dismantled. Thus, we are unable to predict annual CO2 emissions for this. Because of this, with regard to "waste from sold products," we have sampled construction waste associated with dismantling jobs received in FY2021.3 (incl. dismantling of structures that existed at the time of new construction) and calculated the CO2 emissions from that processing and disposal, in place of the dismantling, processing, and disposal of our own construction jobs. Moreover, we count CO2 emissions from transportation of construction waste in connection with dismantling as emissions from waste transportation under a separate item for emission sources called [Downstream transportation and distribution].

Downstream leased assets

Evaluation status

Relevant, calculated

Metric tons CO2e

57

Emissions calculation methodology

Calculated as monetary value of lease assets (financial statements, etc. on the Obayashi Corporation website) x intensity by usage.

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

100

Please explain

Independently computed by the Obayashi Corporation.

As our development and real estate businesses involve various forms of planning, we calculate it as monetary value of lease assets (financial statements, etc. on the Obayashi Corporation website) x intensity by usage (Ministry of the Environment database [6])

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

As one of Japan's biggest comprehensive construction companies, we primarily engage in large-scale construction jobs, which differ from businesses by franchises such as house builders. So, since we do not conduct business that corresponds to franchises, this question is not relevant.

Investments

Evaluation status

Not relevant, explanation provided

Please explain

According to the Basic Guidelines on Calculating Greenhouse Gas Emissions through Supply Chains of the Ministry of the Environment and the Ministry of Economy, Trade and Industry, this category applies to investors (businesses that invest for profit) as well as businesses that offer financial services, so it is mainly for private financial institutions (commercial banks, etc.). This does not apply to our businesses as we are a construction company.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Please explain

We do not calculate CO2 emissions associated with lease assets (upstream) in the form of construction machinery and provisional materials used at construction sites as well as the "manufacturing" of appliances and equipment used in offices. This is because the information is difficult to obtain as we deal with many different leasers.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Please explain

We do not calculate CO2 emissions associated with lease assets (downstream) in the form of construction machinery and provisional materials used at construction sites as well as the "dismantling and disposal" of appliances and equipment used in offices. This is because the information is difficult to obtain as we deal with many different leasers.

C-CN6.6/C-RE6.6

(C-CN6.6/C-RE6.6) Does your organization assess the life cycle emissions of new construction or major renovation projects?

	Assessment of life cycle emissions	Comment
row 1	Yes, quantitative assessment	When receiving orders for new constructions or large-scale repair projects in our construction business, we largely categorize orders as either including both design and construction or including only construction. We are able to consider and make implementations for life-cycle greenhouse gas emissions more independently with design and construction jobs. Of the design and construction projects undertaken by the Obayashi Corporation, nearly all new constructions have their environmental specifications assessed using CASBEE. CASBEE assesses environmental efficiency and life cycle CO2 by calculating "life cycle" CO2 emissions as a sum of annual emissions per floor area at different stages: during "construction," "during repairs, improvements, and dismantling," and during "operations." This can be said to allow us to make quantitative assessments of individual properties for specific years based on those figures.

C-CN6.6a/C-RE6.6a

(C-CN6.6a/C-RE6.6a) Provide details of how your organization assesses the life cycle emissions of new construction or major renovation projects.

	Projects assessed	Earliest project phase that most commonly includes an assessment	Life cycle stage(s) most commonly covered	Methodologies/ standards/tools applied	Comment
row 1	New construction and major renovation projects meeting certain criteria (please specify) Construction projects in Japan that require applications for verification of design and construction. 2) New construction projects (also collecting additions if involving a separate or other building that can be assessed using the CASBEE (new construction) tool). 3) Buildings with at least 300 m^2 of floor space (requiring submission of "Energy conservation plan" to the authorities). 4) Excluding detached houses/apartment	Design phase	Cradle-to-gate	Other, please specify CASBEE Using assessments from CASBEE (Comprehensive Assessment System for Built Environment Efficiency)	CASBEE (Comprehensive Assessment System for Built Environment Efficiency) is a comprehensive assessment system of not only environment-friendly performance in the form of energy conservation and the use of materials and equipment with low environmental load but also the quality of the building, including how comfortable the rooms are and the scenery. CASBEE has been continuously developed and maintained by the Institute for Building Environment and Energy Conservation since a research committee for the comprehensive environmental assessment of buildings was set up as part of an industry-government-

	complexes. 5) Excluding station platforms and other buildings that lack living spaces or are otherwise to be used considerably differently from regular buildings.				academia collaborative project with support from the Housing Bureau of the Ministry of Land, Infrastructure, Transport and Tourism in April 2001. As buildings are used over several decades, the Obayashi Corporation assesses annual emissions per floor space during "operations" as a ratio compared to the emissions of a reference building, as calculated by CASBEE. As CASBEE is revised at regular intervals, we set targets every year using those ratios with the aim of providing the market with buildings that are always more advanced than the average buildings suggested by CASBEE.

C-CN6.6b/C-RE6.6b

(C-CN6.6b/C-RE6.6b) Can you provide embodied carbon emissions data for any of your organization's new construction or major renovation projects completed in the last three years?

	Ability to disclose embodied carbon emissions	Comment
row 1	Yes	The Obayashi Corporation assesses the buildings it designs and constructs in a given year using CASBEE, tallies differences in CO2 emissions during operations between the "reference buildings" that CASBEE indicates as average every year and the "relevant buildings" based on the design specifications, and publicizes our annual reductions. Our track record is 10,000 t-CO2 in FY2019.3, 31,000 t-CO2 in FY2020.3, and 34,000 t-CO2 in FY2021.3.

C-CN6.6c/C-RE6.6c

(C-CN6.6c/C-RE6.6c) Provide details of the embodied carbon emissions of new construction or major renovation projects completed in the last three years.

Year of completion

2020

Property sector

Other, please specify

New design and construction projects

Type of project

New construction

Project name/ID (optional)

New design and construction projects in FY2021.3

Life cycle stage(s) covered

Use stage

Normalization factor (denominator)

Other, please specify

Based on calculations according to the Building Standards Act

Denominator unit

square meter

Embodied carbon (kg/CO2e per the denominator unit)

33,399,000

% of new construction/major renovation projects in the last three years covered by this metric (by floor area)

37.23

Methodologies/standards/tools applied

Other, please specify

CASBEE

Comment

We calculate the total annual emissions of "reference buildings" and "relevant buildings" from CASBEE's emissions during operations for new design and construction projects in FY2021.3, and estimate our reductions based on the difference. We calculate the coverage rate using the ratio to annually constructed floor space.

*Regarding year of completion, we would like to enter it as "2021" since it is the record for FY2021.3, but we made it "2020" since the defined range is 1990-2020.

Year of completion

2019

Property sector

Other, please specify

New design and construction projects

Type of project
New construction

Project name/ID (optional)
New design and construction projects in FY2020.3

Life cycle stage(s) covered
Use stage

Normalization factor (denominator)
Other, please specify

Based on calculations according to the Building Standards Act

Denominator unit
square meter

Embodied carbon (kg/CO2e per the denominator unit)
30,385,000

% of new construction/major renovation projects in the last three years covered by this metric (by floor area)
43.99

Methodologies/standards/tools applied
Other, please specify

CASBEE

Comment

We calculate the total annual emissions of "reference buildings" and "relevant buildings" from CASBEE's emissions during operations for new design and construction projects in FY2021.3, and estimate our reductions based on the difference. We calculate the coverage rate using the ratio to annually constructed floor space.

*Regarding year of completion, we would like to enter it as "2019" since it is the record for FY2019.3, but we made it "2018" since the defined range is 1990-2020.

Year of completion
2018

Property sector
Other, please specify

New design and construction projects

Type of project
New construction

Project name/ID (optional)

New design and construction projects in FY2019.3

Life cycle stage(s) covered

Use stage

Normalization factor (denominator)

Other, please specify

Based on calculations according to the Building Standards Act

Denominator unit

- square meter

Embodied carbon (kg/CO2e per the denominator unit)

10,156,000

% of new construction/major renovation projects in the last three years covered by this metric (by floor area)

18.78

Methodologies/standards/tools applied

Other, please specify

CASBEE

Comment

We calculate the total annual emissions of "reference buildings" and "relevant buildings" from CASBEE's emissions during operations for new design and construction projects in FY2021.3, and estimate our reductions based on the difference. We calculate the coverage rate using the ratio to annually constructed floor space.

*Regarding year of completion, we would like to enter it as "2019" since it is the record for FY2019.3, but we made it "2018" since the defined range is 1990-2020.

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

14.16

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

170,459

Metric denominator

unit total revenue

Metric denominator: Unit total

1,203,895,000,000

Scope 2 figure used

Market-based

% change from previous year

0.43

Direction of change

Increased

Reason for change

Total revenue (sales) output level

In FY2021.3, labor productivity increased for both civil engineering and construction while working hours at construction sites decreased, so total CO2 emissions for just Obayashi Corporation decreased by about 12.7% and sales by 13.09% compared to the previous year. This means that our FY2021.3 sales output level increased by 0.43% compared to FY2020.3.

Intensity figure

14.42

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

170,459

Metric denominator

Other, please specify

Construction volume

Metric denominator: Unit total

1,182,066,000,000

Scope 2 figure used

Market-based

% change from previous year

0.3

Direction of change

Decreased

Reason for change

Construction volume output level

The denominator is FY2021.3 construction volume.

We calculated CO2 emissions per construction with our volume of construction volume (JPY), our primary business, as the denominator. In construction, which is our primary business, construction volume decreased by 12.46% compared to the previous year, but in FY2021.3, labor productivity increased for both civil engineering and construction while working hours at construction sites decreased, so total CO2 emissions for just Obayashi Corporation decreased by about 12.7%.
As a result, our FY2021.3 construction volume output level decreased by about 0.30% compared to FY2020.3.

C7 Emissions breakdown

C7.1

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

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used global warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons in CO2e)	GWP Reference
CO2	113,835	IPCC Fifth Assessment Report (AR5 – 100 year)

C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
Japan	113,835

C7.3

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

By business division

By activity

C7.3a

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

Business division	Scope 1 emissions (metric tons CO2e)
Civil Engineering	57,561
Building Construction	55,942
Other	332

C7.3c

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

Activity	Scope 1 emissions (metric tons CO2e)
Office	332
Construction	113,503

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)
Japan	60,675	56,625	352,718	3,877

C7.6

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

- By business division
- By activity

C7.6a

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

Question dependencies

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Civil Engineering	31,800	29,906
Building Construction	22,395	20,490
Other	6,480	6,229

C7.6c

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

Activity	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Office	6,480	6,229
Construction	54,195	50,396

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.

Reason	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	4,357	Decreased	2.23	Regarding FY2021.3 CO2 emissions (Scope 2), we saw a decrease compared to FY2020.3 because of lower emission coefficients for the power companies that the Obayashi Corporation have a contract with (Hokkaido Electric Power, Tohoku Electric Power, Tokyo Electric Power, Chubu Electric Power, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, and Marubeni Power Retail). The variation (amount of decrease) was Σ (FY2020.3 power use x FY2020.3 emission coefficient) - (FY2021.3

				power use x FY2021.3 emission coefficient) = 4,357 t-CO2. Moreover, the proportion of the variation (amount of decrease) to FY2020.3 total CO2 emissions (Scope 1 + 2) (FY2020.3 reported values (FY2020.3 results): 195,294 t-CO2 (*)) was 4,357 t-CO2 / 195,294 t-CO2 = 2.23%. *Our FY2020.3 results were changed from the values in our previous CDP response following third-party verification.
Other emissions reduction activities	2,290	Decreased	1.17	Regarding FY2021.3 total CO2 emissions (Scope 2), we estimate a 2,290 t-CO2 reduction thanks to the promotion of LED temporary lighting at Obayashi Corporation construction sites. Moreover, the proportion of the variation (amount of decrease) to FY2020.3 total CO2 emissions (Scope 1 + 2) (FY2020.3 reported values (FY2020.3 results): 195,294 t-CO2 (*)) was 2,290 t-CO2 / 195,294 t-CO2 = 1.17%. *Our FY2020.3 results were changed from the values in our previous CDP response following third-party verification.
Divestment	0	No change	0	Not Applicable
Acquisitions	0	No change	0	Not Applicable
Mergers	0	No change	0	Not Applicable
Change in output	0	No change	0	Not Applicable
Change in methodology	0	No change	0	Not Applicable
Change in boundary	0	No change	0	Not Applicable
Change in physical operating conditi	0	No change	0	Not Applicable

ons				
Unidentified	0	No change	0	Not Applicable
Other	0	No change	0	Not Applicable

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?

Market-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.

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

C8.2a

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

Activity	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable + non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	462,298	462,298
Consumption of purchased or acquired electricity		0	352,711	352,711
Consumption of purchased or acquired steam		0	7	7
Consumption of self-generated non-fuel renewable energy		798		798
Total energy consumption		798	815,016	815,814

C8.2b

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

Fuel application	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	No
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

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

Fuels
Gas Oil

Heating value
LHV

Total MWh consumed by the organization
441,669

MWh consumed for self-generation of electricity
17,667

MWh consumed for self-generation of heat
0

MWh consumed self-cogeneration or self-trigeneration
0

Emission factor
2.58

Unit
kg CO2per liter

Emission factor source
List of calculation methods and emission coefficients from calculations, reports, and officially announced systems of the Ministry of the Environment

Comment
Used mainly for construction equipment and private power generation. We used 1,487 kL of diesel in FY2021.3, of which about 4% was used for private power generation.
441,669×0.04=17,667

Fuels
Liquefied Petroleum Gas (LPG)

Heating value
LHV

Total MWh consumed by the organization
33

MWh consumed for self-generation of electricity
0

MWh consumed for self-generation of heat

0

MWh consumed self-cogeneration or self-trigeneration

0

Emission factor

3

Unit

metric tons CO2e per metric ton

Emission factor source

List of calculation methods and emission coefficients from calculations, reports, and officially announced systems of the Ministry of the Environment

Comment

Used mainly for office (Osaka Machinery Center) hot water supply.

Fuels

Motor Gasoline

Heating value

LHV

Total MWh consumed by the organization

855

MWh consumed for self-generation of electricity

0

MWh consumed for self-generation of heat

0

MWh consumed self-cogeneration or self-trigeneration

0

Emission factor

2.32

Unit

kg CO2e per liter

Emission factor source

List of calculation methods and emission coefficients from calculations, reports, and officially announced systems of the Ministry of the Environment

Comment

Used mainly for transportation equipment.

Fuels

Town Gas

Heating value

LHV

Total MWh consumed by the organization

1,085

MWh consumed for self-generation of electricity

0

MWh consumed for self-generation of heat

0

MWh consumed self-cogeneration or self-trigeneration

84.03

Emission factor

2.23

Unit

CO2 kg/m3

Emission factor source

List of calculation methods and emission coefficients from calculations, reports, and officially announced systems of the Ministry of the Environment

Comment

Used mainly for office, etc. (Tokyo Machinery Center, Yokohama Machinery Center, West Japan Robotics Center, East Japan Robotics Center) cafeterias.

Fuels

Kerosene

Heating value

LHV

Total MWh consumed by the organization

19,741

MWh consumed for self-generation of electricity

0

MWh consumed for self-generation of heat

0

MWh consumed self-cogeneration or self-trigeneration

0

Emission factor

2.49

Unit

kg CO2e per liter

Emission factor source

List of calculation methods and emission coefficients from calculations, reports, and officially announced systems of the Ministry of the Environment

Comment

Used mainly for heating in cold areas.

C8.2d

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

Energy Carrier	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	882	882	798	798
Heat	0	0	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C8.2e

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

Sourcing method

Power purchase agreements (PPA), electric generators connected to power grid, no energy attribute certification

Low-carbon technology type

Other, please specify

Solar power, hydropower, wind power, biomass power

Country/area of consumption of low-carbon electricity, heat, steam or cooling
Japan

MWh consumed accounted for at a zero emission factor
3,877

Comment

C9 Additional metrics

C9.1

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

Description
Waste

Metric value

12.7

Metric numerator
Construction waste emissions from new construction (excl. sludge) [t]

Metric denominator (intensity metric only)
Civil engineering construction volume for that year [100,000,000 yen]

% change from previous year
28.7

Direction of change
Decreased

Please explain
We tally the total of construction waste excluding sludge from new construction based on the manifestos as well as calculate construction volume output level from the annual construction volume for new construction. We assess the emission reduction rate by looking at aging for construction volume proportion. FY2021.3 saw a drop to FY2019.3 levels because of a decrease a decrease in large buildings using inverted construction compared to FY2020.3 and in construction volume.

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
row 1	Yes	The Obayashi Corporation is a construction business and is investing in the development of technologies for environmental performance and construction that conserve energy as low-carbon products as well as technologies for building management as services. In FY2021.3, "environment-related development costs" corresponded to 4,987,000,000 yen of environmental preservation costs.

C-CN9.6a/C-RE9.6a

(C-CN9.6a/C-RE9.6a) Provide details of your organization's investments in low-carbon R&D for real estate and construction activities over the last three years.

Technology area

Unable to disaggregate by technology area

Stage of development in the reporting year

Average % of total R&D investment over the last 3 years

41 - 60%

R&D investment figure in the reporting year (optional)

4,987,000,000

Comment

Since the construction of buildings involves introducing facilities and equipment to improve performance during operations (incl. designs), selecting and applying materials and products used, and packaging safety and other diverse functions, our R&D also requires complex and diversified consideration. The same goes for R&D expenditures, so we do not extract them individually but count them as "environment-related development costs."

C-CN9.10/C-RE9.10

(C-CN9.10/C-RE9.10) Did your organization complete new construction or major renovations projects designed as net zero carbon in the last three years?

No, but we plan to in the future

C-CN9.11/C-RE9.11

(C-CN9.11/C-RE9.11) Explain your organization's plan to manage, develop or construct net zero carbon buildings, or explain why you do not plan to do so.

The Obayashi Corporation equipped the Techno-Station of the Technology Research Institute, which was completed in 2010, with renewable energy facilities. It achieved ZEB in the FY2015.3 operational results and this was still the case in FY2021.3. We are using that know-how to promote ZEB construction for our clients too. As the construction industry is order-based, we were not able to supply the market with ZEB in the most recent three years, but we have also been working on projects that are highly rated under BELS (Building-housing Energy-efficiency Labelling System), some of which are under construction and received ZEB Ready certification in FY2021.3. We already have the technological capacity to construct and supply ZEB projects, so our aim is to communicate its recognition as a climate change measure to business owners from the sales stage and supply the market with buildings that have high environment performance as part of our business activities.

C10 Verification

C10.1

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

Scope	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

It is currently being written and is not finished with regard to the reporting year - We

have attached past processing statements

Type of verification or assurance
Limited assurance

Attach the statement

【Obayashi Corporation】Verification Report of Environmental Information.pdf

Page/section reference
1/1

Relevant standard
ISO14064-3

Proportion of reported emissions verified (%)
100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach
Scope 2 market-based

Verification or assurance cycle in place
Annual process

Status in the current reporting year

It is currently being written and is not finished with regard to the reporting year - We have attached past processing statements

Type of verification or assurance
Limited assurance

Attach the statement

【 Obayashi Corporation】Verification Report of Environmental Information.pdf

Page/ section reference
1/1

Relevant standard
ISO14064-3

Proportion of reported emissions verified (%)
100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category
Scope 3 (upstream & downstream)

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance
Limited assurance

Attach the statement

【Obayashi Corporation】Verification Report of Environmental Information.pdf

Page/ section reference

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)
100

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, we do not verify any other climate-related information reported in our CDP disclosure

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.

Tokyo CaT - ETS

C11.1b

(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.

Tokyo CaT - ETS

% of Scope 1 emissions covered by the ETS

1.13

% of Scope 2 emissions covered by the ETS

9.33

Period start date

1 April, 2020

Period end date

31 March, 2025

Allowances allocated

0

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO2e

1,288.8

Verified Scope 2 emissions in metric tons CO2e

5,281

Details of ownership

Other, please specify

Facilities either partly or fully owned and managed by us

Comment

We report the CO2 emissions of our offices and facilities in Tokyo Metropolis (offices and facilities with oil equivalent energy usage of at least 30 kL and less than 1,500 kL in the previous fiscal year) in accordance with the Tokyo Metropolitan Government's Program for Reporting on Measures against Global Warming. This system is part of the urban cap & trade system for office buildings, etc. that is led by Tokyo Metropolis. Since the deadline for submitting the FY2021.3 results has yet to come, the reported values are from the FY2020.3 results.

C11.1d

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

The Obayashi Corporation owns offices as bases for our business activities. As with the

activities at our construction sites, office energy use and concomitant greenhouse gas emissions have to be considered in terms of climate change measures for our business activities and it is important that we keep emissions down. Especially in Tokyo where we have greatest number of employees, we report the CO2 emissions of our offices and facilities in Tokyo Metropolis (offices and facilities with oil equivalent energy usage of at least 30 kL and less than 1,500 kL in the previous fiscal year) in accordance with the Tokyo Metropolitan Government's Program for Reporting on Measures against Global Warming. The following are measures we implement and promote to cut emissions.

1. We are utilizing the ISO14001 organizational system that we are operating inside the Obayashi Corporation to promote energy conservation, appointing an energy conservation manager at each store and creating a system for promoting activities.

2. We measure the energy use figures of each department annually and announce them to all employees through the abovementioned system, thereby seeking to raise everyone's energy conservation awareness.

By making reports according to this system, we encourage higher awareness about emissions from office activities and thus contribute to keeping CO2 emissions down. Offices are in constant use, so we will continue the virtuous circle of raising awareness and promoting reduced emissions. Furthermore, as the FY2021.3 report is still under inspection (end of August submission), these are the FY2020.3 results, but we achieved 1,288.8 t-CO2 for Scope 1 and 5,281.0 t-CO2 for Scope 2, thus totaling 6,569.8 t-CO2 in CO2 emissions, which is a reduction from 6,759.5 t-CO2 in the previous fiscal year.

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, and we don’t 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

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

100

% total procurement spend (direct and indirect)

100

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

99.8

Rationale for the coverage of your engagement

The Obayashi Corporation considers initiatives involving our supply chains as a whole indispensable to fulfilling our corporate social responsibility (CSR), including our environmental protection activities. We work to conduct fair business with our suppliers and strengthen mutual trust in order to grow and develop together as partners. We ask our partners to familiarize themselves with the Obayashi Basic Principles and our ideas about CSR, aiming to engage with themes like human rights, safety and health, the environment, product quality, and social contributions together.
The Obayashi Corporation formualted CSR procurement guidelines in June 2011 for the realization of a sustainable society as expressed in the Obayashi Basic Principles. In March and November 2020, we revised our Obayashi Group CSR Procurement Policy, for example by incorporating more concrete items, in light of various demands from society.

In the Obayashi Group CSR Procurement Policy, the Basic Policy on CSR Procurement Initiatives prescribes items that Obayashi Group directors and employees need to comply with to promote CSR procurement, while the CSR Procurement Guidelines prescribe those things that the Obayashi Group expects of its suppliers in line with this policy. By building positive partnerships with our suppliers that are based on mutual trust and founded on this policy, and by working with suppliers to ensure that the CSR Procurement Guidelines are understood and take root not only at suppliers but throughout their supply chains, we can help promote CSR initiatives with all supply chains concerned with the business of the Obayashi Group. Furthermore, major items are stipulated in the agreements we conclude with supplies, and we make sure to check them when concluding the agreement.

The Obayashi Group CSR Procurement Policy prescribes 9 items, including environmental responsibility. Moreover, "environmental responsibility" specifies "efforts to protect the environment and reduce environmental impact" and covers responses to climate-related issues (reducing CO2 through energy conservation, resource conservation, etc.).

Moreover, the Obayashi Group stipulates our own Green Procurement Guidelines for Office Supplies and Construction Materials and Equipment separately. These aim to contribute to our environmental protection activities, including procurement policy items like "promoting energy and resource conservation" and "reducing CO2 emissions." Moreover, they prescribe that suppliers' environmental work should be evaluated according to the "standard character of suppliers," procuring goods primarily from those that perform well relative to that standard.

The Obayashi Group CSR Procurement Policy and the Green Procurement Guidelines

for Office Supplies and Construction Materials and Equipment are aimed at all of our supplies, and we publicize responses internally and externally. As such, they covered all suppliers we had dealings with in FY2021.

Furthermore, as regards the construction business, which is the Obayashi Corporation's main business, the partner companies that we work together with at our construction sites are key suppliers, so we absolutely need to cooperate well with them.
At our construction sites, our employees work together with partners to reduce CO2 emissions from construction by using low-carbon construction machinery, operating vehicles and machinery fuel-efficiently, and implementing idle reduction. Moreover, the help of our partner companies is indispensable in our surveys of fuel consumption at construction sites, which is what we base our calculations of CO2 emissions from construction on. Those emissions make up at least 99% of the Obayashi Corporation's Scope 1 CO2 emissions.

Impact of engagement, including measures of success

The Obayashi Corporation has set "response rate of questionnaires on understanding of CSR procurement guidelines" as one of the KPIs for the action plan "Promoting CSR procurement," which was defined based on our ESG materialities. We saw a considerable improvement from FY2020 (73%) as it rose to 96.3% in FY2021. This suggests that our promotion of CSR procurement among all suppliers, including responses to climate-related issues (reducing CO2 through energy conservation, resource conservation, etc.), is successful.
About 1.100 companies in different industries are part of the Obayashi Rin-yu-kai, which is an organization for partner companies across Japan.

We regularly hold liaison meetings with members of the Obayashi Rin-yu-kai to share different types of information.

When any of the Obayashi Corporation's suppliers (partners), including members of the Obayashi Rin-yu-kai, work together with us at a construction site of ours, it is assumed that they will adhere to our construction management in accordance with the construction contract.

This includes the Obayashi Corporation's environmental protection activities, including CO2 emission reductions through our environmental management system.

This shows that we are cooperating with all our suppliers (partners).

Furthermore, the FY2021 environment targets we have set in the Obayashi Corporation's environmental management system include "reduction rate for CO2 emissions from construction," "implementation rate for fuel-efficient operations training at the construction site," and "green procurement rate." We inform our suppliers (partners) about these environment targets and our environment protection activities (idle reduction, fuel-efficient operations, green procurement, etc.) as well as track and evaluate the activities on a quarterly basis. The evaluations help us assess the effects and success of our engagement with suppliers.

As an example, with regard to the environmental target "reduction rate for CO2 emissions from construction," we ask our suppliers (partners) to report the monthly diesel usage at the Obayashi Corporation construction site every quarter. The data are then used to calcualte the Obayashi Corporation's CO2 emissions and "reduction rate for CO2 emissions from construction."

At Obayashi Corporation construction sites, our environmental management system requires the implementation of environmental education not only for our workers and employees but also for the workers of our partners. Furthermore, we implement fuel-efficient operations training as an environmental target of our environmental

management system. Moreover, the FY2021 implementation rate was 60% compared to the target of 70% or more.
The "reduction rate for CO2 emissions from construction (FY2014 baseline)," which is an environmental target item for engineering and construction in our environmental management system, is a direct evaluation indicator of success regarding collaboration with partner companies in climate-related issues. We achieved 28.3% in FY2021, compared to the target of 15.0% or more. Moreover, CO2 emissions per construction unit went down from 14.4 t-CO2/100 million yen in FY2020 to 13.8 t-CO2/100 million yen in FY2021. This result suggests successful engagement with our partner companies.
Moreover, our engagement with partner companies is influencing their actions. As an example, we have seen suppliers (partners) switch their construction machinery, which they bring to the construction site, to machinery that reduces emission gases.

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 an engagement campaign to educate customers about your climate change performance and strategy

% of customers by number
100

% customer-related Scope 3 emissions as reported in C6.5
15.3

Please explain the rationale for selecting this group of customers and scope of engagement
In the Obayashi Corporation's corporate code of conduct, which is based on the Obayashi Basic Principles, prescribes items like "environment-friendly society-building" and "providing high-quality structures and services" as "indicators for remaining a company trusted by all stakeholders." We also provide all our clients (orderers) with environment-friendly technology, etc.
As such, all our clients are subject to engagement.
Furthermore, we work to provide clients with satisfactory high-quality structures and services through integrated quality management based on our quality management system, provide clients with initiatives and solutions for advanced technology development that meets their various needs, and support our clients in everything from formulating BCP (business continuity planning) to restoration work during disasters.
In particular, considering that much CO2 is emitted when operating a building, in the

case of buildings designed and built by the Obayashi Corporation, we are actively providing clients (orderers) with technology that can reduce CO2 emissions from building operations, such as CASBEE* specifications of A rank or higher and ZEB.
*Comprehensive Assessment System for Built Environment Efficiency
More concretely, we have set a reduction rate for CO2 emissions from operations of buildings designed and built by us (compared to CASBEE reference building) of 25% or more as an environmental target for design in our environmental management system. Since this has a major impact on the Obayashi Corporation's Scope 3 CO2 emissions (category 11: use of sold products) and the building operations costs of clients (orderers) with regard to energy conservation during building operations, we are collaborating with all our clients (orderers) from the sales and design stages.
In addition, we have set "Proportion of design and construction jobs (2,000 m^2 or more) with CASBEE A rank or higher" as a KPI for the ESG materiality "Forming a society that is kind to the environment." We aim to achieve 70% or more in FY2022.

Impact of engagement, including measures of success

The Obayashi Corporation has set "Client satisfaction" as a KPI based on our ESG materialities. We achieved 96.8% in "Client satisfaction" in FY2021, which is a considerable increase compared to FY2020 (85.4%). This suggests that we are successfully engaging with all our clients.
Furthermore, the "reduction rate for CO2 emissions from design (compared to CASBEE standard)," which is an environmental target item for design in our environmental management system, is a direct evaluation indicator of success regarding collaboration with clients (orderers) in climate-related issues. In FY2021, we achieved 23% compared to the target of 25% or more.
Through this, the Obayashi Corporation reduces our Scope 3 CO2 emissions (category 11: use of sold products) and we estimate that we can contribute to climate action by reducing energy costs and CO2 emissions for building operations by clients (orderers). In addition, we expect that engagement with all clients can help reduce CO2 emissions as well as encourage technological innovation.
Moreover, we have set "Proportion of design and construction jobs (2,000 m2 or more) with CASBEE A rank or higher" as a KPI for the action plan "Promoting an environment-friendly business" based on our ESG materialities. We achieved 64% in FY2021.

C12.1d

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

The Obayashi Corporation has started work on the construction of a geothermal demonstration power plant in collaboration with Oita Chinetsu, who engage in development, construction, management, power sales, and comprehensive consulting with regard to geothermal and other renewable energies, for the realization of a society that utilizes CO2-free hydrogen by using geothermal power. S:Situation ：
Global warming
T: Task ：
Utilizing CO2-free hydrogen as a form of clean energy for carbon neutrality in 2050.
A: Action ：
The Obayashi Corporation started construction of a geothermal demonstration power plant in

Kokonoe-machi, Kusu-gun, Oita in July 2020. It shares the grounds with a hydrogen production demonstration plant that uses geothermal power and is the first attempt in Japan to trial the processes involved in supplying various users with CO2-free hydrogen obtained with geothermal power. We are doing this in collaboration with Oita Chinetsu. The corporate philosophy of Oita Chinetsu is "Contributing to community and society building through the development of renewable energies." They have been generating geothermal energy in Kokonoe-machi, Kusu-gun, Oita since 2013, not only gaining the understanding of residents in the relevant areas but also having a track record of contributions to those areas.

The Obayashi Corporation has continuously worked to expand the use of renewable energies, such as solar power, biomass power, and wind power. Geothermal power, which is one type of renewable energy, is an excellent power source that can be supplied stably. However, power grid capacity is insufficient as suitable locations for generation are located in mountainous areas and connecting it to power lines is difficult as the capacity of commercial power systems for the application of feed-in tariffs (FIT) (*1) tends to be first filled with other renewable energies whose development is quicker. These are challenges that are slowing down commercialization. Moreover, hydrogen is characterized by not releasing any CO2 when used and being suited for large-capacity storage. In particular, CO2-free hydrogen produced through water electrolysis with renewable energy contributes to reducing the environmental load and improving energy self-sufficiency. As such, the Obayashi Corporation is working to promote the use of CO2-free hydrogen alongside the development of geothermal power generation by trialing a scheme to send hydrogen produced with geothermal power in Oita to factories and other facilities through land transportation. The Obayashi Corporation has previously been engaged in research for the social implementation of supply chains of CO2-free hydrogen using geothermal power in New Zealand, where geothermal power is very popular. This new trial builds on insights from there and aims to examine all the commercialization processes from selecting and surveying candidate locations for geothermal power generation in Japan, constructing power plants, and producing and supplying hydrogen made with that power. The trial involves the designing, construction, and performance study of a geothermal demonstration power plant using binary generators (*2).
In addition, the hydrogen production demonstration plant using geothermal power utilizes an energy management system (EMS) for plants with multiple operational modes (*3) that the Obayashi Corporation has developed. The trial investigates how to produce hydrogen optimally. Furthermore, the EMS adds functionality for tracking transportation via GPS devices in the hydrogen trucks as well as managing efficient continuous operations to avoid having to stop and restart the plant in accordance with the trucks' arrival and departure schedules. The plan is for the geothermal demonstration power plant and the hydrogen production demonstration plant to start operations in July 2021.
R: Result：
The CO2-free hydrogen produced at the demonstration plant will be used effectively as a local energy resource, for example by being supplied to local factories and fueling the fuel cells of forklifts. Moreover, we are considering various ways to make use of the geothermal power and CO2-free hydrogen created in the trial while looking for a broad range of research partners, thereby helping local residents and many others experience the use of renewable energies and the arrival of the hydrogen society as something familiar and close by. The Obayashi Corporation will continue to engage in problem-solving for the environment and society by working with entire supply chains that involve the production of CO2-free hydrogen using renewable energy and its transportation, storage, and supply.

*1 Feed-in tariffs (FIT): system that makes it necessary for power companies to purchase power generated from renewable energy at a price set by the government for a certain period of time.
*2 Binary generator: Machine that spins turbines with steam from heating and evaporating a medium with a low boiling point. A lot of power can be generated from geothermal energy whose steam is relatively low-temperature and low-pressure.
*3 Multiple operational modes: There are the following three types.
Maximal hydrogen production mode: the operational mode that produces the most hydrogen in a year (100% load factor on and rate of operation of the hydrogen producing machines).
Cheapest hydrogen production mode: the operational mode that produces hydrogen at the lowest cost (operates the hydrogen producing machines and peripheral equipment at the operating point of best efficiency)
Green priority generation mode: the operational mode that has the highest proportion of geothermal power in the production of hydrogen (by operating the hydrogen production and peripheral equipment so that geothermal power can provide the most of the power used, the amount of purchased grid power can be made as small as possible)

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?

Trade associations

Other

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

Japan Federation of Construction Contractors

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The Japan Federation of Construction Contractors (hereinafter, "the JFCC") has developed the Plan for Promoting a Decarbonized Society with targets for reducing CO2 emissions generated during construction: a 20% reduction compared to 1990 by 2020 and a 25% reduction compared to 1990 by 2030.

The JFCC is a federation of companies in the general construction industry across

Japan as well as organizations of construction contractors that make up those companies. It is engaged in solving various internal and external basic issues relating to the construction industry, including the various construction-related systems, and also works to achieve healthy development for Japanese construction by promoting construction-related technological progress and better management. Through this, it aims to contribute to a stronger foundation for the lives of the people of Japan and industrial activities.
The JFCC's climate action-related activities aim to investigate and research construction-related environmental issues as well as promote advice and countermeasures. It does this through the Environment Committee and several dedicated subcommittees within, such as the Global Warming Countermeasures Subcommittee. More concretely, it is formulating the Independent Action Plan for the Environment in Construction by organizing its environmental activities in the construction industry according to the three themes creating a low-carbon society, creating a recycling-oriented society, and creating a society that respects the natural world on the basis of environmental management.

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

The Obayashi Corporation takes part as a member of the JFCC's Environment Committee as well as the Environmental Management Subcommittee and the Global Warming Countermeasures Subcommittee, which fall under that committee, and works together on the formulation, implementation, and spread of the Independent Action Plans for the Environment in Construction.
Moreover, we take part as a member of the Global Warming Countermeasures Subcommittee, which is a working group for the Plan for Promoting a Decarbonized Society, and are involved in the formulation and implementation of that plan.

C12.3e

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

The Obayashi Corporation works together with the New Energy and Industrial Technology Development Organization (hereinafter, "NEDO") and Kawasaki Heavy Industries (hereinafter, "KHI") to commence a demonstration trial of dry low-NOx hydrogen-exclusive combustion gas turbines that use "micro-mix combustion" technology developed by KHI in May 2020, as part of a project for technological development to build a hydrogen society. In July 2020, we were the first in the world to succeed with this (*). Dry combustion generates power more efficiently than conventional methods and can also reduce NOx emissions. Hydrogen has a variety of uses, including gas turbine power generation and fuel cell vehicles, and since it characteristically does not emit CO2 when used as energy, it is expected to play a central role in the future as the ultimate green energy. NEDO is promoting the project for technological development to build a hydrogen society as part of its efforts to realize a hydrogen society. Amid this, KHI and the Obayashi Corporation conducted a demonstration trial of hydrogen gas turbines that support everything from mixed combustion of natural gas and hydrogen to hydrogen-exclusive combustion in FY2018.3 and FY2019.3, applying a "water injection method" that keeps down NOx generation from local high-temperature combustion. We worked together with Kobe City, Kansai Electric Power Company, and others, expecting a demand for power generation that combines hydrogen and natural gas in the early phase of hydrogen power. This trial allowed us to supply heat and power to a town area through hydrogen-exclusive combustion on Port Island, Kobe for the first time in the world in April 2019.

We have conducted development of dry low-NOx hydrogen-exclusive combustion gas turbines since FY2020.3, and in July 2020, we were the first in the world to successfully trial such gas turbines, which were developed by KHI. This trial aimed to improve further efficiency in hydrogen power generation and reduce the environmental load (reduce emissions of nitrogen oxide (NOx)) through hydrogen-exclusive combustion that uses a dry combustion method. The Obayashi Corporation is steadily implementing this project together with NEDO and KHI to establish a new energy supply system that supports efficient energy use by local communities, working toward realizing a hydrogen society through expanded use of hydrogen energy.

*Developed the world's first dry low-NOx hydrogen-exclusive combustion gas turbine. KHI investigation based on publicly available materials from the gas turbine maker.

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?

The Obayashi Corporation participates in JFCC's Environment Committee through our directors in charge of the environment, who are members of our Board of Directors, which oversees climate-related risks and opportunities, members of our CSR Committee, which formulates our basic policies to promote activities on climate-related issues and other CSR activities as well as proposes measures and evaluates their implementation, and chair of the Environmental Management Expert Committee, which is subordinate to the CSR Committee.
From the Obayashi Corporation, the members of the secretariat (ESG & SDGs Department of the Corporate Strategy Division) of the CSR Committee, which is chaired by the President, and the secretariat (Environmental Management Team, Safety, Quality & Environment Division) of the Environmental Management Expert Committee (chaired by director in charge of the environment), which falls under the CSR Committee, take part as members of the Environmental Management Subcommittee and the Global Warming Countermeasures Subcommittee, which fall under the JFCC's Environment Committee.

We make sure that the contents relating to climate change issues deliberated by the committees and subcommittees of the JFCC coincide with our climate change strategy through processes of reporting and sharing it at our Board of Directors, CSR Committee, Environmental Management Expert Committee, and other organizations. Moreover, if something is found not to match the Obayashi Corporation's climate change strategy, we may try to make the two coincide by having our members in the JFCC's committees and subcommittees express our opinions and work to indirectly influence public policy.

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

【Obayashi Corporation】117th Annual Securities Report.pdf

Page/Section reference

- Management policy, business environment and issues to be addressed, etc. (P11-14)
- Business and other risks (P15-17)
- Research and Development (P24-26)
- Overview of capital investment (P27-28)
- Plans for capital investment, disposals of properties, etc. (P29)
- Corporate governance (P37-40)

Content elements
Governance
Strategy
Risks & Opportunities
Other, please specify

Research and development, overview of capital investments, plans for capital investment, disposals of properties, etc.

Comment

Publication
In voluntary sustainability report

Status
Underway – previous year attached

Attach the document

【Obayashi Corporation】OBAYASHI Corporate Report 2020.pdf

Page/Section reference

- About Obayashi Group: Obayashi Basic Principles（P.4）, Performance at a Glance（Consolidated Financial Highlights）（P.8）
- A Strategy for Growth through ESG Management: President's Message（P.9-12）, A Direction Forward（P.13- 14）, Our Value Creation（P15-16）
- A Foundation for ESG Management: Materialities and KPIs（P29-30）, Establish an Environmentally Responsible Society（P31-32）

Content elements
Governance

Strategy
Risks & Opportunities
Emissions figures
Emission targets
Other metrics

Comment

The Obayashi Corporate Report (integrated report) collects important information for understanding the Obayashi Corporation and the Obayashi Group. More detailed information can be found in our ESG Data Book and on our website.

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	Directors in charge of risks and the environment	Director on board

SC Supply chain

SC0.0

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

SC0.1

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

	Annual revenue
row 1	1,230,418,000,000

SC0.2

(SC0.2) Do you have an ISIN for your company that you would be willing to share with CDP?

No

SC1.1

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

Requesting member

KAO Corporation

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

Emissions in metric tons of CO2e

0.005

Uncertainty (± %)

10

Major sources of emissions

Total CO2 emissions under Scope 1 and Scope 2.
Scope 1 and Scope 2 are CO2 emissions calculated from use of power, diesel, kerosene, gas, etc. consumed at the construction sites.

Verified

Yes

Allocation method

Other, please specify

It is calculated by multiplying the volume of completed construction in FY2021.3 in projects ordered by clients with CO2 emission intensity per construction project in FY2021.3 (construction).

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

We have tracked use of electricity, diesel, kerosene, and gas at our construction sites based on the calculation criteria in the Guidelines for Environmental Accounting in Construction (JFCC) with regard to Scope 1 and 2 emissions.
More concretely, we tally energy use through our own CO2 emission aggregation systems and calculate emissions as well as O2 emission intensity per construction project.

Requesting member
NEC Corporation

Scope of emissions
Scope 1

Allocation level
Company wide

Allocation level detail

Emissions in metric tons of CO2e
162.07

Uncertainty (± %)
10

Major sources of emissions
Total CO2 emissions under Scope 1 and Scope 2.
Scope 1 and Scope 2 are CO2 emissions calculated from use of power, diesel, kerosene, gas, etc. consumed at the construction sites.

Verified
Yes

Allocation method
Other, please specify

It is calculated by multiplying the volume of completed construction in FY2021.3 in projects ordered by clients with CO2 emission intensity per construction project in FY2021.3 (construction).

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
We have tracked use of electricity, diesel, kerosene, and gas at our construction sites based on the calculation criteria in the Guidelines for Environmental Accounting in Construction (JFCC) with regard to Scope 1 and 2 emissions.
More concretely, we tally energy use through our own CO2 emission aggregation systems and calculate emissions as well as O2 emission intensity per construction project.

Requesting member
Toyota Motor Corporation

Scope of emissions
Scope 1

Allocation level
Company wide

Allocation level detail

Emissions in metric tons of CO2e
4,664.64

Uncertainty (± %)
10

Major sources of emissions
Total CO2 emissions under Scope 1 and Scope 2.
Scope 1 and Scope 2 are CO2 emissions calculated from use of power, diesel, kerosene, gas, etc. consumed at the construction sites.

Verified
Yes

Allocation method
Other, please specify

It is calculated by multiplying the volume of completed construction in FY2021.3 in projects ordered by clients with CO2 emission intensity per construction project in FY2021.3 (construction).

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
We have tracked use of electricity, diesel, kerosene, and gas at our construction sites based on the calculation criteria in the Guidelines for Environmental Accounting in Construction (JFCC) with regard to Scope 1 and 2 emissions.
More concretely, we tally energy use through our own CO2 emission aggregation systems and calculate emissions as well as O2 emission intensity per construction project.

Requesting member
Microsoft Corporation

Scope of emissions
Scope 1

Allocation level
Company wide

Allocation level detail

Emissions in metric tons of CO2e
0

Uncertainty (± %)

0

Major sources of emissions

Total CO2 emissions under Scope 1 and Scope 2.

Scope 1 and Scope 2 are CO2 emissions calculated from use of power, diesel, kerosene, gas, etc. consumed at the construction sites.

Verified

Yes

Allocation method

Other, please specify

It is calculated by multiplying the volume of completed construction in FY2021.3 in projects ordered by clients with CO2 emission intensity per construction project in FY2021.3 (construction).

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

We have tracked use of electricity, diesel, kerosene, and gas at our construction sites based on the calculation criteria in the Guidelines for Environmental Accounting in Construction (JFCC) with regard to Scope 1 and 2 emissions.

More concretely, we tally energy use through our own CO2 emission aggregation systems and calculate emissions as well as O2 emission intensity per construction project.

SC1.2

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

ESG Data Book

SC1.3

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

Allocation challenges	Please explain what would help you overcome these challenges
Managing the different emission factors of diverse and numerous geographies makes calculating total footprint difficult	Construction offices and sites are set up and managed temporarily in the construction industry, so we calculate total emissions for the whole corporation based on project intensity in sampling surveys. It is possible to calculate emissions by individual client from their proportion (ratio) of annual projects, so we report these emissions to clients who request it, but do not calculate emissions for clients who do not need it themselves.

SC1.4

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

No

SC1.4b

(SC1.4b) Explain why you do not plan to develop capabilities to allocate emissions to your customers.

Construction offices and sites are set up and managed temporarily in the construction industry, so we estimate totals based on sampling surveys. Because of this, we cannot accurately calculate emissions by individual client.

SC2.1

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

Requesting member

KAO Corporation

Group type of project

Change to provision of goods and services

Type of project

Other, please specify

Proposal and provision of energy efficient buildings

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

Other, please specify

From product delivery to end of use

Estimated lifetime CO2e savings

0

Estimated payback

Details of proposal

Requesting member

NEC Corporation

Group type of project

Change to provision of goods and services

Type of project

Other, please specify

Proposal and provision of energy efficient buildings

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

Other, please specify

From product delivery to end of use

Estimated lifetime CO2e savings

0

Estimated payback

Details of proposal

Requesting member

Toyota Motor Corporation

Group type of project

Change to provision of goods and services

Type of project

Other, please specify

Proposal and provision of energy efficient buildings

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

Other, please specify

From product delivery to end of use

Estimated lifetime

CO2e savings

Estimated payback

Details of proposal

Requesting member

Microsoft Corporation

Group type of project

Change to provision of goods and services

Type of project
Other, please specify

Proposal and provision of energy efficient buildings

Emissions targeted
Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized
Other, please specify

From product delivery to end of use

Estimated lifetime CO2e savings0

Estimated payback

Details of proposal

SC2.2

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

No

SC4.1

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

No, I am not providing data

Submission of Your Response

In which language do you submit your response?

Japanese

Please confirm how you would like your response to be handled by the CDP.

	Submission to	Publicly available/ Not publicly available	Are you prepared to submit additional supply chain module questions?
We submit the response.	Investors Customers	Publicly available	Yes, we submit the supply chain module questions immediately.

Please confirm below.

I have read the terms and conditions and agree to them.