Note : This document has been translated from a part of the Japanese original for reference purposes only. In the event of any discrepancy between this translated document and the Japanese original, the original shall prevail.

NIPPON SANSO HOLDINGS CORPORATION

2024 CDP Corporate Questionnaire 2024

Word version

Important: this export excludes unanswered questions
This document is an export of your organization's CDP questionnaire response. It contains all data points for questions that are answered or in progress. There may be questions or data points that you have been requested to provide, which are missing from this document because they are currently unanswered. Please note that it is your responsibility to verify that your questionnaire response is complete prior to submission. CDP will not be liable for any failure to do so.
Terms of disclosure for corporate questionnaire 2024 - CDP

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Contents

C1. Introduction

(1.1) In which language are you submitting your response?

Select from:

☑ Japanese

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

Select from:

☑ JPY

(1.3) Provide an overview and introduction to your organization.

(1.3.2) Organization type

Select from:

☑ Publicly traded organization

(1.3.3) Description of organization

[Fixed row]

Nippon Sanso Holdings, Inc. (NSHD) was originally founded in 1910 as Nippon Sanso Limited and was renamed Nippon Sanso Corporation in 1918. In 2004, Nippon Sanso Corporation merged with Taiyo Toyo Sanso Corporation to form Taiyo Nippon Sanso Corporation (TNSC). In 2014, TNSC became a consolidated subsidiary of Mitsubishi Chemical Holdings Corporation (now Mitsubishi Chemical Group Corporation).

In 2018, through Nippon Gases Euro-Holding S.L.U. and other entities, NSHD acquired a portion of Praxair's European operations. The following year, it purchased part of Linde Gas North America LLC's HyCO business and related assets via Matheson Tri-Gas, Inc. On October 1, 2020, NSHD transitioned to a pure holding company structure.

As of March 31, 2024, the NSHD Group consists of 195 consolidated companies employing a total of 19,533 people worldwide. Classified within the chemical industry, NSHD's main business involves the production and sale of industrial gases, including typical gases like oxygen, nitrogen, and argon, as well as other gases such as carbon dioxide, hydrogen, helium, LP gas, and specialty gases for semiconductor applications.

Under its previous medium-term management plan, "Ortus Stage 2," from the fiscal year ending 2018 to the fiscal year ending 2021, NSHD achieved significant results, including the expansion of its presence and globalization through the acquisition of European and U.S. HyCO businesses, as well as the growth of its specialty gases business for electronics in East Asia and increased production capacity in the U.S. and Asia.

In October 2020, NSHD established its medium-term management plan, "NS Vision 2026," which will conclude in the fiscal year ending March 31, 2026. Operating under the "Global Quadrupolar Thermos" business management structure, "NS Vision 2026" introduces new non-financial KPI targets alongside financial KPIs and outlines five key

strategies: promoting sustainability management, exploring new businesses for a decarbonized society, expanding the electronics business, pursuing operational excellence, and implementing DX strategies to create new value. Through these initiatives, NSHD aims to enhance the Group's overall capabilities and achieve sustainable growth.

(1.4) State the end date of the year for which you are reporting data. For emissions data, indicate whether you will be providing emissions data for past reporting years.

(1.4.1) End date of reporting year

03/31/2024

(1.4.2) Alignment of this reporting period with your financial reporting period

Select from:

☑ Yes

(1.4.3) Indicate if you are providing emissions data for past reporting years

Select from:

☑ Yes

(1.4.4) Number of past reporting years you will be providing Scope 1 emissions data for

Select from:

☑ 1 year

(1.4.5) Number of past reporting years you will be providing Scope 2 emissions data for

Select from:

☑ 1 year

(1.4.6) Number of past reporting years you will be providing Scope 3 emissions data for

Select from:

☑ 1 year

[Fixed row]

(1.4.1) What is your organization's annual revenue for the reporting period?

1255081000000

(1.5) Provide details on your reporting boundary.

	Is your reporting boundary for your CDP disclosure the same as that used in your financial statements?
	Select from: ☑ Yes

[Fixed row]

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

	Does your organization use this unique identifier?	Provide your unique identifier
ISIN code - equity	*Select from:* ☑ Yes	*JP3711600001*
Ticker symbol	*Select from:* ☑ Yes	*4091*

[Add row]

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

Select all that apply

☑ Peru
☑ China
☑ India
☑ Italy
☑ Japan
☑ Sweden
☑ Belgium
☑ Denmark
☑ Germany
☑ Ireland
☑ Vietnam
☑ Australia
☑ Indonesia
☑ Singapore
☑ Netherlands
☑ United States of America
☑ United Kingdom of Great Britain and Northern Ireland
☑ Spain
☑ Canada
☑ France
☑ Norway
☑ Poland
☑ Myanmar
☑ Cambodia
☑ Malaysia
☑ Portugal
☑ Thailand
☑ Philippines
☑ Saudi Arabia
☑ Taiwan, China
☑ Republic of Korea
☑ United Arab Emirates

(1.14) In which part of the chemicals value chain does your organization operate?

Bulk inorganic chemicals

☑ Hydrogen
☑ Other industrial gases
☑ Oxygen

(1.24) Has your organization mapped its value chain?

(1.24.1) Value chain mapped

Select from:

☑ Yes, we have mapped or are currently in the process of mapping our value chain

(1.24.2) Value chain stages covered in mapping

Select all that apply

☑ Upstream value chain

☑ Downstream value chain

(1.24.3) Highest supplier tier mapped

Select from:

☑ Tier 1 suppliers

(1.24.4) Highest supplier tier known but not mapped

Select from:

☑ Tier 2 suppliers

(1.24.7) Description of mapping process and coverage

[Fixed row]

For Tier 1 business partners, we collect information such as addresses during the registration process in our purchasing system.

(1.24.1) Have you mapped where in your direct operations or elsewhere in your value chain plastics are produced, commercialized, used, and/or disposed of?

(1.24.1.1) Plastics mapping

Select from:

☑ No, and we do not plan to within the next two years

(1.24.1.5) Primary reason for not mapping plastics in your value chain

Select from:

☑ Not an immediate strategic priority

(1.24.1.6) Explain why your organization has not mapped plastics in your value chain

[Fixed row]
NSHD Group does not engage in businesses that directly involve the production of plastics, such as "manufacturing plastic," and therefore has not conducted a specialized mapping for plastics. However, under one of the key strategies of the medium-term management plan "NS Vision 2026," which focuses on promoting sustainability management, the NSHD Group is involved in a non-financial program called the "Zero Waste Program." This program aims to reduce waste emissions and landfill disposal volumes, with each operating company undertaking specific initiatives.
Additionally, as part of its environmental efforts, NSHD is working to reduce GHG emissions and utilize water resources effectively. However, currently, plastics are not considered a strategic priority.

C2. Identification, assessment, and management of dependencies, impacts, risks, and opportunities

(2.1) How does your organization define short-, medium-, and long-term time horizons in relation to the identification, assessment, and management of your environmental dependencies, impacts, risks, and opportunities?

Short-term

(2.1.1) From (years)

0

(2.1.3) To (years)

1

(2.1.4) How this time horizon is linked to strategic and/or financial planning

The time horizon is linked to the business plan.

Medium-term

(2.1.1) From (years)

1

(2.1.3) To (years)

10

(2.1.4) How this time horizon is linked to strategic and/or financial planning

The time horizon is linked to the business plan.

Long-term

(2.1.1) From (years)

10

(2.1.2) Is your long-term time horizon open ended?

Select from:
☑ No

(2.1.3) To (years)

30

(2.1.4) How this time horizon is linked to strategic and/or financial planning

[Fixed row]
It is the same period as our independent climate change goal.

(2.2) Does your organization have a process for identifying, assessing, and managing environmental dependencies and/or impacts?

	Process in place	Dependencies and/or impacts evaluated in this process
	Select from: ☑ Yes	*Select from:* ☑ Both dependencies and impacts

[Fixed row]

(2.2.1) Does your organization have a process for identifying, assessing, and managing environmental risks and/or opportunities?

	Process in place	Risks and/or opportunities evaluated in this process	Is this process informed by the dependencies and/or impacts process?
	Select from: ☑ Yes	*Select from:* ☑ Both risks and opportunities	*Select from:* ☑ Yes

[Fixed row]

(2.2.2) Provide details of your organization's process for identifying, assessing, and managing environmental dependencies, impacts, risks, and/or opportunities.

Row 1

(2.2.2.1) Environmental issue

Select all that apply

☑ Climate change

(2.2.2.2) Indicate which of dependencies, impacts, risks, and opportunities are covered by the process for this environmental issue

Select all that apply

☑ Risks

☑ Opportunities

(2.2.2.3) Value chain stages covered

Select all that apply

☑ Direct operations
☑ Upstream value chain
☑ Downstream value chain

(2.2.2.4) Coverage

Select from:
☑ Full

(2.2.2.5) Supplier tiers covered

Select all that apply
☑ Tier 1 suppliers

(2.2.2.7) Type of assessment

Select from:
☑ Qualitative and quantitative

(2.2.2.8) Frequency of assessment

Select from:
☑ More than once a year

(2.2.2.9) Time horizons covered

Select all that apply
☑ Short-term
☑ Medium-term
☑ Long-term

(2.2.2.10) Integration of risk management process

Select from:

☑ Integrated into multi-disciplinary organization-wide risk management process

(2.2.2.11) Location-specificity used

Select all that apply

☑ Site-specific

☑ National

(2.2.2.12) Tools and methods used

International methodologies and standards

☑ IPCC Climate Change Projections

Databases

☑ Nation-specific databases, tools, or standards

Other

☑ Desk-based research

☑ Internal company methods

☑ Materiality assessment

☑ Scenario analysis

(2.2.2.13) Risk types and criteria considered

Acute physical

☑ Flood (coastal, fluvial, pluvial, ground water)

☑ Heavy precipitation (rain, hail, snow/ice)

Chronic physical

☑ Changing precipitation patterns and types (rain, hail, snow/ice)

☑ Changing temperature (air, freshwater, marine water)

☑ Temperature variability

Policy

☑ Carbon pricing mechanisms

☑ Changes to international law and bilateral agreements

Market

☑ Changing customer behavior

Reputation

☑ Increased partner and stakeholder concern and partner and stakeholder negative feedback

Technology

☑ Transition to lower emissions technology and products

Liability

☑ Non-compliance with regulations

(2.2.2.14) Partners and stakeholders considered

Select all that apply

☑ Customers

☑ Employees

☑ Investors

☑ Regulators

☑ Suppliers

(2.2.2.15) Has this process changed since the previous reporting year?

Select from:

☑ No

(2.2.2.16) Further details of process

The identification and evaluation of significant company-wide risks and opportunities at NSHD are centralized within the Global Risk Management Committee, which convenes

annually. This committee also addresses climate change risks and opportunities as part of its discussions. Both short-term (1 year), medium-term (10 years), and long-term (20 years) risks and opportunities are considered, and the outcomes of these meetings are reported to the Board of Directors. The selection of risks and opportunities considers not only direct operations but also the entire supply chain, including NSHD's suppliers and customers. Identified risks and opportunities are integrated into the business strategy through the Global Strategy Review Committee. This committee meets once a year to review the strategies of each operating company in preparation for the following year's budget. During the same meeting, operating companies report on their sustainability strategies, which are informed by the risks and opportunities they have identified, including those related to climate change. The results of these discussions are then presented to the Board of Directors in the form of a budget proposal. The Technological Risk Liaison Conference leads the response to identified risks and opportunities. Based on the outcomes from the Global Strategy Review Committee, NSHD and each operating company discuss specific climate change-related risks and opportunities to effectively address them. This conference is held at least twice a year for each operating company, ensuring that risk mitigation measures, including those related to climate change, are implemented company wide. To facilitate the early detection of long-term climate change-related risks, prevent their manifestation, and enable prompt action, when necessary, the risk management systems of NSHD Group companies are structured around the Technological Risk Liaison Conference, the Global Strategy Review Committee, and the Global Risk Management Committee. The importance of identified risks and opportunities is assessed by the Global Risk Management Committee based on their "frequency of occurrence and financial or strategic impact." The Global Strategy Review Committee, chaired by the CEO, evaluates their impact on the business once a year. Decisions made during the Global Strategy Review Committee are further deliberated by the Technological Risk Liaison Conference, where specific countermeasures are determined and subsequently deployed globally.

Row 2

(2.2.2.1) Environmental issue

Select all that apply

☑ Climate change

(2.2.2.2) Indicate which of dependencies, impacts, risks, and opportunities are covered by the process for this environmental issue

Select all that apply

☑ Dependencies

☑ Impacts

(2.2.2.3) Value chain stages covered

Select all that apply

☑ Direct operations

☑ Upstream value chain

☑ Downstream value chain

(2.2.2.4) Coverage

Select from:

☑ Full

(2.2.2.5) Supplier tiers covered

Select all that apply

☑ Tier 1 suppliers

(2.2.2.7) Type of assessment

Select from:

☑ Qualitative and quantitative

(2.2.2.8) Frequency of assessment

Select from:

☑ More than once a year

(2.2.2.9) Time horizons covered

Select all that apply

☑ Short-term

☑ Medium-term

☑ Long-term

(2.2.2.11) Location-specificity used

Select all that apply

☑ Site-specific

☑ National

(2.2.2.12) Tools and methods used

International methodologies and standards

☑ ISO 14001 Environmental Management Standard

Other

☑ Desk-based research

☑ Internal company methods

☑ Materiality assessment

☑ Scenario analysis

(2.2.2.14) Partners and stakeholders considered

Select all that apply

☑ Customers

☑ Employees

☑ Investors

☑ Regulators

☑ Suppliers

(2.2.2.15) Has this process changed since the previous reporting year?

Select from:

☑ No

(2.2.2.16) Further details of process

NSHD is promoting the acquisition of ISO 14001 certification and some of our subsidiaries have already obtained this certification. We are working to comply with regulations and evaluate and reduce the environmental impact of our operations.

Row 3

(2.2.2.1) Environmental issue

Select all that apply

☑ Water

(2.2.2.2) Indicate which of dependencies, impacts, risks, and opportunities are covered by the process for this environmental issue

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(2.2.2.3) Value chain stages covered

Select all that apply

☑ Direct operations

☑ Upstream value chain

☑ Downstream value chain

(2.2.2.4) Coverage

Select from:

☑ Full

(2.2.2.5) Supplier tiers covered

Select all that apply

☑ Tier 1 suppliers

(2.2.2.7) Type of assessment

Select from:

☑ Qualitative and quantitative

(2.2.2.8) Frequency of assessment

Select from:

☑ Annually

(2.2.2.9) Time horizons covered

Select all that apply

☑ Short-term

☑ Medium-term

☑ Long-term

(2.2.2.10) Integration of risk management process

Select from:

☑ Integrated into multi-disciplinary organization-wide risk management process

(2.2.2.11) Location-specificity used

Select all that apply

☑ Site-specific

☑ National

(2.2.2.12) Tools and methods used

Commercially/publicly available tools

☑ WRI Aqueduct

Databases

☑ Nation-specific databases, tools, or standards

Other

☑ Desk-based research

☑ Internal company methods

☑ Materiality assessment
☑ Scenario analysis
☑ Source Water Vulnerability Assessment

(2.2.2.13) Risk types and criteria considered

Acute physical
☑ Flood (coastal, fluvial, pluvial, ground water)
☑ Heavy precipitation (rain, hail, snow/ice)

Chronic physical
☑ Changing precipitation patterns and types (rain, hail, snow/ice)
☑ Changing temperature (air, freshwater, marine water)
☑ Temperature variability

Policy
☑ Regulation of discharge quality/volumes

Market
☑ Inadequate access to water, sanitation, and hygiene services (WASH)

Reputation
☑ Impact on human health
☑ Increased partner and stakeholder concern and partner and stakeholder negative feedback

Technology
☑ Transition to water efficient and low water intensity technologies and products

Liability
☑ Non-compliance with regulations

(2.2.2.14) Partners and stakeholders considered

Select all that apply

☑ Customers

☑ Employees

☑ Investors

☑ Regulators

☑ Suppliers

(2.2.2.15) Has this process changed since the previous reporting year?

Select from:

☑ No

(2.2.2.16) Further details of process

[Add row]

Process Details

The identification and evaluation of significant company-wide risks and opportunities at NSHD, as well as the deliberation of corresponding measures, are centralized in the Global Risk Management Committee, which meets annually. Climate change risks and opportunities are included among the risks and opportunities to be considered in this meeting. Discussions encompass potential impacts from short-term (1 year), medium-term (10 years), and long-term (20 years) risks and opportunities, with the results reported to the Board of Directors. The selection of risks and opportunities considers not only direct operations but also upstream and downstream factors, including NSHD's suppliers and customers.

The integration of identified risks and opportunities into the business strategy occurs through the Global Strategy Review Committee. This committee meets once a year to review the strategies of each operating company in preparation for the following year's budget. During the meeting, sustainability strategies informed by identified risks and opportunities are reported by the operating companies, including issues related to water and climate change.

The results of this meeting lead to discussions among NSHD and each operating company to address and seize risks and opportunities related to water and climate change. The Technological Risk Liaison Conference is held at least twice a year for each operating company to ensure that risk mitigation measures, including those concerning water-related climate change issues, are deployed company-wide.

Identification, Evaluation, and Management Points Process for Water-Related Climate Risks

To facilitate the early detection of long-term water-related climate change risks, prevent their manifestation, and enable prompt action when they do arise, the risk management systems of NSHD Group companies primarily operate through the Technological Risk Liaison Conference, the Global Strategy Review Committee, and the Global Risk Management Committee. The importance of risks and opportunities is assessed by the Global Risk Management Committee based on "frequency of occurrence and financial or strategic impact," while the impact on the business is determined annually by the Global Strategy Review Committee, chaired by the CEO.

Subsequently, matters decided by the Global Strategy Review Meeting are discussed at the Technological Risk Liaison Conference held by NSHD and each operating company, where specific countermeasures are established and then deployed globally.

(2.2.7) Are the interconnections between environmental dependencies, impacts, risks and/or opportunities assessed?

(2.2.7.1) Interconnections between environmental dependencies, impacts, risks and/or opportunities assessed

Select from:

☑ Yes

(2.2.7.2) Description of how interconnections are assessed

[Fixed row]

In assessing environment-related risks and opportunities, NSHD considers the dependency and impact relationships with natural capital in identifying risks and opportunities. Identified risks and opportunities are reported to the Global Strategy Review Meeting. The Global Strategy Review Committee not only addresses the risks and opportunities associated with each environmental issue, but also discusses measures to eliminate trade-offs to contribute to solving social issues through our business activities.

(2.3) Have you identified priority locations across your value chain?

(2.3.1) Identification of priority locations

Select from:

☑ Yes, we have identified priority locations

(2.3.2) Value chain stages where priority locations have been identified

Select all that apply

☑ Direct operations

(2.3.3) Types of priority locations identified

Sensitive locations

☑ Areas of limited water availability, flooding, and/or poor quality of water

(2.3.4) Description of process to identify priority locations

NSHD conducts water stress surveys at all its production sites in order to understand the risks associated with the use of water resources and to more effectively address water risks. Aqueduct, a water risk assessment tool developed by the World Resources Institute (WRI), is used to assess water stress at 121 sites, which are classified into five risk levels (low, low-medium, medium, medium-high, and high). While no sites in Japan were identified as having “medium-high” or “high” water stress, a total of 21 sites overseas were identified. These 21 sites account for approximately 14% of NSHD's total water intake. Based on a comprehensive assessment of the scale of water intake, our own

assessment of the Physical Risks Quantity, and the results of interviews with residents, we have concluded that there is no significant risk of water stress at NSHD.

(2.3.5) Will you be disclosing a list/spatial map of priority locations?

Select from:

☑ No, we have a list/geospatial map of priority locations, but we will not be disclosing it

[Fixed row]

(2.4) How does your organization define substantive effects on your organization?

Risks

(2.4.1) Type of definition

Select all that apply

☑ Qualitative

☑ Quantitative

(2.4.2) Indicator used to define substantive effect

Select from:

☑ Revenue

(2.4.3) Change to indicator

Select from:

☑ Absolute decrease

(2.4.5) Absolute increase/ decrease figure

2000000000

(2.4.6) Metrics considered in definition

Select all that apply

☑ Frequency of effect occurring

☑ Time horizon over which the effect occurs

☑ Likelihood of effect occurring

(2.4.7) Application of definition

NSHD is enhancing the risk management systems across its companies to ensure early detection of risks that could impede the achievement of business objectives over a long period, exceeding 10 years. The aim is to prevent these risks from materializing and to respond promptly when they do. The severity of a risk is assessed based on its frequency of occurrence and its financial or strategic impact on NSHD. Materiality is defined as an expected financial impact of at least ¥2,000 million, with a frequency of occurrence of at least once a year.
The process for determining the financial or strategic impact of a business is conducted through the Global Strategy Review Committee, chaired by the CEO and attended by representatives from both domestic and international operating companies, at least once a year. Decisions made during the Global Strategy Review Committee are then discussed at the Technological Risk Liaison Conference, which meets at least twice a year. This conference, held separately by NSHD and its regional representative companies, focuses on measures to address identified risks.
Climate change is one of these significant risks, and plans for reducing greenhouse gas emissions, along with other strategies to tackle climate change issues, are discussed within the regional representative companies.

Opportunities

(2.4.1) Type of definition

Select all that apply

☑ Qualitative

☑ Quantitative

(2.4.2) Indicator used to define substantive effect

Select from:

☑ Revenue

(2.4.3) Change to indicator

Select from:

☑ Absolute increase

(2.4.5) Absolute increase/ decrease figure

2000000000

(2.4.6) Metrics considered in definition

Select all that apply

☑ Frequency of effect occurring

☑ Time horizon over which the effect occurs

☑ Likelihood of effect occurring

(2.4.7) Application of definition

[Add row]

NSHD defines a material impact as an expected financial impact of ¥2,000 million or more (occurring at least once a year or more frequently). The process for determining financial or strategic impacts related to the business is a Global Strategy Review Committee chaired by the CEO and attended by representatives from domestic and overseas operating companies at least once a year to discuss, identify, and approve key opportunities that need to be addressed by NSHD. Climate change issues are treated as one of these opportunities, and GHG emission reduction plans and other measures to address climate change issues are discussed at the regional representative companies.

(2.5) Does your organization identify and classify potential water pollutants associated with its activities that could have a detrimental impact on water ecosystems or human health?

(2.5.1) Identification and classification of potential water pollutants

Select from:

☑ Yes, we identify and classify our potential water pollutants

(2.5.2) How potential water pollutants are identified and classified

[Fixed row]

NSHD identifies and classifies water pollutants that have the potential to adversely affect ecosystems and human health in accordance with the following policy and rationale. In accordance with the NSHD Group Environmental Policy, NSHD complies with the relevant laws and regulations of each country and region (such as water pollution control

laws), respects international norms, and conducts its business with due consideration for the environment. Water pollutants are classified and controlled in accordance with the laws of each region, and wastewater is discharged after being measured for phosphorus, nitrogen, COD, and other pollutants. NSHD's use of freshwater is cyclical and does not allow water pollutants to leak out. Specifically, all freshwaters taken by NSHD is supplied to the cooling tower and pumped to the heat exchanger, which is a component of the rotating machine, as a refrigerant. After heating, the warmed freshwater returns to the cooling tower and is simultaneously cooled to a temperature equivalent to that of the atmosphere. The cooled fresh water is again supplied to the heat exchanger by a pump and returns to the cooling tower via the same route as described above. As freshwater is used in a cyclical manner in this manner, we believe that the water quality is unlikely to be degraded.

(2.5.1) Describe how your organization minimizes the adverse impacts of potential water pollutants on water ecosystems or human health associated with your activities.

Row 2

(2.5.1.1) Water pollutant category

Select from:

☑ Inorganic pollutants

(2.5.1.2) Description of water pollutant and potential impacts

NSHD identifies the following substances as water pollutants and recognizes the potential impact of each on the ecosystem and human health. Nitric acid and nitrate compounds: High levels of nitrate and nitrite nitrogen in drinking water can cause methemoglobinemia, a condition that interferes with the oxygen-carrying capacity of the blood and can be harmful to human health. Fluorine and fluorine compounds: may accumulate in the environment and be carcinogenic. Hexavalent chromium: Highly toxic heavy metal that is carcinogenic. Boron and boron compounds: Causes serious eye damage and eye irritation. Ammonium compounds: High levels of nitrate and nitrite nitrogen in drinking water can cause methemoglobinemia, which interferes with the oxygen-carrying capacity of the blood and may be harmful to human health.

(2.5.1.3) Value chain stage

Select all that apply

☑ Direct operations

(2.5.1.4) Actions and procedures to minimize adverse impacts

Select all that apply

☑ Assessment of critical infrastructure and storage condition (leakages, spillages, pipe erosion etc.) and their resilience

(2.5.1.5) Please explain

[Add row]

NSHD manages the quality of its wastewater in such a way that it does not violate any standards and prevents any spillage, leaching, or leakage of pollutant substances. Waste liquids are stored in waste tanks and are taken away by specialized companies as industrial waste, so there is no leakage to the outside environment. In addition, each business site manages and confirms compliance with the regulation that “liquid waste is not discharged and is treated by a third party. Water pollutants are monitored by monitoring the quality of wastewater. As a measure to prevent the release of pollutants, equipment and sensors are visually inspected, and wastewater is regularly monitored for the presence of pollutants that exceed the standards set by local authorities. Furthermore, we use the fact that contaminants in wastewater do not exceed the range of standard values as a criterion for evaluating success, and we strive to prevent leakage accidents and outflow of chemical substances to the outside environment. For example, the effluent standard for pH under the Water Pollution Control Law is “within the range of pH 5.0 to 9.0,” but the management standard within NSHD is set at “pH 6.3 or higher and pH 8.1 or lower. The security personnel at facilities required to comply with this standard record the pH of the integrated purification tank daily. In the event that the pH falls below 6.3 or exceeds 8.1, a system is in place to notify the operations department of an emergency. In such cases, the operations department will cut off the water supply and introduce pH adjustment agents to rectify the pH level. This entire management process is evaluated annually at NSHD's Technological Risk Management Conference.

C3. Disclosure of risks and opportunities

(3.1) Have you identified any environmental risks which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future?

Climate change

(3.1.1) Environmental risks identified

Select from:

☑ Yes, both in direct operations and upstream/downstream value chain

Water

(3.1.1) Environmental risks identified

Select from:

☑ No

(3.1.2) Primary reason why your organization does not consider itself to have environmental risks in your direct operations and/or upstream/downstream value chain

Select from:

☑ Environmental risks exist, but none with the potential to have a substantive effect on our organization

(3.1.3) Please explain

The risk assessment utilizes WRI Aqueduct to evaluate flooding, water risk, and water stress, allowing NSHD to analyze water-related risks within its value chain. Each risk is assessed based on its probability of occurrence, financial impact, and implications for business strategy. A risk is deemed significant if it results in a financial impact of 2,000 million yen or more, which would substantially affect NSHD's operations. After examining NSHD's value chain using these criteria, we have determined that there are currently no significant water risks. Additionally, since the primary feedstock for industrial gas is air, NSHD does not encounter any water risks in sourcing this material. While the NSHD Group does produce some items that utilize water, such as oxygen-18 stable isotopes and water used in aquaculture, the overall volume of water used across most products is minimal. Thus, although some water risk exists in the value chain, it is considered to be relatively low.

Plastics

(3.1.1) Environmental risks identified

Select from:

☑ No

(3.1.2) Primary reason why your organization does not consider itself to have environmental risks in your direct operations and/or upstream/downstream value chain

Select from:

☑ Not an immediate strategic priority

(3.1.3) Please explain

[Fixed row]

Since the NSHD Group is not in the business of directly handling plastics, such as “manufacturing plastics,” we have not identified any plastic-specific risks. One of the non-financial programs that the entire NSHD Group is working on under the “Promotion of Sustainability Management,” one of the key strategies in the NS Vision 2026 medium term management plan, is the “Zero Waste Program,” in which each operating company is working to reduce the amount of waste and other emissions and landfill disposal. The Zero Waste Program is one of the non-financial programs undertaken by the NSHD Group under the “Promotion of Sustainability Management. In addition, we are promoting the reduction of GHG emissions and the effective use of water resources as part of our environmental initiatives, but we do not consider plastics to be a strategic priority at this time.

(3.1.1) Provide details of the environmental risks identified which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future.

Climate change

(3.1.1.1) Risk identifier

Select from:

☑ Risk1

(3.1.1.3) Risk types and primary environmental risk driver

Market

☑ Changing customer behavior

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Direct operations

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ Japan

(3.1.1.9) Organization-specific description of risk

In response to recent climate change-related extreme weather events, the international framework for combating global warming, the Paris Agreement, has come into effect, prompting action worldwide. In Japan, a policy aiming for carbon neutrality by FYE2050 was announced in October 2020. Within this evolving business environment, Taiyo Nippon Sanso, a subsidiary of NSHD, derives over 50% of its revenue from the industrial gas sector, which requires significant amounts of electricity in its manufacturing processes.
Specifically, over 99% of the 10,050 GWh of electricity used by NSHD in FYE2024 was consumed by its industrial gas operations around the world, with the majority dedicated to the operation of air separation units. As a result, there is a risk that existing industrial gas manufacturing processes, which use substantial electricity, may be avoided by customers in the steel and chemical sectors that are pushing for decarbonization, leading to a potential decline in revenue. If 10% of existing customers were to exclude NSHD from their industrial gas supply processes, a revenue loss of approximately ¥28,162 million could be anticipated.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Decreased revenues due to reduced demand for products and services

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Long-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Very likely

(3.1.1.14) Magnitude

Select from:

☑ High

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

We are analyzing the risk of declining sales resulting from changes in customer behavior, particularly in the steel and chemical sectors that are advancing decarbonization efforts, should the transition to a decarbonized society progress toward achieving the Paris Agreement's 1.5-degree target. The existing industrial gas manufacturing processes that consume significant amounts of electricity may be avoided by these customers. We assess that this shift in customer behavior poses a risk that could impact revenue over the long term.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.23) Anticipated financial effect figure in the long-term – minimum (currency)

28162000000

(3.1.1.24) Anticipated financial effect figure in the long-term – maximum (currency)

28162000000

(3.1.1.25) Explanation of financial effect figure

Excluding equipment and construction sales, NSHD's industrial gas business in Japan accounts for 68% of NSHD's total sales in the Japanese market, which accounted for 33% of NSHD's total sales of 1,255 billion yen in FY2023. If 10% of these customers were to exclude NSHD from the industrial gas supply process because of increased environmental awareness, sales would decrease by approximately 28,162 million (broken down to 1,255,000 million yen*33%*68%*10%). *Figures are rounded down to the nearest million yen.

(3.1.1.26) Primary response to risk

Diversification

☑ Develop new products, services and/or markets

(3.1.1.27) Cost of response to risk

225000000

(3.1.1.28) Explanation of cost calculation

[breakdown] In an effort to establish commercial products that contribute to the environment, led by carbon-free (H2, NH3) combustion technology, the Company plans to invest a total of 225 million yen in FYE2024, consisting of R&D expenses (149 million yen) including personnel expenses and capital investment and loans (76 million yen). We believe that the establishment of carbon-free (H2 and NH3) combustion technology will greatly reduce the risk of a reduction in sales.

(3.1.1.29) Description of response

[Current Status] With the formulation of the Paris Agreement, efforts to reduce CO2 and other GHGs throughout the supply chain are being promoted in many parts of the world. Our Group operates industrial gas businesses in Japan, Europe, and the U.S., where electricity consumption is very large, and there is a risk that sales may decrease due to moves by existing customers to review their supply chains in response to heightened environmental awareness. If 10% of our customers in the industrial gas business in Japan were to exclude our group from the industrial gas supply process due to heightened environmental awareness, we estimate that our sales would decrease by approximately 28,162 million yen. [Given this business environment], our group needs to reduce GHG emissions in our customers' industrial gas usage processes so that we can continue to receive business from environmentally conscious customers. [In order to solve these issues], we are reviewing our existing industrial gas utilization processes, promoting the introduction of carbon-free (H2, NH3) combustion technology, and working to reduce GHG emissions through research and development related to the use of oxygen combustion. In particular, the NSGC Group has been engaged in research and development of oxygen combustion technologies for more than half a century, contributing to the reduction of GHG emissions. Specifically, TAIYO NIPPON SANSO's Yamanashi Technology Solution Center, the R&D base of the NSHD Group established in 1989, is developing oxygen combustion technologies with various applications. Oxyfuel combustion technology involves the addition of highly pure oxygen to air, increasing the oxygen concentration to 21% or more, which enhances combustion efficiency. This technology plays a significant role in energy conservation and reducing CO2 emissions. It can be effectively applied in various industries, including high-temperature electric arc furnaces and melting furnaces, making it a versatile solution for improving environmental sustainability.
In FYE2024, we plan to invest 225 million yen in research and development of these technologies. [As a result of the progress] in R&D of oxygen combustion technology, reductions in GHG emissions from typical industrial furnaces are expected to be in the tens of thousands of tons. By implementing our oxygen combustion technology, we will transition air combustion in industrial furnaces across various industries to oxygen-enriched combustion. We aim to continue partnering with environmentally conscious customers, contributing to the realization of carbon-free combustion solutions, such as hydrogen (H2) and ammonia (NH3).

Climate change

(3.1.1.1) Risk identifier

Select from:

☑ Risk2

(3.1.1.3) Risk types and primary environmental risk driver

Policy

☑ Carbon pricing mechanisms

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Direct operations

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ Japan

(3.1.1.9) Organization-specific description of risk

In response to the extreme weather events linked to climate change, the Paris Agreement has come into effect, prompting global action. In October 2020, Japan announced its commitment to achieving carbon neutrality by 2050. To meet this goal, it is anticipated that regulations and initiatives—such as carbon taxes and emissions trading, which have been implemented in Europe—will be introduced in Japan. These developments could potentially lead to increased direct costs for NSHD.If carbon taxes or other taxes under the carbon pricing mechanism are introduced, there is a possibility of an increase in direct costs due to the increased tax burden. For example, according to the IEA's 2022 Report, if a carbon tax were introduced to achieve carbon neutrality by 2050, it is assumed that a carbon tax of 15,365 yen/t would be imposed in 2030. In this case, the tax burden would increase by approximately 31,560 million yen, which would be equivalent to the operating income of the Taiyo Nippon Sanso Group and would have a significant impact on our business. If we increase our gas production in the future, we may face a further tax burden due to the increase in Scope2 emissions, which may pose a risk of a significant decrease in our profits.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Increased indirect [operating] costs

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Long-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Very likely

(3.1.1.14) Magnitude

Select from:

☑ High

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

If the transition to a decarbonized society progresses, the analysis shows the potential for increased direct costs due to the increased tax burden if carbon taxes and other taxes in the carbon pricing mechanism are introduced. The analysis shows that the impact of carbon pricing will lead to an increase in indirect costs over the long term.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.23) Anticipated financial effect figure in the long-term – minimum (currency)

28780000000

(3.1.1.24) Anticipated financial effect figure in the long-term – maximum (currency)

28780000000

(3.1.1.25) Explanation of financial effect figure

NSHD's overall GHG emissions are approximately 5,667 thousand t-CO2 in FYE2024. In particular, the Taiyo Nippon Sanso Group's GHG emissions as of FYE2024 were 1,873 thousand t-CO2. According to the IEA's 2022 Report, if a carbon tax were introduced to achieve carbon neutrality by FYE2050, It is assumed that a carbon tax of 15,365 yen/t- CO2 would be imposed. In that case, the tax burden in Japan would increase by 28,780 million yen. 28,780 million yen is calculated as follows: 1,873,000 t-CO2*15,365 yen/t-co2

(3.1.1.26) Primary response to risk

Compliance, monitoring and targets

☑ Implementation of environmental best practices in direct operations

(3.1.1.27) Cost of response to risk

10000000000

(3.1.1.28) Explanation of cost calculation

Breakdown] Installation cost of a complete set of large air separation unit: approx. 10 billion yen ([breakdown] cold box: 20%, other equipment and facilities: 30%, construction and eng. costs: 40%, eng. costs and others: 10%).

(3.1.1.29) Description of response

[Status] It is expected that environmental regulations such as carbon pricing will be strengthened in the future in many countries around the world, especially in Japan. GHG emissions of the entire Taiyo Nippon Sanso Group in FYE2024 were 1,873 thousand t-CO2, and if we do not work to reduce GHG emissions, we may be liable for a tax burden of 28,780 million yen when environmental regulations such as carbon taxes are implemented. [Issues] Among one of NSHD’s major businesses TAIYO NIPPON SANSO's, electricity used to produce its main products nitrogen, oxygen, and argon accounts for more than 98% of CO2 emissions. This must be reduced first and foremost in order to respond to the risk of stricter environmental regulations in Japan. [Action] NSHD has established the “Carbon Neutral Program I” and aims to achieve carbon neutrality by FYE2050. Toward this goal, NSHD replaced the air separation unit used in its gas production business at the JFESC Kurashiki Plant in FY2017, which reduced CO2 emissions by approximately 40,000 t-CO2. In FY2024, JFESC's Fukuyama Plant replaced its air separation unit with state-of-the-art equipment capable of producing 48,000 Nm3/h of oxygen gas, 82,000 Nm3/h of nitrogen gas, and 1,580 Nm3/h of liquid argon, thereby reducing CO2 emissions by more than 10,000 t-CO. In addition, the plant's product yield could be improved by introducing simulator-based automatic control into the operation of the air separation unit. The same amount of electricity can be used to increase the flow of product gas, thereby reducing CO2 emissions. Currently, only one plant in Japan has introduced this system, but we are working to increase the number of plants in the

future. [As a result of these and other emission reduction activities, we achieved a reduction of 50,080t-CO2 in Scope 1 and 2 emissions in FYE2024.

Climate change

(3.1.1.1) Risk identifier

Select from:

☑ Risk3

(3.1.1.3) Risk types and primary environmental risk driver

Acute physical

☑ Cyclone, hurricane, typhoon

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Direct operations

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ Japan

(3.1.1.9) Organization-specific description of risk

NSHD's Taiyo Nippon Sanso mainly produces industrial gases and has 35 gas production plants. If climate change intensifies and there is an increase in heavy rainfall and strong winds in the future, it could result in the air separation unit that produces industrial gases at these plants breaking down. The failure of such equipment could disrupt stable product supply to customers, potentially leading to significant profit declines. Additionally, the financial burden from equipment failures due to extreme weather could amount to several hundred million yen. Therefore, it is essential to address the risk of breakdowns in the components of the air separation unit.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Increased capital expenditures

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Unlikely

(3.1.1.14) Magnitude

Select from:

☑ Medium

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

The analysis indicates that if average temperatures continue to rise, climate change intensifies, and further heavy rains and strong winds increase in the future, these effects could lead to the failure of the air separation unit that produces industrial gases at our plant. The analysis indicates that damage to sites caused by more extreme weather events will lead to higher capital expenditures in the short-term.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.19) Anticipated financial effect figure in the short-term – minimum (currency)

100000000

(3.1.1.20) Anticipated financial effect figure in the short-term – maximum (currency)

3000000000

(3.1.1.25) Explanation of financial effect figure

The amount of damage caused by equipment failure of air separation unit varies greatly depending on the equipment that fails. It also depends greatly on the size of the air separation unit. If an air compressor were to fail due to lightning, the cost per unit would range from 100 million yen to 3,000 million yen. This cost is calculated from the cost of equipment and personnel. In addition, the gas production plant is equipped with multiple air separation units, and if the air compressors of many air separation units are damaged, the damage cost could increase to several hundred million yen.

(3.1.1.26) Primary response to risk

Policies and plans

☑ Use risk transfer instruments

(3.1.1.27) Cost of response to risk

110000000

(3.1.1.28) Explanation of cost calculation

[The cost paid to the insurers under the global insurance is calculated as follows: Sanso Center: approximately 100 million yen and TAIYO NIPPON SANSO total gas center: approximately 10 million yen, each calculated as a lump sum, resulting in an annual cost of approximately 110 million yen.

(3.1.1.29) Description of response

[Add row]

Situation: In recent years, Japan has experienced intensified meteorological disasters, such as typhoons, due to factors like global warming. Typhoon No. 14, which occurred in FYE2022, caused significant damage across Japan, including flooding and building collapses. The increase in climate-related damage from such abnormal weather raises the risk of equipment failures at NSHD, a subsidiary of Taiyo Nippon Sanso.

Task: Currently, Taiyo Nippon Sanso operates 35 gas production plants, each equipped with multiple air separation units. In the event of equipment failures caused by extreme weather, such as flooding or wind damage, the combined costs for equipment repairs and personnel response could exceed 100 million yen per unit, leading to a substantial increase in expenses. Therefore, it is necessary to mitigate financial risks to NSHD by securing insurance.
Action: Taiyo Nippon Sanso has taken out global insurance to cover recovery from fires, accidents, and other incidents related to abnormal weather affecting the manufacturing equipment, including air separation units, at all 35 gas production facilities nationwide. The coverage includes fire, water damage, lightning, explosion, wind damage, hail damage, snow damage, theft, electrical and mechanical accidents, and other accidental damage. As a result, even if equipment failure occurs in the air separation units due to abnormal weather, damages will not exceed the insured amount. The company will continue to maintain this global insurance in FYE2024.
Outcome: To date, there have been no significant financial losses resulting from abnormal weather. By continuing to invest in insurance, the company can address potential financial risks associated with future disasters.

(3.1.2) Provide the amount and proportion of your financial metrics from the reporting year that are vulnerable to the substantive effects of environmental risks.

Climate change

(3.1.2.1) Financial metric

Select from:
☑ Revenue

(3.1.2.2) Amount of financial metric vulnerable to transition risks for this environmental issue (unit currency as selected in 1.2)

56942000000

(3.1.2.3) % of total financial metric vulnerable to transition risks for this environmental issue

Select from:
☑ 1-10%

(3.1.2.4) Amount of financial metric vulnerable to physical risks for this environmental issue (unit currency as selected in 1.2)

0

(3.1.2.5) % of total financial metric vulnerable to physical risks for this environmental issue

Select from:

☑ Less than 1%

(3.1.2.7) Explanation of financial figures

In response to the abnormal weather conditions caused by climate change in recent years, the Paris Agreement, an international framework to combat global warming, has come into effect, and the world has begun to act. In Japan, a policy to become carbon neutral by FYE2050 was announced in October 2020. In this business environment, NSHD's Taiyo Nippon Sanso accounts for more than 50% of its sales from the industrial gas business, which uses large amounts of electricity in the manufacturing process. Specifically, more than 99% of the electricity consumed by NSHD in FYE2024 was used by its industrial gas business, which operates around the world, and the majority of this electricity is used to operate air separation units. As a result, there is a risk that existing industrial gas production processes that use large amounts of electricity will be shunned by customers in the steel and chemical sectors who are pursuing decarbonization initiatives, resulting in lower sales. NSHD's Taiyo Nippon Sanso mainly produces industrial gases and has 35 gas production plants. If climate change intensifies and there is an increase in heavy rainfall and strong winds in the future, the air separation unit that produces industrial gases at these plants may fail. Failure of such equipment could make it difficult to supply products to customers in a stable manner, which could result in a large decrease in profits. In addition, the cost burden assumed in the event of equipment failure due to abnormal weather conditions could reach several hundred million yen. It is necessary to respond to the risk of breakdowns of components of air separation unit.

Climate change

(3.1.2.1) Financial metric

Select from:

☑ Assets

(3.1.2.2) Amount of financial metric vulnerable to transition risks for this environmental issue (unit currency as selected in 1.2)

0

(3.1.2.3) % of total financial metric vulnerable to transition risks for this environmental issue

Select from:

☑ Less than 1%

(3.1.2.4) Amount of financial metric vulnerable to physical risks for this environmental issue (unit currency as selected in

1.2)

3000000000

(3.1.2.5) % of total financial metric vulnerable to physical risks for this environmental issue

Select from:

☑ 1-10%

(3.1.2.7) Explanation of financial figures

Add row]

In response to recent abnormal weather conditions linked to climate change, the Paris Agreement has come into effect, prompting global action. In Japan, a commitment to achieve carbon neutrality by FYE2050 was announced in October 2020. Within this business landscape, NSHD's Taiyo Nippon Sanso derives over 50% of its sales from the industrial gas sector, which relies heavily on electricity for production. In FYE2024, more than 99% of the electricity consumed by NSHD was attributed to its industrial gas business, which operates globally, primarily powering air separation units. As a result, there is a risk that existing industrial gas production methods, which consume significant amounts of electricity, may be rejected by customers in the steel and chemical industries who are prioritizing decarbonization initiatives, potentially leading to reduced sales. Taiyo Nippon Sanso operates 35 gas production plants that primarily produce industrial gases. If climate change intensifies and heavy rainfall and strong winds become more frequent, the air separation units at these plants may be at risk of failure. Such equipment failures could disrupt stable product supply to customers, significantly impacting profits. Additionally, the financial burden from equipment failures due to extreme weather could reach several hundred million yen. Therefore, it is essential to proactively address the risk of breakdowns in the components of the air separation units.

(3.3) In the reporting year, was your organization subject to any fines, enforcement orders, and/or other penalties for water-related regulatory violations?

	Water-related regulatory violations
	Select from: ☑ No

[Fixed row]

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

Select from:

☑ Yes

(3.5.1) Select the carbon pricing regulation(s) which impact your operations.

Select all that apply

☑ EU ETS

(3.5.2) Provide details of each Emissions Trading Scheme (ETS) your organization is regulated by.

EU ETS

(3.5.2.1) % of Scope 1 emissions covered by the ETS

6

(3.5.2.2) % of Scope 2 emissions covered by the ETS

100

(3.5.2.3) Period start date

04/01/2023

(3.5.2.4) Period end date

03/31/2024

(3.5.2.5) Allowances allocated

3108

(3.5.2.6) Allowances purchased

0

(3.5.2.7) Verified Scope 1 emissions in metric tons CO2e

52988

(3.5.2.8) Verified Scope 2 emissions in metric tons CO2e

941442

(3.5.2.9) Details of ownership

Select from:

☑ Facilities we own and operate

(3.5.2.10) Comment

[Fixed row]

A part of Scope 1 and Scope 2 emissions for Nippon Gases (Europe) are covered. Scope 2 emissions come from electricity, and power generation is included in the EU ETS. In 2023, since the facility was not operational, the allocations are estimates for the period from January 1, 2024, to March 31, 2024.

(3.5.4) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

When considering the carbon price in a broad sense (/t-CO2), energy prices, energy taxes, FIT levy, emission credits, and carbon taxes are covered. in NSHD's business. We use a lot of electricity to produce our main products, N2, O2, and Ar. As far as the carbon tax is concerned, the fiscal impact of Japan's carbon tax is limited because the tax rate in Japan is currently not very high. In the future, however, as regulations regarding global warming become more stringent, the tax rate is expected to rise, and the scope of the tax will expand. Particularly in Japan, where many companies are intensive energy consumers, these changes could have a significant impact on companies. Therefore, in the case of the more stringent regulatory scenario under the 2DS, we have analyzed energy-intensive businesses in Japan (industrial gas) to identify potential business and financial risks. NSHD is actively using the levy reduction and exemption system to address carbon pricing issues in a broad sense. NSHD has been taking advantage of this program since its establishment in 2012. he levy for certified business sites is reduced or exempted by 80% or 40%, depending on the improvement of the business's basic per unit of sales. NSHD has applied for exemption for 18 companies in Japan and has received billions of yen in exemptions.

(3.6) Have you identified any environmental opportunities which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future?

	Environmental opportunities identified
Climate change	*Select from:* ☑ Yes, we have identified opportunities, and some/all are being realized
Water	*Select from:* ☑ Yes, we have identified opportunities, and some/all are being realized

[Fixed row]

(3.6.1) Provide details of the environmental opportunities identified which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future.

Climate change

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp1

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Markets

☑ Expansion into new markets

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Downstream value chain

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ Japan

(3.6.1.8) Organization specific description

With the formulation of the Paris Agreement, various initiatives aimed at carbon neutrality have been attracting attention. NSHD, whose industrial gas business, which supports a wide range of industries from core industries such as steel, chemicals, automobiles, and construction to food and medical fields, accounts for more than 50% of its sales, also sees an opportunity to expand sales by entering new markets related to carbon neutrality. Specifically, NSHD is seeking to enter new markets by meeting growing demand for oxygen gas burners that convert fossil fuels to green fuels and do not emit carbon dioxide during combustion, as well as demand for CO2 recovery for CCUS (CO2 recovery and reuse).

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues through access to new and emerging markets

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Long-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ More likely than not (50–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

We see opportunities to expand sales by entering new markets related to carbon neutrality. Specifically, our analysis shows that demand for oxygen gas burners that convert fossil fuels to green fuels and do not emit carbon dioxide during combustion and demand for CO2 recovery for CCUS (CO2 recovery and reuse) will increase. We analyze that the opportunity will lead to increased sales because of the transition to decarbonized products.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.21) Anticipated financial effect figure in the long-term - minimum (currency)

400000000

(3.6.1.22) Anticipated financial effect figure in the long-term – maximum (currency)

400000000

(3.6.1.23) Explanation of financial effect figures

TAIYO NIPPON SANSO, which is engaged in the Japanese gas business in NSHD, sells various industrial gases such as oxygen, nitrogen, and argon, and manufactures and sells related equipment. By expanding sales of hydrogen-oxygen burners that do not emit CO2 during combustion, the company expects to reduce its customers' GHG emissions by approximately 200 million t-CO2e and achieve sales of approximately 400 million yen in FYE2030. 2030 estimate: 400 million yen (breakdown: 40 oxygen burners*10 million yen/unit)

(3.6.1.24) Cost to realize opportunity

175000000

(3.6.1.25) Explanation of cost calculation

[As part of the social implementation of CCUS and green fuel, we have invested 175 million yen in R&D (114 million yen) and facilities (61 million yen), including personnel expenses, to develop a CO2 liquefaction facility and a hydrogen-oxygen burner.

(3.6.1.26) Strategy to realize opportunity

[Situation] With the establishment of the Paris Agreement, countries around the world are implementing various measures to achieve carbon neutrality. This has led to a rising demand for green fuels that do not emit carbon dioxide during combustion, as well as an increasing interest in CO2 recovery for CCUS (carbon capture,

utilization, and storage). As a result, NSHD, which derives over 50% of its sales from the industrial gas sector—supporting a diverse range of industries from core sectors like steel, chemicals, and automotive to food and healthcare—sees a significant opportunity to expand its sales by entering new markets related to carbon neutrality, such as CCUS and green fuels.
[Challenge] In light of these developments, it is essential for NSHD to enter new markets associated with carbon neutrality and grow its sales.
[Action] To address this challenge, NSHD is collaborating with Taiheiyo Cement Corp. on the development of carbon recycling cement manufacturing technology, as part of NEDO's (New Energy and Industrial Technology Development Organization) initiatives. In FYE2022, NSHD installed CO2 liquefaction equipment at the Kumagaya plant, where CO2 emitted during cement production is recycled and reused as cement and construction materials. Furthermore, NSHD has been selected as a contractor for NEDO's commissioned project on "Development of Combustion Technology for Fuel Ammonia," actively promoting this initiative. In April 2022, the company successfully conducted a demonstration experiment using 100% hydrogen combustion with a hydrogen-oxygen burner for glass melting, significantly reducing CO2 emissions from the melting furnace. Building on this success, NSHD has also implemented oxygen burners for glass melting furnaces and will continue research activities in this field through FYE2024.
[Results] As a result of entering these new markets, NSHD expects to achieve sales of approximately 400 million yen by 2030. Looking ahead, the company aims to pursue further opportunities in carbon neutrality-related markets. In our medium-term management plan, "NS Vision 2026," formulated in 2022, NSHD has committed to investing 38 billion yen over four years in strategic initiatives, including those focused on carbon neutrality.

Water

(3.6.1.1) Opportunity identifier

Select from:
☑ Opp1

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Products and services
☑ Increased sales of existing products and services

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:
☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ Japan

(3.6.1.6) River basin where the opportunity occurs

Select all that apply

☑ Other, please specify :Aquacluture

(3.6.1.8) Organization specific description

While global demand for seafood is increasing, the decline in global fish catch due to the impacts of climate change has become a significant food security challenge. NGE, a part of the NSHD Group that operates in the European gas business, supplies high-purity oxygen for salmon farming. Specifically, two air separation units have been installed in Norway to meet the oxygen demand. As the global demand for edible fish rises, the production of farmed salmon in Norway is expected to expand at an average growth rate of 6%.
Additionally, Taiyo Nippon Sanso, another member of the NSHD Group, offers high-efficiency air separation unit that addresses issues in aquaculture ponds. This equipment enables high-density farming of fish such as eels, trout, flounder, and shrimp, while also preventing diseases in farmed fish, allowing for an increase in catch volume at a lower cost. We believe that Taiyo Nippon Sanso’s air separation unit can help solve the global problem of declining fish catches.
To ensure healthy growth of farmed fish, managing the dissolved oxygen levels (DO) in the rearing water is crucial. The amount of oxygen that can dissolve in water is significantly affected not only by aeration strength but also by water temperature and salinity. Taiyo Nippon Sanso's air separation unit effectively dissolves oxygen in water, achieving the ideal dissolved oxygen levels (DO) for fish farming and enhancing productivity. By introducing this equipment and enriching the rearing water with oxygen, it becomes possible to realize high-density farming, promote growth, and reduce wastewater volume.
This equipment has been widely adopted across various fish species, including eels, trout, and flounder. Based on this extensive experience, we visit customer sites to propose the optimal oxygen supply methods tailored to their specific needs.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues resulting from increased demand for products and services

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Likely (66–100%)

(3.6.1.12) Magnitude

Select from:

☑ Medium-high

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

In response to the increased awareness of biodiversity conservation, there is an increased demand for fish from aquacultural farming rather than natural fish taken from the ocean. TAIYO NIPPON SANSO is working to secure stable food supplies through land-based aquaculture as one of the ways to achieve this goal. In this land-based aquaculture there is still room for improvement in terms of efficient oxygen dissolution methods and optimal DO levels for each fish species, and we are working with our customers to solve problems and increase demand through data analysis. The opportunities presented by this shift to land-based aquaculture are expected to lead to increased sales.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.17) Anticipated financial effect figure in the short-term - minimum (currency)

450000000

(3.6.1.18) Anticipated financial effect figure in the short-term – maximum (currency)

450000000

(3.6.1.23) Explanation of financial effect figures

After FYE2021, Taiyo Nippon Sanso will continue to accumulate the necessary know-how as a manufacturer of high-efficiency oxygen dissolution systems for aquaculture, while contributing to the high operational efficiency of high-efficiency oxygen dissolution systems for aquaculture with a focus towards global expansion. The results in FYE2016-2024 at Taiyo Nippon Sanso have increased 1.8 times with the introduction of the system increasing from 29 companies to 53 companies. Considering the recent food supply problems, we believe that sales of oxygen for aquaculture will increase in the future, and we plan to acquire up to 75 customers in FYE2025. We believe that the growth in demand for oxygen gas for aquaculture could lead to sales of approximately 450 million yen in FYE2025.

(3.6.1.24) Cost to realize opportunity

220000000

(3.6.1.25) Explanation of cost calculation

[Cost to Realize Opportunity] In order to acquire 75 customers from 53 companies, a liquefied gas storage tank called a cold evaporator (CE) needs to be installed. 220 million yen (breakdown: 1 unit: 10 million yen * 22 companies) of capital investment is required.

(3.6.1.26) Strategy to realize opportunity

[We are able to provide a stable supply of oxygen gas to aquaculture companies using our industrial gas infrastructure, in which we have the largest market share. However, there is still room for improvement in terms of efficient oxygen dissolution methods and optimal DO levels for each fish species. [We need to establish an efficient oxygen dissolution method and collect data on oxygen efficacy for each fish species. It is necessary to overcome technical challenges together with users. [Action] To solve the above issues, we are working on data collection for each fish species and product development in collaboration with users. By working together with users to clear technical issues, we were able to realize the delivery of our oxygen gas earlier than expected. [Result] From 2016 to 2024, we have succeeded in acquiring 24 users. We will continue to clear technical issues with users and achieve installation of our CEs for 22 companies by FYE2031 and realize the delivery of liquefied oxygen gas along with equipment sales.

Climate change

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp2

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Products and services

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

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Downstream value chain

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ Japan

(3.6.1.8) Organization specific description

TAIYO NIPPON SANSO, which operates the Japan Gas Business in NSHD, sells various industrial gases such as oxygen, nitrogen, and argon, as well as manufactures and sells related equipment. With the recent increase in environmental awareness throughout society, there is a desire to implement measures to combat climate change, one of which is to reduce CO2 emissions from business activities This also applies to industrial gas suppliers, which is NSHD's main business. The estimated potential demand for oxygen for industrial furnaces is 2.1 billion Nm3 , of which, assuming a 50% commercial rights acquisition rate and selling oxygen gas at ¥10/Nm3 , sales of over ¥10,000 million can be expected. This represents 1% of NSHD's total sales revenue, so we recognize this as a very significant opportunity. In addition, the oxygen burner that NSHD is focusing on developing will enable ammonia combustion in industrial furnaces, and since ammonia combustion emits zero CO2 during combustion, further demand growth is expected considering future trends toward climate change countermeasures.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues resulting from increased demand for products and services

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Medium-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Likely (66–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the

organization in the selected future time horizons

In response to the current increase in environmental awareness throughout society, it is desirable to implement measures to combat climate change, and one of these measures is the reduction of CO2 emissions from business activities. The oxygen burners that NSHD is focusing on developing will enable ammonia combustion in industrial furnaces. Since ammonia combustion emits zero CO2 during combustion, further demand growth is expected considering future trends toward climate change countermeasures. The opportunity presented by the shift to low-carbon products is expected to lead to increased sales.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.19) Anticipated financial effect figure in the medium-term - minimum (currency)

10500000000

(3.6.1.20) Anticipated financial effect figure in the medium-term - maximum (currency)

10500000000

(3.6.1.23) Explanation of financial effect figures

Taiyo Nippon Sanso, which is engaged in the Japanese gas business in NSHD, sells various industrial gases such as oxygen, nitrogen, and argon, and manufactures and sells related equipment. The estimated potential demand for oxygen for industrial furnaces is 2.1 billion Nm3, and if we assume that the commercial rights acquisition rate is 50% and we sell oxygen gas at 10 yen/Nm3, we can expect sales of over 10.5 billion yen. The formula is as follows: Total market demand for oxygen: 2,100,000,000,000Nm³ * Commercial rights acquisition rate: 50% * Unit price of oxygen gas: ¥10/Nm³

(3.6.1.24) Cost to realize opportunity

1600000000

(3.6.1.25) Explanation of cost calculation

[In order to supply oxygen to meet demand, it is necessary to install approximately 40 oxygen PSA units with a capacity of 3000 Nm³/h (approx. 400 million yen). Therefore, a capital investment of 1,600 million yen ([PSA installation cost: 400 million yen]/[amortization period: 10 years]*40 units) would be required.

(3.6.1.26) Strategy to realize opportunity

[Situation] In response to the movement toward carbon neutrality being initiated in the United States and Europe, companies in Japan are also being called upon to reduce their GHG emissions. This applies to companies operating industrial gas furnaces as well, which are considering transitioning from fossil fuels to carbon-free fuels like ammonia. By advancing the development of oxygen burners that utilize ammonia (NH3), NSHD anticipates an increased demand for oxygen gas used in NSHD's industrial furnaces.
[Task] The use of NH3 in combustion presents challenges, as its nitrogen content can lead to the generation of harmful nitrogen oxides (NOx) when combusted. Additionally, the absence of carbon particles (soot) means that effective heat transfer through radiation within the furnace is a concern during development.
[Action] Taiyo Nippon Sanso, part of NSHD's Japan gas business, is actively working on the development of oxygen burners that utilize NH3. Development began in FYE2014, and by FYE2019, the company established a method that combines oxygen-enriched combustion—enhancing the concentration of oxygen in the air—with a fuel mix of 30% ammonia and city gas, effectively strengthening the flame's radiant heat transfer while suppressing the generation of harmful nitrogen oxides.
[Results] This approach is expected to significantly reduce CO2 emissions from industrial gas furnaces. Moreover, because this oxygen burner employs oxygen-enriched combustion, its widespread adoption will create opportunities for NSHD's oxygen supply. By FYE2025, NSHD plans to secure contracts for the installation of oxygen gas generation systems (oxygen PSA) at customer sites using oxygen burners that utilize NH3. Additionally, the company aims to obtain 40 orders and corresponding oxygen gas supply contracts by FYE2030.

Climate change

(3.6.1.1) Opportunity identifier

Select from:
☑ Opp3

(3.6.1.3) Opportunity type and primary environmental opportunity driver

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

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:
☑ Downstream value chain

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply
☑ Japan

(3.6.1.8) Organization specific description

In recent years, it has become desirable for companies to implement climate change countermeasures in their activities, and one such measure is the reduction of CO2 emissions from business activities. If NSHD succeeds in developing oxygen combustion technology at its Yamanashi Technology Solution Center, where it conducts R&D, demand for this technology will be high, and demand for the oxygen gas it supplies will increase accordingly. The oxygen blast furnace under consideration is expected to increase oxygen demand by 2.5 billion Nm³ per year, and if oxygen gas is sold at ¥10/Nm3 per unit, sales are expected to increase by ¥25,000 million, which is a significant opportunity in that it represents 3% of total group sales, and we recognize that the impact will be significant.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues resulting from increased demand for products and services

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Medium-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Likely (66–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

In recent years, it has become desirable for companies to implement climate change countermeasures in their activities, and one such measure is the reduction of CO2 emissions from business activities. If NSHD succeeds in developing oxygen combustion technology at its Yamanashi Technology Solution Center, where it conducts R&D, demand for this technology will be high, and demand for the oxygen gas it supplies will increase accordingly. We believe that the opportunities resulting from the increased need for low-carbon technology will lead to increased sales.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.19) Anticipated financial effect figure in the medium-term - minimum (currency)

25000000000

(3.6.1.20) Anticipated financial effect figure in the medium-term - maximum (currency)

25000000000

(3.6.1.23) Explanation of financial effect figures

In recent years, it has become desirable for companies to implement climate change countermeasures in their activities, and one such measure is the reduction of CO2 emissions from business activities. The advanced oxygen blast furnace under consideration is expected to increase oxygen demand by 2.5 billion Nm3 per year, and if oxygen gas is sold at 10 yen/Nm3, sales are expected to increase by 25,000 million yen. The trial calculation formula is as follows: Annual demand for advanced oxygen blast furnace: 2,500,000,000 Nm3 * Oxygen gas unit price: ¥10/Nm3＝25,000,000,000

(3.6.1.24) Cost to realize opportunity

150000000

(3.6.1.25) Explanation of cost calculation

[The Company will invest a total of 150 million yen in R&D (114 million yen), including personnel expenses, and facilities (36 million yen) to develop an oxygen burner that can be applied to an oxygen blast furnace.

(3.6.1.26) Strategy to realize opportunity

[In response to the movement toward carbon neutrality that has begun in the United States and Europe, the steel industry, to which NSHD provides oxygen gas, is also being asked to reduce GHG emissions in a similar manner. In the steel industry, a large amount of CO2 is emitted in the process of producing pig iron using blast furnaces, and NSHD believes that the development of technologies to reduce CO2 emissions will lead to increased opportunities to win orders from the steel industry. [NSHD needs to develop technologies that contribute to the reduction of CO2 emissions in the steel business. [Action] The Yamanashi Technology Solution Center, NSHD's R&D base, is developing oxygen combustion technology. Oxyfuel combustion technology is a technology to increase combustion efficiency by adding high-purity oxygen to tributary gases and using an environment where the oxygen concentration in the air is 21% or higher. This technology can be applied to various applications such as high temperature heating furnaces and

melting furnaces as a technology that contributes to energy conservation and reduction of CO2 emissions. [The oxygen demand to NSHD by this technology is expected to be 2.5 billion Nm3, and it is applied to various combustion applications such as heating furnaces and melting furnaces as a technology that contributes to energy conservation and reduction of CO2 emissions. In the future, we aim to convert air combustion to oxygen combustion in new blast furnaces in various steel industries by further developing combustion technology.

Water

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp2

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Products and services

☑ Increased sales of existing products and services

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Downstream value chain

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ Norway

(3.6.1.6) River basin where the opportunity occurs

Select all that apply

☑ Other, please specify :養殖

(3.6.1.8) Organization specific description

The current turnover of the Norwegian aquaculture industry is 13.7 million euros.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues resulting from increased demand for products and services

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Likely (66–100%)

(3.6.1.12) Magnitude

Select from:

☑ Medium

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Aquaculture growth in Norway is expected to be 10% per year in the medium term. The currency for the projected financial effect figures is the Euro.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.17) Anticipated financial effect figure in the short-term - minimum (currency)

15070000

(3.6.1.18) Anticipated financial effect figure in the short-term – maximum (currency)

15070000

(3.6.1.23) Explanation of financial effect figures

The growth rate of Norwegian aquaculture is expected to be 10% per annum in the medium term, and the current turnover of the Norwegian aquaculture industry is €13.7 million.

(3.6.1.24) Cost to realize opportunity

14700000

(3.6.1.25) Explanation of cost calculation

The current asset value of the equipment directly used for aquaculture is 1.47 million euros. Cost calculations relate to equipment, storage and supply systems installed at the aquaculture farms.

(3.6.1.26) Strategy to realize opportunity

[Add row]
Aquaculture development is an important component of protecting the wild environment from human impacts on nature.

(3.6.2) Provide the amount and proportion of your financial metrics in the reporting year that are aligned with the substantive effects of environmental opportunities.

Climate change

(3.6.2.1) Financial metric

Select from:
☑ CAPEX

(3.6.2.2) Amount of financial metric aligned with opportunities for this environmental issue (unit currency as selected in

1.2)

850000000000

(3.6.2.3) % of total financial metric aligned with opportunities for this environmental issue

Select from:

☑ 41-50%

(3.6.2.4) Explanation of financial figures

50% of our capital expenditure, or 850 billion yen, is invested in environmental and hydrogen social contribution projects. The “Environment and Hydrogen Society Contribution” category includes projects that will contribute to the company's and its customers' efforts to become carbon neutral, such as the HyCO plant related to hydrogen production and the establishment of Green Hydrogen JC. We will continue to make investments to acquire further opportunities to achieve carbon neutrality.

Water

(3.6.2.1) Financial metric

Select from:

☑ Revenue

(3.6.2.2) Amount of financial metric aligned with opportunities for this environmental issue (unit currency as selected in 1.2)

147000000

(3.6.2.3) % of total financial metric aligned with opportunities for this environmental issue

Select from:

☑ Less than 1%

(3.6.2.4) Explanation of financial figures

[Add row]

The aquaculture-related sales for the year totaled 147 million yen, compared to the FYE2024 sales of 420,400 million yen for the Japan business. Although sales of this business are currently small, we will strive to increase sales in the future.

C4. Governance

(4.1) Does your organization have a board of directors or an equivalent governing body?

(4.1.1) Board of directors or equivalent governing body

Select from:

☑ Yes

(4.1.2) Frequency with which the board or equivalent meets

Select from:

☑ More frequently than quarterly

(4.1.3) Types of directors your board or equivalent is comprised of

Select all that apply

☑ Executive directors or equivalent

☑ Independent non-executive directors or equivalent

(4.1.4) Board diversity and inclusion policy

Select from:

☑ Yes, and it is publicly available

(4.1.5) Briefly describe what the policy covers

[Fixed row]

The Corporate Governance Principles stipulate that diversity, including in terms of gender, internationality, professional experience, and age, shall be considered in the selection of director candidates.

(4.1.1) Is there board-level oversight of environmental issues within your organization?

	Board-level oversight of this environmental issue
Climate change	*Select from:* ☑ Yes
Water	*Select from:* ☑ Yes
Biodiversity	*Select from:* ☑ Yes

[Fixed row]

(4.1.2) Identify the positions (do not include any names) of the individuals or committees on the board with accountability for environmental issues and provide details of the board's oversight of environmental issues.

Climate change

(4.1.2.1) Positions of individuals or committees with accountability for this environmental issue

Select all that apply

☑ Chief Executive Officer (CEO)

(4.1.2.2) Positions' accountability for this environmental issue is outlined in policies applicable to the board

Select from:

☑ Yes

(4.1.2.3) Policies which outline the positions' accountability for this environmental issue

Select all that apply

☑ Individual role descriptions

(4.1.2.4) Frequency with which this environmental issue is a scheduled agenda item

Select from:

☑ Scheduled agenda item in some board meetings – at least annually

(4.1.2.5) Governance mechanisms into which this environmental issue is integrated

Select all that apply

☑ Reviewing and guiding annual budgets

☑ Overseeing and guiding scenario analysis

☑ Overseeing the setting of corporate targets

☑ Monitoring progress towards corporate targets

☑ Approving and/or overseeing employee incentives

☑ Overseeing and guiding acquisitions, mergers, and divestitures

☑ Overseeing and guiding the development of a climate transition plan

☑ Reviewing and guiding the assessment process for dependencies, impacts, risks, and opportunities

☑ Overseeing and guiding major capital expenditures

☑ Monitoring the implementation of the business strategy

☑ Overseeing reporting, audit, and verification processes

☑ Monitoring the implementation of a climate transition plan

☑ Overseeing and guiding the development of a business strategy

(4.1.2.7) Please explain

The Global Strategy Review Committee is held once a year to review the strategies of each operating company in the formulation of the budget for the next fiscal year. At the meeting, the operating companies report on their sustainability strategies, which include climate change issues. The results of the meeting are reported to the Board of Directors in the form of a budget proposal. The Global Risk Management Committee is a body that deliberates on the selection of NSHD's key risks and measures to address them and meets once a year. Climate change risk is also included in the risks to be considered at the meeting, and the results of the meeting are reported to the Board of Directors. The Executive Committee deliberates on the formulation and monitoring of the medium term management plan and investment projects. In formulating the medium-term management plan, NSHD's approach to climate change issues during the period of the medium-term management plan and the setting of targets are discussed. In addition, the impact of each investment on climate change issues is also discussed during the deliberation of individual investment projects. The medium-term management plan and investment projects are proposed to the Board of Directors after deliberation by the Executive Committee. Once a year, MOS Indices reports to the Board of Directors the targets for reducing GHG emissions and other environmental impacts, as well as the targets for the next fiscal year and the results of the previous year with respect to quality, safety, and security, and the Board of Directors discusses the contents of these reports.

Water

(4.1.2.1) Positions of individuals or committees with accountability for this environmental issue

Select all that apply

☑ Chief Executive Officer (CEO)

(4.1.2.2) Positions' accountability for this environmental issue is outlined in policies applicable to the board

Select from:

☑ Yes

(4.1.2.3) Policies which outline the positions' accountability for this environmental issue

Select all that apply

☑ Individual role descriptions

(4.1.2.4) Frequency with which this environmental issue is a scheduled agenda item

Select from:

☑ Scheduled agenda item in some board meetings – at least annually

(4.1.2.5) Governance mechanisms into which this environmental issue is integrated

Select all that apply

☑ Reviewing and guiding annual budgets

☑ Overseeing and guiding scenario analysis

☑ Overseeing the setting of corporate targets

☑ Monitoring progress towards corporate targets

☑ Overseeing reporting, audit, and verification processes

☑ Overseeing and guiding the development of a business strategy

☑ Reviewing and guiding the assessment process for dependencies, impacts, risks, and opportunities

(4.1.2.7) Please explain

[Fixed row]

NSHD has established an environmental policy for the NSHD Group through a resolution by the Board of Directors. This policy states, "Under the guidance of top management, we strive to harmonize our business activities with the environment and reduce environmental impact, contributing to a resource-circulating society through technology and supporting the development of a sustainable society." As outlined in this policy, the President and CEO of NSHD is responsible for addressing climate change-related issues,

including water intake and water resources, as delegated by the Board of Directors. The President and CEO chairs the Global Strategy Review Committee and the Global Risk Management Committee, in accordance with regulations set by the Board. In the former, they are responsible for determining the group's overall business strategy, while in the latter, they ensure the effectiveness of risk management within the NSHD Group. Through these meetings, the President and CEO examines NSHD's specific responses to climate change-related issues, including those related to water.
As an example of the President and CEO's resolutions regarding water-related issues, the "Sustainable Water Program (SWP)" was announced as part of the medium term management plan "NS Vision 2026: Enabling the Future," published on May 11, 2022, promoting sustainable management. Effective utilization of water resources is essential; through efficient use of water, we aim to conserve water resources in corporate activities, assess water risks, and implement measures for high-risk sites. The SWP includes conducting a water stress assessment using the "Aqueduct" tool developed by the World Resources Institute (WRI) to identify gas production plants (ASU and HyCO sites) located in high-risk areas. Additionally, for gas production plants in high-risk areas, we will work to reduce water intake and consumption by increasing water circulation. The President and CEO is responsible for overseeing the progress of sustainability management, including the SWP.

(4.2) Does your organization's board have competency on environmental issues?

Climate change

(4.2.1) Board-level competency on this environmental issue

Select from:

☑ Yes

(4.2.2) Mechanisms to maintain an environmentally competent board

Select all that apply

☑ Consulting regularly with an internal, permanent, subject-expert working group

☑ Engaging regularly with external stakeholders and experts on environmental issues

☑ Integrating knowledge of environmental issues into board nominating process

☑ Regular training for directors on environmental issues, industry best practice, and standards (e.g., TCFD, SBTi)

☑ Having at least one board member with expertise on this environmental issue

(4.2.3) Environmental expertise of the board member

Experience

☑ Management-level experience in a role focused on environmental issues

Water

(4.2.1) Board-level competency on this environmental issue

Select from:

☑ Yes

(4.2.2) Mechanisms to maintain an environmentally competent board

Select all that apply

☑ Having at least one board member with expertise on this environmental issue

(4.2.3) Environmental expertise of the board member

Experience

☑ Management-level experience in a role focused on environmental issues

[Fixed row]

(4.3) Is there management-level responsibility for environmental issues within your organization?

	Management-level responsibility for this environmental issue
Climate change	*Select from:* ☑ Yes
Water	*Select from:* ☑ Yes
Biodiversity	*Select from:*

	Management-level responsibility for this environmental issue
	☑ Yes

[Fixed row]

(4.3.1) Provide the highest senior management-level positions or committees with responsibility for environmental issues (do not include the names of individuals).

Climate change

(4.3.1.1) Position of individual or committee with responsibility

Executive level

☑ Chief Executive Officer (CEO)

(4.3.1.2) Environmental responsibilities of this position

Dependencies, impacts, risks and opportunities

☑ Assessing environmental dependencies, impacts, risks, and opportunities

☑ Managing environmental dependencies, impacts, risks, and opportunities

Policies, commitments, and targets

☑ Measuring progress towards environmental corporate targets

☑ Setting corporate environmental targets

Strategy and financial planning

☑ Conducting environmental scenario analysis

☑ Developing a climate transition plan

☑ Implementing a climate transition plan

☑ Managing annual budgets related to environmental issues

Other

☑ Providing employee incentives related to environmental performance

(4.3.1.4) Reporting line

Select from:

☑ Reports to the board directly

(4.3.1.5) Frequency of reporting to the board on environmental issues

Select from:

☑ Quarterly

(4.3.1.6) Please explain

At NSHD, the President and CEO is responsible for addressing climate change challenges. According to the regulations established by the Board of Directors, the CEO chairs the Global Strategy Review Committee and the Global Risk Management Committee. In the former, the CEO is responsible for determining the overall business strategy for the group, while in the latter, they ensure the effectiveness of NSHD's risk management. Through these meetings, the CEO considers NSHD's specific responses to climate change issues.
The Global Strategy Review Committee is held once a year during the budgeting process for the next fiscal year, where strategies from each operating company are reviewed. The Chief Sustainability Officer (CSO), who is responsible for NSHD's sustainability activities, reports on the achievements of the year's sustainability efforts, including greenhouse gas (GHG) emission reductions, and sets targets for the upcoming year. The outcomes of this meeting are reported to the Board of Directors in the form of a budget proposal, while sustainability activities are reported separately.
The Global Risk Management Committee is a body that discusses the selection of key risks and their responses, also held annually. This meeting evaluates business risks faced by NSHD based on frequency and impact on financial or strategic matters and considers appropriate responses. In the fiscal year ending 2023 (FYE2023), the development of necessary technologies for GHG reduction was discussed as a risk, and strategies that NSHD should adopt were debated.
The executive committee reviews and monitors the formulation of the medium-term management plan and investment projects. The current medium-term management plan, which targets the four years from FYE2023 to FYE2026, was presented on May 11, 2022, after discussions in the executive committee and the Board of Directors. Within this plan, NSHD has established five key strategies, two of which focus on "promoting sustainable management" and "exploring new businesses toward a decarbonized society." The goals include reducing GHG emissions by 18% by FYE2026 and by 32% by FYE2031 compared to FYE2019, aiming for carbon neutrality by FYE2050. Additionally, by FYE2026, the GHG reduction contributions from environmentally friendly products are expected to exceed NSHD's GHG emissions, accelerating responses to climate change challenges. The CEO bears responsibility for achieving these targets. Progress on the medium-term management plan is regularly monitored by the Board of Directors.
While the executive committee and the Board of Directors also discuss individual investment projects, they examine the potential increase in GHG emissions due to these projects, their extent, and how these projects contribute to reducing customers' GHG emissions, considering the impact of each project on climate change challenges.

Water

(4.3.1.1) Position of individual or committee with responsibility

Executive level

☑ Chief Executive Officer (CEO)

(4.3.1.2) Environmental responsibilities of this position

Dependencies, impacts, risks and opportunities

☑ Assessing environmental dependencies, impacts, risks, and opportunities

☑ Assessing future trends in environmental dependencies, impacts, risks, and opportunities

☑ Managing environmental dependencies, impacts, risks, and opportunities

Policies, commitments, and targets

☑ Setting corporate environmental targets

Strategy and financial planning

☑ Conducting environmental scenario analysis

☑ Implementing the business strategy related to environmental issues

☑ Managing annual budgets related to environmental issues

(4.3.1.4) Reporting line

Select from:

☑ Reports to the board directly

(4.3.1.5) Frequency of reporting to the board on environmental issues

Select from:

☑ Quarterly

(4.3.1.6) Please explain

[Add row]
At NSHD, the President and CEO (CEO) is responsible for climate change issues, including water-related issues, and chairs the Global Strategy Review Committee and the Global Risk Management Committee in accordance with regulations established by the Board of Directors. The former is responsible for determining the Group's overall business strategy, while the latter is responsible for ensuring the effectiveness of NSHD's risk management. The CEO is responsible for all management of the NSHD Group. In addition, the NSHD Group Environmental Policy stipulates that the CEO should direct the Group to contribute to the development of a sustainable society by using technology to contribute to a resource-recycling society through efforts to harmonize with the environment and reduce the environmental impact of its business activities. Matters related to water risk that are considered by the Global Strategic Review Meeting are reported to the Board of Directors, which reviews the contents and instructs the CEO on any necessary measures to be taken. At the Global Strategic Review Meeting, the Sustainability CSO reports on other environmental impacts, including reductions in GHG emissions.

(4.5) Do you provide monetary incentives for the management of environmental issues, including the attainment of targets?

Climate change

(4.5.1) Provision of monetary incentives related to this environmental issue

Select from:
☑ Yes

(4.5.2) % of total C-suite and board-level monetary incentives linked to the management of this environmental issue

19

(4.5.3) Please explain

As part of NSHD's sustainability management, the CSO, an executive officer of NSHD, is responsible for risk management related to safety, security, and the environment, and the CSO's performance evaluation includes reducing the number of accidents to zero. GHG reduction targets are included in CSO performance evaluations.

Water

(4.5.1) Provision of monetary incentives related to this environmental issue

Select from:

☑ Yes

(4.5.2) % of total C-suite and board-level monetary incentives linked to the management of this environmental issue

19

(4.5.3) Please explain

[Fixed row]

As part of NSHD's sustainability management, the CSO, an NSHD executive officer, is responsible for risk management related to safety, security, and the environment, and reducing the number of safety, security, and environmental accidents to zero is included in the CSO's performance evaluation. Environmental accidents including water-related environmental accidents are also included in the CSO's performance evaluation.

(4.5.1) Provide further details on the monetary incentives provided for the management of environmental issues (do not include the names of individuals).

Climate change

(4.5.1.1) Position entitled to monetary incentive

Board or executive level

☑ Chief Sustainability Officer (CSO)

(4.5.1.2) Incentives

Select all that apply

☑ Bonus – set figure

☑ Promotion

(4.5.1.3) Performance metrics

Targets

☑ Achievement of environmental targets

Strategy and financial planning

☑ Achievement of climate transition plan

(4.5.1.4) Incentive plan the incentives are linked to

Select from:

☑ Both Short-Term and Long-Term Incentive Plan, or equivalent

(4.5.1.5) Further details of incentives

The part of NSHD's sustainability management, the CSO, an executive officer of NSHD, is responsible for risk management related to safety, security, and the environment, and the CSO's performance evaluation includes reducing the number of accidents to zero. GHG reduction targets are also included in CSO performance evaluations.

(4.5.1.6) How the position's incentives contribute to the achievement of your environmental commitments and/or climate transition plan

CSO の業績評価の対象に GHG 削減目標が含まれています。

GHG reduction targets are included in the scope of CSO performance evaluation.

Water

(4.5.1.1) Position entitled to monetary incentive

Board or executive level

☑ Chief Sustainability Officer (CSO)

(4.5.1.2) Incentives

Select all that apply

☑ Bonus – set figure

☑ Promotion

(4.5.1.3) Performance metrics

Policies and commitments

☑ Other policies and commitments-related metrics, please specify :環境事故には水に関する環境事故も含まれており、CSO の業績評価の対象となっております。
Environmental accidents include water-related environmental accidents, which are subject to CSO's performance evaluation.

(4.5.1.4) Incentive plan the incentives are linked to

Select from:

☑ Both Short-Term and Long-Term Incentive Plan, or equivalent

(4.5.1.5) Further details of incentives

As part of NSHD's sustainability management, the CSO, an NSHD executive officer, is responsible for risk management related to safety, security, and the environment, and reducing the number of safety, security, and environmental accidents to zero is included in the CSO's performance evaluation. Environmental accidents also include water-related environmental accidents, which are included in the CSO's performance evaluation.

(4.5.1.6) How the position's incentives contribute to the achievement of your environmental commitments and/or climate transition plan

[Add row]
Environmental accidents include water-related environmental accidents, which are subject to CSO's performance evaluation.

(4.6) Does your organization have an environmental policy that addresses environmental issues?

	Does your organization have any environmental policies?
	Select from: ☑ Yes

[Fixed row]

(4.6.1) Provide details of your environmental policies.

Row 1

(4.6.1.1) Environmental issues covered

Select all that apply

☑ Climate change

☑ Water

☑ Biodiversity

(4.6.1.2) Level of coverage

Select from:

☑ Organization-wide

(4.6.1.3) Value chain stages covered

Select all that apply

☑ Direct operations

(4.6.1.4) Explain the coverage

We recognize environmental issues as one of our highest priorities, and this applies to all NSHD companies in the full range of direct operations.

(4.6.1.5) Environmental policy content

Environmental commitments

☑ Commitment to a circular economy strategy

☑ Commitment to avoidance of negative impacts on threatened and protected species

☑ Commitment to comply with regulations and mandatory standards

☑ Commitment to take environmental action beyond regulatory compliance

☑ Commitment to stakeholder engagement and capacity building on environmental issues

Climate-specific commitments

☑ Commitment to net-zero emissions

Water-specific commitments

☑ Commitment to control/reduce/eliminate water pollution

☑ Commitment to reduce water consumption volumes

☑ Commitment to reduce water withdrawal volumes

☑ Commitment to safely managed WASH in local communities

☑ Commitment to the conservation of freshwater ecosystems

(4.6.1.6) Indicate whether your environmental policy is in line with global environmental treaties or policy goals

Select all that apply

☑ Yes, in line with the Paris Agreement

☑ Yes, in line with Sustainable Development Goal 6 on Clean Water and Sanitation

(4.6.1.7) Public availability

Select from:

☑ Publicly available

(4.6.1.8) Attach the policy

Environment Policy.pdf
[Add row]

(4.10) Are you a signatory or member of any environmental collaborative frameworks or initiatives?

(4.10.1) Are you a signatory or member of any environmental collaborative frameworks or initiatives?

Select from:

☑ Yes

(4.10.2) Collaborative framework or initiative

Select all that apply

☑ Task Force on Climate-related Financial Disclosures (TCFD)

☑ UN Global Compact

(4.10.3) Describe your organization's role within each framework or initiative

[Fixed row]

[TCFD] NSHD has announced its endorsement of the TCFD effective November 2019. through its endorsement of the TCFD, NSHD will further accelerate its existing efforts to reduce its environmental impact, promote energy conservation activities, and expand the range of products that contribute to reducing GHG emissions, and will also gradually expand its information disclosure. NSHD has signed the United Nations Global Compact (UNGC) and was registered as a participating company as of January 18, 2022. NSHD is also a member of the Global Compact Network Japan, which is comprised of Japanese and other companies that have signed the UNGC. Nippon Gases Euro-Holding S.L.U., an NSHD company, has also signed the UNGC and is registered as a participating company.

(4.11) In the reporting year, did your organization engage in activities that could directly or indirectly influence policy, law, or regulation that may (positively or negatively) impact the environment?

(4.11.1) External engagement activities that could directly or indirectly influence policy, law, or regulation that may impact the environment

Select all that apply

☑ Yes, we engaged indirectly through, and/or provided financial or in-kind support to a trade association or other intermediary organization or individual whose activities could influence policy, law, or regulation

(4.11.2) Indicate whether your organization has a public commitment or position statement to conduct your engagement activities in line with global environmental treaties or policy goals

Select from:

☑ Yes, we have a public commitment or position statement in line with global environmental treaties or policy goals

(4.11.3) Global environmental treaties or policy goals in line with public commitment or position statement

Select all that apply

☑ Paris Agreement

(4.11.4) Attach commitment or position statement

JCIA's Stance as a Chemical Industry Toward Carbon Neutrality (4.11).pdf

(4.11.5) Indicate whether your organization is registered on a transparency register

Select from:
☑ Yes

(4.11.6) Types of transparency register your organization is registered on

Select all that apply
☑ Non-government register

(4.11.7) Disclose the transparency registers on which your organization is registered & the relevant ID numbers for your organization

InfluenceMap

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

[Fixed row]
The Japanese government's FYE2050 carbon neutrality declaration is an ambitious goal, but we believe it represents an ideal vision for a sustainable society. This policy is also crucial for maintaining the international competitiveness of Japan's chemical industry. To achieve this, the chemical industry must accelerate efforts to enhance processes and expand contributions to emission reductions. We will strive to significantly reduce greenhouse gas emissions from energy and raw materials through the development and social implementation of technologies such as carbon capture and utilization (CCU), artificial photosynthesis, and chemical recycling, moving towards a resource-circulating society. Based on the above policy, NSHD will also incorporate climate change-related initiatives into its medium-term management plan.

(4.11.2) Provide details of your indirect engagement on policy, law, or regulation that may (positively or negatively) impact the environment through trade associations or other intermediary organizations or individuals in the reporting year.

Row 1

(4.11.2.1) Type of indirect engagement

Select from:

☑ Indirect engagement via a trade association

(4.11.2.4) Trade association

Asia and Pacific

☑ Japan Chemical Industry Association

(4.11.2.5) Environmental issues relevant to the policies, laws, or regulations on which the organization or individual has taken a position

Select all that apply

☑ Climate change

(4.11.2.6) Indicate whether your organization's position is consistent with the organization or individual you engage with

Select from:

☑ Consistent

(4.11.2.7) Indicate whether your organization attempted to influence the organization or individual's position in the reporting year

Select from:

☑ Yes, we publicly promoted their current position

(4.11.2.8) Describe how your organization's position is consistent with or differs from the organization or individual's position, and any actions taken to influence their position

The Japan Chemical Industry Association (JCIA) promotes various climate change mitigation activities for its member companies.

1. Voluntary Action Plan on the Environment: Member companies are striving to improve energy consumption intensity to reduce CO2 emissions.
2. Promotion of GHG Emission Reduction: JCIA advocates the use of Carbon Life Cycle Analysis (cLCA) to comprehensively assess the entire product life cycle and

understand the contribution of products to avoided emissions.
JCIA's initiatives are managed by several working teams within a technical committee composed of major member companies. Representatives from NSHD actively participate in most of these teams, strongly supporting JCIA's activities, which include proposals to the Japanese government regarding the introduction of emissions trading systems and the promotion of emission-reducing products in global value chains.

(4.11.2.9) Funding figure your organization provided to this organization or individual in the reporting year (currency)

57534.24

(4.11.2.10) Describe the aim of this funding and how it could influence policy, law or regulation that may impact the environment

The Japan Chemical Industry Association (JCIA) promotes various climate change mitigation activities for its member companies. 1. Environmental Voluntary Action Plans - Member companies are working to improve energy consumption intensity to reduce CO2 emissions. Through funding, we aim to further enhance these activities and contribute to the decarbonization of the entire industry, aligning with the Paris Agreement's greenhouse gas emission reduction goals.

(4.11.2.11) Indicate if you have evaluated whether your organization's engagement is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.2.12) Global environmental treaties or policy goals aligned with your organization's engagement on policy, law or regulation

Select all that apply

☑ Paris Agreement

[Add row]

(4.12) Have you published information about your organization's response to environmental issues for this reporting year in places other than your CDP response?

Select from:

☑ Yes

(4.12.1) Provide details on the information published about your organization's response to environmental issues for this reporting year in places other than your CDP response. Please attach the publication.

Row 1

(4.12.1.1) Publication

Select from:
☑ In mainstream reports, in line with environmental disclosure standards or frameworks

(4.12.1.2) Standard or framework the report is in line with

Select all that apply
☑ TCFD

(4.12.1.3) Environmental issues covered in publication

Select all that apply
☑ Climate change

(4.12.1.4) Status of the publication

Select from:
☑ Complete

(4.12.1.5) Content elements

Select all that apply
☑ Governance
☑ Risks & Opportunities
☑ Strategy
☑ Emissions figures

☑ Emission targets

(4.12.1.6) Page/section reference

Annual Securities Report for the Year Ended March 31, 2024 P19

(4.12.1.7) Attach the relevant publication

Annual Securities Report for the Year Ended March 31, 2024.pdf

Row 2

(4.12.1.1) Publication

Select from:
☑ In mainstream reports

(4.12.1.3) Environmental issues covered in publication

Select all that apply
☑ Water

(4.12.1.4) Status of the publication

Select from:
☑ Complete

(4.12.1.5) Content elements

Select all that apply
☑ Strategy

(4.12.1.6) Page/section reference

p33/ “(2) Environment.”

(4.12.1.7) Attach the relevant publication

Annual Securities Report for the Year Ended March 31, 2024.pdf
[Add row]

C5. Business strategy

(5.1) Does your organization use scenario analysis to identify environmental outcomes?

Climate change

(5.1.1) Use of scenario analysis

Select from:
☑ Yes

(5.1.2) Frequency of analysis

Select from:
☑ Not defined

Water

(5.1.1) Use of scenario analysis

Select from:
☑ Yes

(5.1.2) Frequency of analysis

Select from:
☑ Not defined
[Fixed row]

(5.1.1) Provide details of the scenarios used in your organization’s scenario analysis.

Climate change

(5.1.1.1) Scenario used

Climate transition scenarios

☑ IEA NZE 2050

(5.1.1.3) Approach to scenario

Select from:

☑ Qualitative and quantitative

(5.1.1.4) Scenario coverage

Select from:

☑ Organization-wide

(5.1.1.5) Risk types considered in scenario

Select all that apply

☑ Policy

☑ Market

☑ Reputation

☑ Technology

☑ Liability

(5.1.1.6) Temperature alignment of scenario

Select from:

☑ 1.5°C or lower

(5.1.1.7) Reference year

2019

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2030

☑ 2040

☑ 2050

(5.1.1.9) Driving forces in scenario

Local ecosystem asset interactions, dependencies and impacts

☑ Climate change (one of five drivers of nature change)

Stakeholder and customer demands

☑ Consumer sentiment

☑ Consumer attention to impact

Regulators, legal and policy regimes

☑ Global regulation

Relevant technology and science

☑ Granularity of available data (from aggregated to local)

Direct interaction with climate

☑ On asset values, on the corporate

Macro and microeconomy

☑ Domestic growth

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

With the adoption of the Paris Agreement in 2015 and the commitment to achieving the 1.5°C target at COP26 in 2021, we acknowledge the impacts of strengthened policies and regulations for decarbonization across countries, as well as the resulting market changes. According to an IEA report, the projected carbon prices for advanced countries that have declared carbon neutrality are expected to be around $205/CO2-ton for FYE2040 and $250/CO2-ton for FYE2050. We anticipate an increased burden from carbon taxes as a risk associated with the transition to decarbonization. On the other hand, we expect to gain business opportunities through early initiatives such as expanding the

adoption of renewable energy via Power Purchase Agreements (PPAs) and green power certificates, thereby differentiating ourselves from competitors.

(5.1.1.11) Rationale for choice of scenario

To anticipate the impact and influence on our company in a world where the entire market is actively engaged in achieving carbon neutrality by 2050, we selected the NZE2050 scenario. NSHD is committed to achieving virtually zero GHG emissions by 2050, and we believe this scenario is useful for analyzing our future vision.

Water

(5.1.1.1) Scenario used

Physical climate scenarios

☑ RCP 8.5

(5.1.1.2) Scenario used SSPs used in conjunction with scenario

Select from:

☑ No SSP used

(5.1.1.3) Approach to scenario

Select from:

☑ Qualitative and quantitative

(5.1.1.4) Scenario coverage

Select from:

☑ Organization-wide

(5.1.1.5) Risk types considered in scenario

Select all that apply

☑ Acute physical

☑ Chronic physical

(5.1.1.6) Temperature alignment of scenario

Select from:

☑ 4.0ºC and above

(5.1.1.7) Reference year

2022

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2050

(5.1.1.9) Driving forces in scenario

Local ecosystem asset interactions, dependencies and impacts

☑ Climate change (one of five drivers of nature change)

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

For the "physical climate scenario," we refer to the global warming scenario (RCP8.5) from the IPCC's Fifth Assessment Report (released in FYE2014). We use an expected average temperature increase of 3.2 to 5.4°C at CO2 concentrations of 1000 ppm by FYE2100 to examine the impact of decreased efficiency of air separation units on revenue. Additionally, for sea level rise, we use parameters of 13 cm for FYE2030 and 25 cm for FYE2050 to estimate the risks associated with flooding and other related events.

(5.1.1.11) Rationale for choice of scenario

The purpose of using RCP scenarios is for our company to understand the physical risks associated with climate change and to assess the scale of their impacts. According to the IPCC's Fifth Assessment Report, there is a correlation between CO2 emissions from human activities and global warming. As long as carbon emissions continue, physical impacts from climate change, such as extreme weather events, are projected to expand and intensify by 2100. Due to the nature of scenario analysis, it is important to consider that mitigating global warming and achieving the 1.5°C target are not guaranteed, and we must also account for the physical impacts of rising average temperatures. Therefore, we reference the RCP8.5 scenario, which suggests that, due to social conditions, the priority for decarbonization efforts may decrease significantly, leading to a projected increase in global average temperatures of more than 4°C compared to pre-industrial levels by 2100.

Climate change

(5.1.1.1) Scenario used

Climate transition scenarios

☑ IEA SDS

(5.1.1.3) Approach to scenario

Select from:

☑ Qualitative and quantitative

(5.1.1.4) Scenario coverage

Select from:

☑ Organization-wide

(5.1.1.5) Risk types considered in scenario

Select all that apply

☑ Policy

☑ Market

☑ Reputation

☑ Technology

☑ Liability

(5.1.1.6) Temperature alignment of scenario

Select from:

☑ 1.6ºC - 1.9ºC

(5.1.1.7) Reference year

2019

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2030

☑ 2050

(5.1.1.9) Driving forces in scenario

Local ecosystem asset interactions, dependencies and impacts

☑ Climate change (one of five drivers of nature change)

Stakeholder and customer demands

☑ Consumer sentiment

☑ Consumer attention to impact

Regulators, legal and policy regimes

☑ Global regulation

Relevant technology and science

☑ Granularity of available data (from aggregated to local)

Direct interaction with climate

☑ On asset values, on the corporate

Macro and microeconomy

☑ Domestic growth

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

We envision a world with stricter policy regulations to achieve the targets in the Paris Agreement adopted in 2015. The share of green/blue hydrogen in oxygen production will be 36% in FYE2030 and 88% in FYE2050, and we analyze this as a business opportunity to increase demand for our products.

(5.1.1.11) Rationale for choice of scenario

The SDS scenario is used to envision a world in which we achieve the goals set forth in the Paris Agreement, and we believe it is useful in analyzing our future vision, as NSHD is committed to achieving virtually zero GHG emissions for our Group by 2050.

Climate change

(5.1.1.1) Scenario used

Physical climate scenarios

☑ RCP 8.5

(5.1.1.2) Scenario used SSPs used in conjunction with scenario

Select from:

☑ No SSP used

(5.1.1.3) Approach to scenario

Select from:

☑ Qualitative and quantitative

(5.1.1.4) Scenario coverage

Select from:

☑ Organization-wide

(5.1.1.5) Risk types considered in scenario

Select all that apply

☑ Acute physical

☑ Chronic physical

(5.1.1.6) Temperature alignment of scenario

Select from:

☑ 4.0ºC and above

(5.1.1.7) Reference year

2019

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2030

☑ 2050

☑ 2100

(5.1.1.9) Driving forces in scenario

Local ecosystem asset interactions, dependencies and impacts

☑ Climate change (one of five drivers of nature change)

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

The physical climate scenarios are based on the global warming scenario (RCP8.5) from the Fifth Assessment Report (released in FYE2014) of the United Nations Intergovernmental Panel on Climate Change (IPCC) and the average temperature increase from 3.2 to 5.4 at FYE2100 with a CO2 concentration of 1000ppm. We examined the impact of lower revenues due to lower efficiency of the air separation unit. We also estimated the risk of flooding and other risks by using the parameters of FYE2030 13 cm and FYE2050 25 cm for sea level rise.

(5.1.1.11) Rationale for choice of scenario

[Add row]

The purpose of using RCP scenarios is for our company to understand the physical risks associated with climate change and to assess the scale of their impacts. According to the IPCC's Fifth Assessment Report, there is a correlation between CO2 emissions from human activities and global warming. As long as carbon emissions continue, physical impacts from climate change, such as extreme weather events, are projected to expand and intensify by 2100. Due to the nature of scenario analysis, it is important to consider that mitigating global warming and achieving the 1.5°C target are not guaranteed, and we must also account for the physical impacts of rising average temperatures. Therefore, we reference the RCP8.5 scenario, which suggests that, due to social conditions, the priority for decarbonization efforts may decrease significantly, leading to a projected increase in global average temperatures of more than 4°C compared to pre-industrial levels by 2100.

(5.1.2) Provide details of the outcomes of your organization’s scenario analysis.

Climate change

(5.1.2.1) Business processes influenced by your analysis of the reported scenarios

Select all that apply

☑ Risk and opportunities identification, assessment and management

☑ Strategy and financial planning

☑ Resilience of business model and strategy

☑ Capacity building

☑ Target setting and transition planning

(5.1.2.2) Coverage of analysis

Select from:

☑ Organization-wide

(5.1.2.3) Summarize the outcomes of the scenario analysis and any implications for other environmental issues

The international framework for addressing global warming, the Paris Agreement, has come into effect, prompting action worldwide. In Japan, a policy was announced in October 2020 to aim for carbon neutrality by FYE2050. To achieve this goal, it is expected that regulations and initiatives, such as carbon taxes and emissions trading systems that have been evaluated in Europe, will also be introduced in Japan. The implementation of new regulations regarding CO2 emissions poses a risk of increased indirect costs. Daicel's total annual emissions for Scope 1 and Scope 2 amount to approximately 2.2 million tons of CO2. Assuming a CO2 price of $140/CO2-ton as projected by the IEA for FYE2040, this would result in a tax burden of ¥42 billion, leading to an estimated loss of about ¥10 billion in operating profit domestically. Furthermore, if gas production increases, Scope 2 emissions will rise, resulting in additional tax burdens. To address these challenges, we are working to expand the adoption of renewable energy through initiatives such as Power Purchase Agreements (PPAs) and green power certificates. As a result, approximately 6% of NSHD's electricity was generated from renewable energy sources, contributing to GHG emissions reduction. In March 2021, NSHD also developed the SCOPE-Jet SCAN. This technology controls the supply of oxygen and fuel by analyzing the furnace temperature, thereby increasing the efficiency of oxygen utilization. Efficient fuel use can help reduce CO

Water

(5.1.2.1) Business processes influenced by your analysis of the reported scenarios

Select all that apply

☑ Risk and opportunities identification, assessment and management
☑ Strategy and financial planning
☑ Resilience of business model and strategy
☑ Capacity building
☑ Target setting and transition planning

(5.1.2.2) Coverage of analysis

Select from:
☑ Organization-wide

(5.1.2.3) Summarize the outcomes of the scenario analysis and any implications for other environmental issues

[Fixed row]
The purpose of using RCP scenarios is for our company to understand the physical risks associated with climate change and to assess the scale of their impacts. According to the IPCC's Fifth Assessment Report, there is a correlation between CO2 emissions from human activities and global warming. If carbon emissions continue, physical impacts from climate change, such as extreme weather events, are projected to expand and intensify by 2100. Due to the nature of scenario analysis, it is important to consider that mitigating global warming and achieving the 1.5°C target are not guaranteed, and we must also account for the physical impacts of rising average temperatures. Therefore, we reference the RCP8.5 scenario, which suggests that, due to social conditions, the priority for decarbonization efforts may significantly decrease, leading to a projected increase in global average temperatures of more than 4°C compared to pre-industrial levels by 2100.
NSHD’s Taiyo Nippon Sanso primarily produces industrial gases and operates 35 gas production plants. If climate change intensifies and we experience an increase in heavy rainfall and strong winds, there is a risk that air separation units used in gas production could malfunction. Such malfunctions could hinder our ability to reliably supply products to customers, potentially resulting in significant profit losses. Furthermore, the estimated costs associated with equipment failures due to extreme weather could reach several hundred million yen. Therefore, it is necessary to implement measures to address the risks of equipment failure in air separation units.
Taiyo Nippon Sanso holds property comprehensive insurance to cover recovery from fires, accidents, and other incidents caused by extreme weather at our 35 gas production plants nationwide. The insurance covers damages from fire, lightning strikes, explosions, wind damage, hail damage, snow damage, theft, electrical and mechanical accidents, and other accidental damages. Consequently, even if equipment failures occur in air separation units due to extreme weather, damages will not exceed the insured amounts. We will continue to maintain this property comprehensive insurance in FYE2024. Thus far, we have not experienced significant financial damages resulting from extreme weather. By continuing to hold insurance, we can also address potential future financial risks from disasters.

(5.2) Does your organization’s strategy include a climate transition plan?

(5.2.1) Transition plan

Select from:

☑ Yes, we have a climate transition plan which aligns with a 1.5°C world

(5.2.3) Publicly available climate transition plan

Select from:

☑ Yes

(5.2.4) Plan explicitly commits to cease all spending on, and revenue generation from, activities that contribute to fossil fuel expansion

Select from:

☑ No, and we do not plan to add an explicit commitment within the next two years

(5.2.6) Explain why your organization does not explicitly commit to cease all spending on and revenue generation from activities that contribute to fossil fuel expansion

In our medium-term management plan “NS Vision 2026,” we have confirmed that the entire group is aware of the external environment in which we operate. We then share best practices in each region in our business activities and pursue operational excellence to achieve both social and economic value, aiming to further enhance our corporate value. The Minebea Group uses fossil-derived fuels in the manufacture of its products and other activities. We recognize the need to move away from fossil fuels, but the formulation of an effective transition plan is an issue to be considered in the future.

(5.2.7) Mechanism by which feedback is collected from shareholders on your climate transition plan

Select from:

☑ We have a different feedback mechanism in place

(5.2.8) Description of feedback mechanism

Information such as TCFD scenario analysis is disclosed in conjunction with the medium-term management plan, and questions regarding the content of this information are also accepted at the financial results briefing. First, NSHD discloses information on sustainability on the NSHD website. Specifically, in addition to responses to the materiality, medium-term management plan, and CDP, the website discloses information such as opportunity and risk analyses based on “transition scenarios” and “physical climate scenarios” based on TCFD recommendations, as well as the identification, assessment, and management process for climate-related risks. In addition, NSHD has published a report on its environmental and social activities annually since FYE2005. Since FYE2017, the report has been integrated with the Annual Report and published annually as the Integrated Report, and all data since FYE2005 is available on our website for anyone to view. In addition, NSHD regularly holds IR seminars for individual investors, and as in 2022, the “Web IR Conference on Sustainability initiatives” held in December 2023 provided an opportunity for dialogue with investors and shareholders. In addition, we also

accepted questions related to climate change at our annual May financial results briefing (speaker: President & CEO). Furthermore, an inquiry form has been set up on the official NSHD website to enable dialogue with stakeholders (in the form of an e-mail). We believe that our system for collecting feedback from shareholders is functioning, as we not only disclose information to them as described above, but also provide them with opportunities and venues to communicate with us.

(5.2.9) Frequency of feedback collection

Select from:

☑ More frequently than annually

(5.2.10) Description of key assumptions and dependencies on which the transition plan relies

By providing environmental product offerings and applications and solutions, the Group will contribute to the realization of the Transition Plan and to the reduction of greenhouse gas emissions in client industries. We recognize that it is essential to collaborate not only with our own efforts but also with strategic partners. To this end, we will strengthen our efforts to develop the necessary technologies, and for those technologies that are lacking, we will strengthen collaboration with our strategic partners.

(5.2.11) Description of progress against transition plan disclosed in current or previous reporting period

The goal of our transition plan is to achieve net zero Scope 1,2 emissions in 2050. In the reporting year, we were able to reduce our Scope 1 and 2 emissions by more than 200,000 t-CO2 compared to the previous year. In the reporting year, we achieved a reduction of 50,080t-CO2 by implementing reduction initiatives such as increasing the efficiency of our facilities. Progress toward achieving the transition plan is on track.

(5.2.13) Other environmental issues that your climate transition plan considers

Select all that apply

☑ No other environmental issue considered

[Fixed row]

(5.3) Have environmental risks and opportunities affected your strategy and/or financial planning?

(5.3.1) Environmental risks and/or opportunities have affected your strategy and/or financial planning

Select from:

☑ Yes, both strategy and financial planning

(5.3.2) Business areas where environmental risks and/or opportunities have affected your strategy

Select all that apply

☑ Products and services

☑ Upstream/downstream value chain

☑ Investment in R&D

☑ Operations

[Fixed row]

(5.3.1) Describe where and how environmental risks and opportunities have affected your strategy.

Products and services

(5.3.1.1) Effect type

Select all that apply

☑ Risks

☑ Opportunities

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

NSHD's main products are oxygen, nitrogen, and argon, and since the raw material is air, there are almost no raw material costs, only energy costs incurred mainly for electricity to use the air separation unit to take air from the atmosphere. NSHD is a company that is involved in business activities from development, production, supply, sales, and product use, NSHD is committed to environmental and social consciousness in all processes of its business activities (value chain). We are working to reduce energy intensity through development and design, replacement of components of air separation unit with high-efficiency machines, and optimization of plant operations in response to demand trends. At the same time, the issue of climate change has become a challenge, and we believe that there is an opportunity to contribute to solving this issue by providing innovative gas solutions from NSHD. With this in mind, we calculate and disclose our avoided emissions as an environmental contribution through NSHD products, thereby helping other companies reduce their GHG emissions. For example, Taiyo Nippon Sanso's Yamanashi Technology Solution Center, which is NSHD's R&D base, is focusing on oxygen combustion technology to help realize a carbon-neutral society. Oxyfuel combustion technology is a technology for combustion of oxygenated combustion gases. Oxyfuel combustion technology adds high-purity oxygen to tributary gases to increase combustion efficiency in an environment where the oxygen concentration in the air is 21% or higher, which allows for higher flame temperatures than air combustion and reduces the nitrogen content of tributary gases, thereby reducing the energy carried away as exhaust gas. The flame temperature is higher than that of air combustion.

Upstream/downstream value chain

(5.3.1.1) Effect type

Select all that apply

☑ Risks

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

Bulk gas, NSHD's main product, has limited impact in the supply chain because its feedstock is air (atmospheric). However, in the value chain, industrial gas is in demand throughout Japan and is regularly transported by tanker trucks. There is always a risk that earthquakes, typhoons, or other events could stop the supply of liquefied gas to customers. However, NSHD has production facilities throughout Japan and is able to respond to physical disasters by delivering to customers by tanker trucks from other locations and by making advance deliveries based on weather forecasts and other predictions.

Investment in R&D

(5.3.1.1) Effect type

Select all that apply

☑ Opportunities

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

NSHD's philosophy is encapsulated in the phrase, "Proactive. Innovative. Collaborative. Making life better through gas technology. The Gas Professionals." We believe that addressing carbon neutrality is an urgent and crucial challenge for realizing this vision.
In recent years, NSHD has focused on the utilization of hydrogen, which is gaining attention as a CO2-free and environmentally friendly energy source. We have developed

and are marketing both stationery and mobile hydrogen stations, leveraging our expertise in hydrogen gas supply and handling technology. Additionally, we are collaborating with our Euro operations to intensify research and development in hydrogen and ammonia combustion.
Since hydrogen and ammonia combustion produces no CO2 or air pollutants, NSHD recognizes the potential for further contributions to achieving a carbon-neutral society. We are investing in various technologies from multiple perspectives to realize carbon neutrality.
As part of our commitment, we have set a target for FYE 2026: the avoided emissions from our environmental product offerings and applications will exceed NSHD's GHG emissions. For FYE 2024, the avoided emissions from our products and services are projected to increase by approximately 6% compared to last year, reaching 3,775 [thousand-CO2]. This demonstrates our steady progress toward achieving our goals in combating climate change.

Operations

(5.3.1.1) Effect type

Select all that apply

☑ Risks

☑ Opportunities

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

☑ Water

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

[Add row]

The industrial gas production process, which is NSHD's core business, is highly electricity-intensive, requiring significant power to operate air separation units. As such, reducing energy consumption presents a major challenge for NSHD, as any fluctuations in energy use directly impact profitability. Furthermore, decreasing energy consumption will also lead to reductions in Scope 1 and Scope 2 emissions, effectively contributing to climate change mitigation.
Recent advancements in computer performance have enabled the completion of complex calculations in relatively short timeframes. This has made it possible to optimize the operation of air separation units by fine-tuning parameters such as valve timing and vane openings. This optimization has been shown to reduce power consumption significantly. Leveraging computer optimization to decrease electricity usage represents an effective opportunity for NSHD to lower manufacturing costs and greenhouse gas (GHG) emissions without requiring substantial investment.
To capitalize on this opportunity, NSHD has been deploying computer analysis across its gas production plants since FY2017. By FYE2022, this initiative had been implemented in nine plants across Japan, including Shinyo Sanso Co, Ltd, Shunan Sanso Co., Ltd, Shin Sagami Sanso Co., Ltd, and Fuji Sanso Co.,Ltd, as well as two overseas plants, Leeden National Oxygen Ltd. and Nippon Sanso Ingasco, Inc. The total investment for this initiative was only 16 million yen, based on one researcher working 1,600 man-hours per year at a cost of 10,000 yen per hour. Additionally, a project utilizing new digital solution technology for further optimization is currently in development.

As a result of these efforts, NSHD successfully reduced electricity consumption by 6,764 MWh per year. Using TEPCO's FYE2020 CO2 emission factor of 0.441 kg-CO2/kWh, this translates into a GHG emission reduction of 2,983 tons of CO2, demonstrating that significant reductions in electricity consumption and associated GHG emissions were achieved with minimal labor cost input.
Regarding water-related risks, the industrial gas production process relies on water for cooling in the cooling water circulation system, particularly in cooling towers. Consequently, water availability is a critical factor in choosing a plant location, which is why all of our facilities are strategically located near reliable water sources.
Scenario analysis indicates that climate change may increase the frequency of natural disasters, thereby elevating associated risks. Global warming raises the likelihood of localized heavy rains and flooding due to typhoons and storm surges linked to rising sea levels, which could lead to factory closures lasting days or weeks. Additionally, as temperatures rise due to climate change, the temperature of the cooling water supplied to cooling towers will also increase. This, in turn, raises the temperature of the industrial gas exiting the cooling tower, reducing its density and affecting operational efficiency. To mitigate this, it will be necessary to increase the flow rate of freshwater for cooling, resulting in a higher intake of water. We recognize that these conditions pose increased risks related to water availability.

(5.3.2) Describe where and how environmental risks and opportunities have affected your financial planning.

Row 1

(5.3.2.1) Financial planning elements that have been affected

Select all that apply

- ☑ Revenues
- ☑ Liabilities
- ☑ Direct costs
- ☑ Indirect costs
- ☑ Access to capital
- ☑ Capital allocation
- ☑ Capital expenditures

(5.3.2.2) Effect type

Select all that apply

- ☑ Risks
- ☑ Opportunities

(5.3.2.3) Environmental issues relevant to the risks and/or opportunities that have affected these financial planning elements

Select all that apply

☑ Climate change

☑ Water

(5.3.2.4) Describe how environmental risks and/or opportunities have affected these financial planning elements

[Add row]

Since the raw material for industrial gas is air, there is no need for raw material costs; only energy, primarily electricity, is required to use air separation unit to draw air from the atmosphere. Therefore, energy reduction is the biggest challenge for NSHD, as any increase or decrease in energy consumption is directly related to revenue. In addition, reducing energy consumption will lead to reductions in Scope 1 and 2, which will effectively contribute to climate change issues. Computer performance has improved significantly in recent years, making it possible to complete even complex calculations in a relatively short time, and it is now possible to optimize the operation of air separation unit using parameters such as the timing of valve opening and closing, vane opening, and other parameters. This has been shown to reduce the power consumption of air separation units. The ability to reduce electricity consumption by optimizing the operation of air separation unit using a computer is a very effective opportunity for NSHD to reduce manufacturing costs and GHG emissions without requiring special investment. Therefore, NSHD is deploying computer analysis to its gas gas production plants to reduce GHG emissions. The project was launched in FY17 and by FYE2022, this activity had been deployed to 9 plants in Japan, including Shinyo Sanso Co, Ltd, Shunan, Shin Sagami Sanso Co., Ltd, and Fuji Sanso Co.,Ltd, and 2 overseas plants, Leeden National Oxygen Ltd. and Nippon Sanso Ingasco, Inc. The cost of realizing the opportunity was only 16 million yen, assuming one researcher, 1,600 man-hours/year, and a R&D man-hour cost of 10,000 yen per man-hour. In addition, a project using new digital solution technology for further optimization is underway. As a result of the above, electricity consumption was reduced by 6,764 MWh/year. Using TEPCO's FYE2020 CO2 emission factor (0.441 kg-CO2/kWh), this result translates into a GHG emission reduction benefit of 2,983 t-CO2, meaning that the reduction in electricity consumption and associated GHG emissions were realized with only an input of labor costs. By further promoting this initiative, we will reduce NSHD's GHG emissions, aiming for an 18% reduction in GHG emissions compared to FYE2019 by FYE2025, which is our medium term management plan. Regarding water risks, the risk of flooding due to localized heavy rains caused by global warming or typhoons and storm surges caused by sea level rise is increasing, and the resulting natural disasters could have financial consequences such as plant closures of several days to several weeks. To reduce damages from these risks, we will promote disaster preparedness and use of insurance as a long-term initiative. In addition, NSHD's medium term management plan, which started from FYE2022, has launched the Sustainable Water Program (SWP), which is based on a water stress survey using Aqueduct, a water risk assessment tool developed by the World Resources Institute (WRI), to assess water stress at high-risk areas. The SWP identifies and continuously monitors gas production plants (ASU and HyCO plants located overseas) in high-risk areas through a water stress survey using Aqueduct, a water risk assessment tool developed by the World Resources Institute (WRI). We are working to reduce water withdrawal and water consumption at gas production plants identified as high-risk areas. Effective use of water resources is a must, and we aim to conserve water resources in our corporate activities through efficient use of water resources.

(5.4) In your organization’s financial accounting, do you identify spending/revenue that is aligned with your organization’s climate transition?

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

[Fixed row]

(5.5) 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
	Select from: ☑ Yes	*Research and development of products that contribute to environmental preservation*

[Fixed row]

(5.5.3) Provide details of your organization's investments in low-carbon R&D for chemical production activities over the last three years.

Row 2

(5.5.3.1) Technology area

Select from:

☑ Unable to disaggregate by technology area

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

27

(5.5.3.4) R&D investment figure in the reporting year (unit currency as selected in 1.2) (optional)

10420000

(5.5.3.5) Average % of total R&D investment planned over the next 5 years

27

(5.5.3.6) Explain how your R&D investment in this technology area is aligned with your climate commitments and/or climate transition plan

[Add row]
R&D investment for low-carbon products is calculated by aggregating R&D investment for CN-related themes identified by the Sustainability WG.

(5.9) What is the trend in your organization’s water-related capital expenditure (CAPEX) and operating expenditure (OPEX) for the reporting year, and the anticipated trend for the next reporting year?

(5.9.1) Water-related CAPEX (+/- % change)

245

(5.9.2) Anticipated forward trend for CAPEX (+/- % change)

549

(5.9.3) Water-related OPEX (+/- % change)

-4

(5.9.4) Anticipated forward trend for OPEX (+/- % change)

(5.9.5) Please explain

[Fixed row]
At Taiyo Nippon Sanso, two replacement projects for air separation units that use cooling water began in FYE2023, and in FYE2024, the replacement of one large air separation unit was completed to address wear and tear from prolonged use of the unit. This led to an increase in capital expenditure (CAPEX) from the previous year. In FYE2025, the replacement of one air separation unit for liquid production is scheduled to be completed due to the relocation of the manufacturing site. As for operating costs (OPEX), a subcommittee on “gas production plants” was established in the medium-term management plan, and a remote operation center (ROC) was established in April 2023 to realize “automatic operation of gas production plants” in FYE2031, mainly through the utilization and promotion of DX. In FYE2024, we will start remote operation of the production plant to achieve a production volume of 1,000 tons per year. In FYE2024, OPEX decreased due to lower production (equipment utilization). Although the cost of electricity for operations continues to rise due to the current social situation, we will continue to pursue the initiatives with the goal of improving productivity. We believe that higher productivity means more efficient operations, which will lead to lower operating costs.

(5.10) Does your organization use an internal price on environmental externalities?

	Use of internal pricing of environmental externalities	Environmental externality priced
	Select from: ☑ Yes	*Select all that apply* ☑ Carbon

[Fixed row]

(5.10.1) Provide details of your organization’s internal price on carbon.

Row 1

(5.10.1.1) Type of pricing scheme

Select from:
☑ Shadow price

(5.10.1.2) Objectives for implementing internal price

Select all that apply

☑ Incentivize consideration of climate-related issues in decision making

☑ Incentivize consideration of climate-related issues in risk assessment

(5.10.1.3) Factors considered when determining the price

Select all that apply

☑ Alignment with the price of a carbon tax

(5.10.1.4) Calculation methodology and assumptions made in determining the price

The internal carbon price is subject to change based on periodic checks of the external environment.

(5.10.1.5) Scopes covered

Select all that apply

☑ Scope 1

☑ Scope 2

(5.10.1.6) Pricing approach used – spatial variance

Select from:

☑ Uniform

(5.10.1.8) Pricing approach used – temporal variance

Select from:

☑ Evolutionary

(5.10.1.9) Indicate how you expect the price to change over time

We assume that regulations through the carbon tax will become stricter each year, and that the internal carbon price may increase in the future, since the price is determined in alignment with the carbon price.

(5.10.1.10) Minimum actual price used (currency per metric ton CO2e)

4500

(5.10.1.11) Maximum actual price used (currency per metric ton CO2e)

4500

(5.10.1.12) Business decision-making processes the internal price is applied to

Select all that apply

☑ Risk management

(5.10.1.13) Internal price is mandatory within business decision-making processes

Select from:

☑ Yes, for some decision-making processes, please specify

(5.10.1.14) % total emissions in the reporting year in selected scopes this internal price covers

100

(5.10.1.15) Pricing approach is monitored and evaluated to achieve objectives

Select from:

☑ Yes

(5.10.1.16) Details of how the pricing approach is monitored and evaluated to achieve your objectives

[Add row]

The introduction of shadow pricing falls outside the scope of investment calculations; however, we ensure that it is always included alongside investment planning projects and utilized as one of the indicators for investment decisions. The production of separated gases, which is NSHD's core business, consumes a substantial amount of electricity. Efforts to reduce this electricity consumption are crucial for the sustainability of our operations. From this perspective, transitioning to high-efficiency equipment during upgrades is an important consideration, alongside economic viability.

The implementation of internal carbon pricing (ICP) also enhances environmental awareness across various business units and group companies, promoting the upgrade to high-efficiency facilities. We identify the extent of new CO2 emissions or reductions contributed by new equipment investment activities within our domestic business units and group companies, as well as the potential financial impact.

We regularly review the external environment to adjust our internal carbon price as necessary.

(5.11) Do you engage with your value chain on environmental issues?

	Engaging with this stakeholder on environmental issues	Environmental issues covered
Suppliers	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change ☑ Water
Customers	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change
Investors and shareholders	*Select from:* ☑ No, but we plan to within the next two years	*Select all that apply*
Other value chain stakeholders	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change

[Fixed row]

(5.11.1) Does your organization assess and classify suppliers according to their dependencies and/or impacts on the environment?

Climate change

(5.11.1.1) Assessment of supplier dependencies and/or impacts on the environment

Select from:

☑ Yes, we assess the dependencies and/or impacts of our suppliers

(5.11.1.2) Criteria for assessing supplier dependencies and/or impacts on the environment

Select all that apply

☑ Contribution to supplier-related Scope 3 emissions

(5.11.1.3) % Tier 1 suppliers assessed

Select from:

☑ 1-25%

(5.11.1.4) Define a threshold for classifying suppliers as having substantive dependencies and/or impacts on the environment

We distribute a document and checklist of “Developing Cooperative Business Practices with Suppliers and Business Partners” to TAIYO NIPPON SANSO's electric materials-related suppliers. We are also conducting interviews with some of our suppliers.

(5.11.1.5) % Tier 1 suppliers meeting the thresholds for substantive dependencies and/or impacts on the environment

Select from:

☑ None

Water

(5.11.1.1) Assessment of supplier dependencies and/or impacts on the environment

Select from:

☑ Yes, we assess the dependencies and/or impacts of our suppliers

(5.11.1.2) Criteria for assessing supplier dependencies and/or impacts on the environment

Select all that apply

☑ Impact on water availability

(5.11.1.3) % Tier 1 suppliers assessed

Select from:

☑ 1-25%

(5.11.1.4) Define a threshold for classifying suppliers as having substantive dependencies and/or impacts on the environment

We distribute a document and checklist of “Developing Cooperative Business Practices with Suppliers and Business Partners” to TAIYO NIPPON SANSO's electric materials-related suppliers. We are also conducting interviews with some of our suppliers.

(5.11.1.5) % Tier 1 suppliers meeting the thresholds for substantive dependencies and/or impacts on the environment

Select from:

☑ None

[Fixed row]

(5.11.2) Does your organization prioritize which suppliers to engage with on environmental issues?

Climate change

(5.11.2.1) Supplier engagement prioritization on this environmental issue

Select from:

☑ Yes, we prioritize which suppliers to engage with on this environmental issue

(5.11.2.2) Criteria informing which suppliers are prioritized for engagement on this environmental issue

Select all that apply

☑ In line with the criteria used to classify suppliers as having substantive dependencies and/or impacts relating to climate change

(5.11.2.4) Please explain

For interviews, the five companies with the lowest scores on the check sheet will be used as the reference standard.

Water

(5.11.2.1) Supplier engagement prioritization on this environmental issue

Select from:

☑ Yes, we prioritize which suppliers to engage with on this environmental issue

(5.11.2.2) Criteria informing which suppliers are prioritized for engagement on this environmental issue

Select all that apply

☑ In line with the criteria used to classify suppliers as having substantive dependencies and/or impacts relating to water

(5.11.2.4) Please explain

[Fixed row]

For the interviews, the five companies with the lowest scores on the check sheet will be used as the reference standard.

(5.11.5) Do your suppliers have to meet environmental requirements as part of your organization's purchasing process?

	Suppliers have to meet specific environmental requirements related to this environmental issue as part of the purchasing process	Policy in place for addressing supplier non-compliance
Climate change	*Select from:* ☑ No, but we plan to introduce environmental requirements related to this environmental issue within the next two years	*Select from:* ☑ Yes, we have a policy in place for addressing non-compliance
Water	*Select from:* ☑ No, but we plan to introduce environmental requirements related to this environmental issue within the next two years	*Select from:* ☑ Yes, we have a policy in place for addressing non-compliance

[Fixed row]

(5.11.7) Provide further details of your organization's supplier engagement on environmental issues.

Climate change

(5.11.7.2) Action driven by supplier engagement

Select from:

☑ Adaptation to climate change

(5.11.7.3) Type and details of engagement

Capacity building

☑ Provide training, support and best practices on how to set science-based targets

(5.11.7.4) Upstream value chain coverage

Select all that apply

☑ Tier 1 suppliers

(5.11.7.5) % of tier 1 suppliers by procurement spend covered by engagement

Select from:

☑ 1-25%

(5.11.7.6) % of tier 1 supplier-related scope 3 emissions covered by engagement

Select from:

☑ 1-25%

(5.11.7.9) Describe the engagement and explain the effect of your engagement on the selected environmental action

[Indicators of Success] Interviews were conducted with the bottom five scoring companies on the Major Suppliers Checklist. Company-Specific Explanation of Impact of Climate Change Engagement Strategy with Customers] Taiyo Nippon Sanso Corporation (“TNSC”), an NSHD operating in Japan, has distributed a “Developing Cooperative Business Practices with Suppliers and Business Partners” guidebook to its major suppliers in the semiconductor industry. This is a group-specific initiative, with plans set and progress managed every year, and is regarded as an activity for “sustainable supply chains” in the future. In FYE2024, we aim to complete interviews (in a single year) with suppliers scoring below the bottom of the checklist, and we are working to engage suppliers not only through distribution of the checklist but also through two-way communication.

(5.11.7.11) Engagement is helping your tier 1 suppliers engage with their own suppliers on the selected action

Select from:

☑ Yes

Water

(5.11.7.2) Action driven by supplier engagement

Select from:

☑ Total water withdrawal volumes reduction

(5.11.7.3) Type and details of engagement

Innovation and collaboration

☑ Collaborate with suppliers on innovations to reduce environmental impacts in products and services

(5.11.7.4) Upstream value chain coverage

Select all that apply

☑ Tier 1 suppliers

(5.11.7.5) % of tier 1 suppliers by procurement spend covered by engagement

Select from:

☑ 1-25%

(5.11.7.7) % tier 1 suppliers with substantive impacts and/or dependencies related to this environmental issue covered by engagement

Select from:

☑ Unknown

(5.11.7.9) Describe the engagement and explain the effect of your engagement on the selected environmental action

[Indicators of Success] Interviews were conducted with the bottom five scoring companies on the Major Suppliers Checklist. Company-Specific Explanation of Impact of Climate Change Engagement Strategy with Customers] Taiyo Nippon Sanso Corporation (“TNSC”), an NSHD operating in Japan, has distributed a “Developing Cooperative Business Practices with Suppliers and Business Partners” guidebook to its major suppliers in the semiconductor industry. This is a group-specific initiative, with plans set and progress managed every year, and is regarded as an activity for “sustainable supply chains” in the future, In FYE2024, we aim to complete interviews (in a single year) with suppliers

scoring below the bottom of the checklist, and we are working to engage suppliers not only through distribution but also through two-way communication.

(5.11.7.11) Engagement is helping your tier 1 suppliers engage with their own suppliers on the selected action

Select from:
☑ Yes
[Add row]

(5.11.9) Provide details of any environmental engagement activity with other stakeholders in the value chain.

Climate change

(5.11.9.1) Type of stakeholder

Select from:
☑ Customers

(5.11.9.2) Type and details of engagement

Education/Information sharing
☑ Run an engagement campaign to educate stakeholders about the environmental impacts about your products, goods and/or services

(5.11.9.3) % of stakeholder type engaged

Select from:
☑ Less than 1%

(5.11.9.4) % stakeholder-associated scope 3 emissions

Select from:
☑ Unknown

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

The steel industry has traditionally been an energy-intensive market and a CO2-intensive industry, accounting for 9% of total CO2 emissions into the atmosphere. Therefore, technological innovation is needed to achieve carbon neutrality in the steel industry. Therefore, we are cooperating with our customers in the steel industry to innovate technologies to realize a low-carbon society. The scope of the collaboration is the steel industry customers of Nippon Gases Euro-Holding (NGE), NSHD's business in Europe. The steel industry accounts for 19% of NGE's sales.

(5.11.9.6) Effect of engagement and measures of success

A measure of the success of this engagement is the continued engagement in technology innovation and the introduction of cutting-edge technologies that can utilize green hydrogen in the steelmaking process. In FYE2024, NGE is working with its customers in the steel industry to innovate technologies to realize a low-carbon society, and with the help of partner companies, has introduced cutting-edge technologies that enable the use of green hydrogen in the steelmaking process at customer plants. This will be the world's first ladle preheater fueled solely by green hydrogen that achieves zero CO2 emissions. Based on the above, we consider this initiative to be a success. The steel industry has traditionally been an energy-intensive market and a CO2 emission-intensive industry, accounting for 9% of total CO2 emissions into the atmosphere, and we believe that the reduction effect of the engagement will be significant.

Climate change

(5.11.9.1) Type of stakeholder

Select from:

☑ Other value chain stakeholder, please specify :研究機関、戦略的パートナー企業

Research institutions and strategic partners

(5.11.9.2) Type and details of engagement

Innovation and collaboration

☑ Collaborate with stakeholders on innovations to reduce environmental impacts in products and services

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ Unknown

(5.11.9.4) % stakeholder-associated scope 3 emissions

Select from:

☑ Unknown

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

[Justification for Engaging with This Stakeholder]
NSHD aims to contribute to the reduction of greenhouse gas emissions in customer industries by providing environmentally friendly products and solutions. To achieve this, we are strengthening our efforts in technology development and enhancing collaboration with strategic partners to address any technological gaps. Specifically, we are advancing collaboration in ammonia technology.
[Scope of Collaboration]
NSHD is engaged in the development of technologies that enable the realization of carbon neutrality through multifaceted collaboration with various research institutions and companies. Taiyo Nippon Sanso, a subsidiary of NSHD, participated in the Cabinet Office-led national project known as the Strategic Innovation Promotion Program (SIP) from FYE2014 to FYE2019, focusing on the energy carrier "Ammonia Hydrogen Station Fundamental Technology." In this program, we conducted joint research with institutions such as Tokyo Institute of Technology, National Institute of Advanced Industrial Science and Technology, Hiroshima University, Toyota Industries Corporation, and Showa Denko K.K.
Furthermore, the company developed a technology for efficiently recovering high-purity hydrogen from ammonia decomposition gas for fuel cell vehicles as part of the SIP's commissioned research project on "Ammonia Hydrogen Station Fundamental Technology." Additionally, we were selected as a contractor for the New Energy and Industrial Technology Development Organization (NEDO) project "Fuel Ammonia Utilization and Production Technology Development / Combustion Technology Development of Fuel Ammonia in Industrial Furnaces." From FYE2022 to FYE2026, we are collaborating with AGC Inc., National Institute of Advanced Industrial Science and Technology, and Tohoku University to develop combustion technology for ammonia in industrial furnaces where the utilization technology for fuel ammonia is not yet established, contributing to decarbonization in the industrial sector.

(5.11.9.6) Effect of engagement and measures of success

[Add row]
NSHD is collaborating with various research institutes and companies to develop technologies that will enable the realization of carbon neutrality from multiple perspectives, and a measure of success in R&D engagement with external organizations is to conduct research that contributes to a decarbonized society and to demonstrate the use of ammonia as a fuel in glass melting furnaces. For the five-year period FYE2022 to FYE2026, we are conducting an engagement with AGC Corporation, the National Institute of Advanced Industrial Science and Technology, and Tohoku University to develop technology for burning ammonia in industrial furnaces, where technology for using fuel ammonia has not yet been established. We are also engaged in the development of new technology for the combustion of ammonia in industrial furnaces. In FYE2024, we conducted the world's first demonstration test using ammonia as fuel in a glass melting furnace. In this test, the NOx concentration in the exhaust gas was below the environmental standard while maintaining the temperature of the glass melting furnace, which indicates that this engagement was successful. The results of this engagement have been very positive. As a result of this engagement, we believe that we have not only achieved our own decarbonization by developing ammonia combustion technology in industrial furnaces, where the technology for utilizing fuel ammonia has not yet been established, but also contributed to the decarbonization of the industry and society as a whole.

	Environmental initiatives implemented due to CDP Supply Chain member engagement
	Select from: ☑ Yes

[Fixed row]

C6. Environmental Performance - Consolidation Approach

(6.1) Provide details on your chosen consolidation approach for the calculation of environmental performance data.

	Consolidation approach used	Provide the rationale for the choice of consolidation approach
Climate change	*Select from:* ☑ Financial control	*The scope includes consolidated subsidiaries.*
Water	*Select from:* ☑ Financial control	*The scope includes consolidated subsidiaries.*
Plastics	*Select from:* ☑ Financial control	*The scope includes consolidated subsidiaries.*
Biodiversity	*Select from:* ☑ Financial control	*The scope includes consolidated subsidiaries.*

[Fixed row]

C7. Environmental performance - Climate Change

(7.1) Is this your first year of reporting emissions data to CDP?

Select from:
☑ No

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

	Has there been a structural change?
	Select all that apply ☑ No

[Fixed row]

(7.1.2) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?

	Change(s) in methodology, boundary, and/or reporting year definition?
	Select all that apply ☑ No

[Fixed row]

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

Select all that apply

☑ Act on the Rational Use of Energy

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

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

☑ The Greenhouse Gas Protocol: Scope 2 Guidance

☑ The Greenhouse Gas Protocol: Corporate Value Chain (Scope 3) Standard

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

	Scope 2, location-based	Scope 2, market-based
	Select from: ☑ We are reporting a Scope 2, location-based figure	*Select from:* ☑ We are reporting a Scope 2, market-based figure

[Fixed row]

(7.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1, Scope 2 or Scope 3 emissions that are within your selected reporting boundary which are not included in your disclosure?

Select from:

☑ No

(7.5) Provide your base year and base year emissions.

Scope 1

(7.5.1) Base year end

03/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

1045500.0

(7.5.3) Methodological details

Emissions are mainly from HyCO projects in the U.S.

Scope 2 (location-based)

(7.5.1) Base year end

03/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

5640500.0

(7.5.3) Methodological details

Japan and Europe use market-based standards for calculations, while the United States and the Asia-Oceania region use location-based standards, and we do not calculate solely based on location-based standards.

Scope 2 (market-based)

(7.5.1) Base year end

03/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

5640500.0

(7.5.3) Methodological details

Japan and Europe use market-based standards for calculations, while the United States and the Asia-Oceania region use location-based standards, and we do not calculate solely based on location-based standards.

Scope 3 category 1: Purchased goods and services

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

883000.0

(7.5.3) Methodological details

Taiyo Nippon Sanso calculates the emissions by multiplying the purchase quantities (both volume and monetary data) of products or services by their respective emission factors. However, for transportation services and oxygen, nitrogen, and argon purchased from consolidated subsidiaries or affiliates, these are excluded from the calculation as they fall under Scope 1, 2, or Scope 3 Category 4 and 15. We refer to the GHG Protocol's "Corporate Value Chain (Scope 3) Accounting and Reporting Standard." The emission factors used are based on the emission factor database Ver. 3 published on the Green Value Chain Platform and information from IDEAv2 (for calculating greenhouse gas emissions in the supply chain).

Scope 3 category 2: Capital goods

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

46280.0

(7.5.3) Methodological details

We calculate the emissions for the reporting fiscal year by multiplying the amount of capital investment by the emission factor per unit price of capital goods. This follows the GHG Protocol's "Corporate Value Chain (Scope 3) Accounting and Reporting Standard." The emission factors used are sourced from the emission factor database Ver. 3 published on the Green Value Chain Platform and information from IDEAv2 (for calculating greenhouse gas emissions in the supply chain). We also include adjustments for consumption tax.

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

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

248000.0

(7.5.3) Methodological details

We refer to the GHG Protocol's "Corporate Value Chain (Scope 3) Accounting and Reporting Standard." The emission factors used are sourced from the emission factor database Ver. 3 published on the Green Value Chain Platform and information from IDEAv2 (for calculating greenhouse gas emissions in the supply chain).
For purchased fuels, the GHG emissions resulting from the extraction, production, and transportation of the fuels used in the production of purchased electricity and steam are calculated by multiplying the annual purchase quantity by the respective emission factor for each fuel. For electricity and steam, the emissions are calculated by multiplying the purchased quantity from external sources by the emission factor, which considers fuel procurement and transmission and distribution losses.

Scope 3 category 4: Upstream transportation and distribution

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

37000.0

(7.5.3) Methodological details

Taiyo Nippon Sanso and Nippon Liquefied Coal calculate their CO2 emissions as a specified shipper under the Act on Promotion of Global Warming Countermeasures by deducting the CO2 emissions from their logistics subsidiaries included in Scope 1 emissions. The CO2 emissions associated with the transportation and distribution of products

for which Taiyo Nippon Sanso and Nippon Liquefied Coal bear the transportation costs are included in this category.

Scope 3 category 5: Waste generated in operations

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

2000.0

(7.5.3) Methodological details

Emissions intensity is calculated by multiplying industrial waste emissions by emissions intensity as per waste type (including transportation phase), in reference with the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol. The emission intensity used information from the Emission Intensity Database Ver. 3 published by the Green Value Chain Platform in its calculation.

Scope 3 category 6: Business travel

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

1000.0

(7.5.3) Methodological details

Calculated by multiplying the number of employees of Taiyo Nippon Sanso and its consolidated subsidiaries in Japan by the emission intensity per employee (0.13 tonCO2/capita/year), referring to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol. Emission intensity was obtained from the Emission Intensity Database Ver. 3 and IDEAv2 (for supply chain GHG emissions calculation) published on the Green Value Chain Platform.

Scope 3 category 7: Employee commuting

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

3000.0

(7.5.3) Methodological details

TAIYO NIPPON SANSO employees: For train commuters, emissions intensity is calculated by multiplying the annual commuter pass allowance by the amount of transportation expense paid. For employees who commute to work by car, the number of working days per year and the emissions intensity (per person-km) of private passenger cars are multiplied by the round-trip commuting distance. Employees of domestic consolidated subsidiaries: calculated by multiplying the number of employees by the number of working days per year and emission intensity per working day, referring to the “Corporate Value Chain (Scope 3) Accounting and Reporting Standards” of the GHG Protocol. For emission intensity, we used information from the Emission Intensity Database Ver. 3 and IDEAv2 (for calculating supply chain GHG emissions), which are available on the Green Value Chain Platform.

Scope 3 category 8: Upstream leased assets

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

Since the costs to the leased assets are less than 0.1% of NSHD's revenues, the emissions in Category 8 are not relevant.

Scope 3 category 9: Downstream transportation and distribution

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

Most downstream transportation in Japan is performed by group companies and reported in category 4. Therefore, we see emissions in Category 9 as not relevant.

Scope 3 category 10: Processing of sold products

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

As stated in the guidance for the chemical sector issued by the WBCSD (Guidance on Accounting and Reporting Corporate GHG Emissions in the Chemical Sector Value Chain), because of the diversity of applications and customer structures, chemical companies have difficulty obtaining reliable figures so it is not necessary to report Scope 3 and Category 10 emissions. Further, the guidance states that Category 10 emissions are not relevant.

Scope 3 category 11: Use of sold products

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

2436000.0

(7.5.3) Methodological details

CO2 emissions from the use of propane gas (LPG), liquefied carbon dioxide gas, and dry ice sold to customers outside the Taiyo Nippon Sanso Group, and CO2 emissions from the use of electricity during the operation of air separation unit (for the amortization period in accounting) are recorded. We used (Scope 3) Accounting and Reporting Standards" of the GHG Protocol as a reference for our calculations. Emission intensity was calculated using information from the Emission Intensity Database Ver. 3 and IDEAv2 (for calculating supply chain GHG emissions) published on the Green Value Chain Platform.

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

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

NSHD's main products (oxygen, nitrogen, and argon) are not applicable as they only return to the atmosphere. Fuel and carbon dioxide and dry ice are answered in Category 11. In addition, high-pressure gas containers are rental items and are not disposed of at the customer's site. Industrial gases with high global warming potential are detoxified after use and are not released directly into the atmosphere. Furthermore, the air separation unit (plant) itself is not disposed of at the customer's site. Based on the above, the emissions of category 12 are not relevant because the emissions are sufficiently small compared to other categories.

Scope 3 category 13: Downstream leased assets

(7.5.1) Base year end

03/30/2024

(7.5.2) Base year emissions (metric tons CO2e)

46000

(7.5.3) Methodological details

CO2 emissions from the use of electricity during operation of air separation unit leased by Taiyo Nippon Sanso to its customers (electricity consumption is calculated by multiplying the rated power consumption by the average operating hours).

Scope 3 category 14: Franchises

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

Since we have no franchise business, we see Category 14 emissions as not relevant.

Scope 3 category 15: Investments

(7.5.1) Base year end

03/31/2021

(7.5.2) Base year emissions (metric tons CO2e)

687000.0

(7.5.3) Methodological details

[Fixed row]
GHG emissions of each of TAIYO NIPPON SANSO's seven major affiliated companies in Japan are multiplied by our shareholding ratio (as of the end of the fiscal year). The GHG emissions of the seven companies are based on actual results for the relevant period.

(7.6) What were your organization’s gross global Scope 1 emissions in metric tons CO2e?

	Gross global Scope 1 emissions (metric tons CO2e)	End date	Methodological details
Reporting year	*1062000*	*03/31/2024*	For Europe, DEFRA emission factors are used. Emission factors for all other countries are from Japan's Act on Promotion of Global Warming Countermeasures.
Past year 1	*1103000*	*03/31/2023*	We use Japan's Act on Promotion of Global Warming Countermeasures.

[Fixed row]

(7.7) What were your organization’s gross global Scope 2 emissions in metric tons CO2e?

Reporting year

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

3843000

(7.7.2) Gross global Scope 2, market-based emissions (metric tons CO2e) (if applicable)

4605000

(7.7.4) Methodological details

The location-based approach uses country-specific emission factors published by the IEA. The market-based approach utilizes emission factors by electricity suppliers for certain companies in Japan, Europe, and parts of Asia, while the United States, China, Taiwan, and Singapore use grid emission factors. For other regions, the country-specific emission factors published by the IEA are used.

Past year 1

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

3942000

(7.7.2) Gross global Scope 2, market-based emissions (metric tons CO2e) (if applicable)

4765000

(7.7.3) End date

03/31/2023

(7.7.4) Methodological details

[Fixed row]
The location-based approach uses country-specific emission factors published by the IEA. The market-based approach employs emission factors from electricity suppliers for certain companies in Japan, Europe, and parts of Asia, while the United States, China, Taiwan, and Singapore use grid emission factors. For other regions, country-specific emission factors published by the IEA are utilized.

(7.8) Account for your organization’s gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

(7.8.1) Evaluation status

Select from:
☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

916795

(7.8.3) Emissions calculation methodology

Select all that apply
☑ Spend-based method

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

0

(7.8.5) Please explain

Taiyo Nippon Sanso calculates the emissions by multiplying the purchase quantities (both volume and monetary data) of products and services by their respective emission intensities. However, transportation services and purchases of oxygen, nitrogen, and argon from consolidated subsidiaries or affiliates are excluded from the calculation, as they fall under Scope 1, 2, or Scope 3 categories 4 and 15. The methodology references the GHG Protocol's "Corporate Value Chain (Scope 3) Accounting and Reporting Standard." The emission intensities are derived from the emission intensity database Ver. 3 published on the Green Value Chain Platform and from IDEAv3.4, which is used for calculating supply chain greenhouse gas emissions.

Capital goods

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

53397

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Investment-specific method

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

0

(7.8.5) Please explain

The capital investment amount for the reporting year is calculated by multiplying it by the emission intensity per unit of capital goods. This approach references the GHG Protocol's "Corporate Value Chain (Scope 3) Accounting and Reporting Standard." The emission intensities are obtained from the emission intensity database Ver. 3 published on the Green Value Chain Platform and from IDEAv3.4, which is used for calculating supply chain greenhouse gas emissions.

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

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

236000

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Average data method

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

0

(7.8.5) Please explain

The methodology references the GHG Protocol's "Corporate Value Chain (Scope 3) Accounting and Reporting Standard." Emission intensities are derived from the emission intensity database Ver. 3 published on the Green Value Chain Platform and from IDEAv3.4, which is used for calculating supply chain greenhouse gas emissions.
The GHG emissions associated with the extraction, production, and transportation of fuels used for the production of purchased fuels, electricity, and steam are calculated as follows:

- **Fuels:** The annual purchase quantity is multiplied by the emission intensity specific to each type of fuel.
- **Electricity and Steam:** The emissions are calculated by multiplying the externally purchased quantity by the emission intensity that considers fuel procurement and transmission and distribution losses.

Upstream transportation and distribution

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

37000

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Fuel-based method

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

100

(7.8.5) Please explain

Taiyo Nippon Sanso and Nippon Liquid Gas calculate CO2 emissions reported as specific consignors under the Act on Promotion of Global Warming Countermeasures by deducting the CO2 emissions from logistics subsidiaries that are included in Scope 1 emissions. The CO2 emissions related to the transportation and distribution of products for which Taiyo Nippon Sanso and Nippon Liquid Gas bear the transportation costs are included in this category.

Waste generated in operations

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

1000

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Average data method

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

0

(7.8.5) Please explain

Emissions intensity is calculated by multiplying industrial waste emissions by emissions intensity by waste type (including transportation phase), referring to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol. The emission intensity used information from the Emission Intensity Database Ver. 3 published by the Green Value Chain Platform.

Business travel

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

776

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Average data method

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

0

(7.8.5) Please explain

Calculated by multiplying the number of employees of Taiyo Nippon Sanso and its consolidated subsidiaries in Japan by the emission intensity per employee (0.13 tonCO2/capita/year), referring to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol. The emission intensity used information from the Emission Intensity Database Ver. 3 and IDEAv3.4 (for calculating supply chain GHG emissions), which are available on the Green Value Chain Platform.

Employee commuting

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

2751

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Distance-based method

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

0

(7.8.5) Please explain

For Taiyo Nippon Sanso employees who commute by train, the CO2 emissions are calculated by multiplying the annual transportation allowance by the emission intensity per unit of transportation cost. For employees who commute by car, the emissions are calculated based on the round-trip commuting distance multiplied by the number of working days and the emission intensity for passenger vehicles (per person-kilometer).
For employees of domestic consolidated subsidiaries, emissions are calculated by multiplying the number of employees by the annual working days and the emission intensity per working day. This methodology references the GHG Protocol's "Corporate Value Chain (Scope 3) Accounting and Reporting Standard." The emission intensities are derived from the emission intensity database Ver. 3 published on the Green Value Chain Platform and from IDEAv3.4, which is used for calculating supply chain greenhouse gas emissions.

Upstream leased assets

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Since the costs to the leased assets are less than 0.1% of NSHD's revenues, the emissions in Category 8 are considered not relevant.

Downstream transportation and distribution

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Most downstream transportation in Japan is performed by group companies and reported in category 4. Therefore, we consider that emissions in Category 9 are not relevant.

Processing of sold products

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

As stated in the guidance for the chemical sector issued by the WBCSD (Guidance on Accounting and Reporting Corporate GHG Emissions in the Chemical Sector Value Chain), because of the diversity of applications and customer structures, chemical companies have difficulty obtaining reliable figures, so Scope 3 Category 10 emissions do not need to be reported. Therefore, in line with the guidance we see Category 10 emissions as not relevant.

Use of sold products

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

1390977

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Methodology for direct use phase emissions, please specify :

CO2 emissions from the use of propane gas (LPG), liquefied carbon dioxide gas, and dry ice sold to customers outside the Taiyo Nippon Sanso Group, and CO2 emissions from the use of electricity during operation of air separation unit (for the years of depreciation in accounting).

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

0

(7.8.5) Please explain

Taiyo Nippon Sanso accounts for CO2 emissions from the use of propane gas (LPG), liquefied carbon dioxide, and dry ice sold to customers outside the Taiyo Nippon Sanso Group, as well as CO2 emissions from electricity usage during the operation of air separation units (accounted for over the depreciation period). This methodology references the GHG Protocol's "Corporate Value Chain (Scope 3) Accounting and Reporting Standard." The emission intensities are derived from the emission intensity database Ver. 3 published on the Green Value Chain Platform and from IDEAv3.4, which is used for calculating supply chain greenhouse gas emissions.

End of life treatment of sold products

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

NSHD's main products (oxygen, nitrogen, and argon) are not applicable as they only return to the atmosphere. Fuel and carbon dioxide and dry ice are answered in Category 11. In addition, high-pressure gas containers are rental items and are not disposed of at the customer's site. Industrial gases with high global warming potential are detoxified after use and are not released directly into the atmosphere. Furthermore, the air separation unit (plant) itself is not disposed of at the customer's site. Based on the above, the emissions of category 12 are not relevant because the emissions are sufficiently small compared to other categories.

Downstream leased assets

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

46000

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Methodology for indirect use phase emissions, please specify **:**

We are disclosing the CO2 emissions from the use of electricity during the operation of air separation unit leased by Taiyo Nippon Sanso to its customers (electricity consumption is calculated by multiplying the rated electricity consumption by the average operating hours).

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

0

(7.8.5) Please explain

CO2 emissions from the use of electricity during the operation of air separation unit leased by Taiyo Nippon Sanso to its customers (electricity consumption is calculated by multiplying the rated electricity consumption by the average operating hours).

Franchises

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

As NSHD has no franchise business, Category 14 emissions are not relevant. There are no plans to develop a franchise business in our future business plan.

Investments

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

814000

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Supplier-specific method

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

100

(7.8.5) Please explain

[Fixed row]

The GHG emissions of each of Taiyo Nippon Sanso's nine main affiliates in Japan are multiplied by our shareholding ratio (as at the end of the reporting period). The GHG emissions of the nine companies are based on actual results for the relevant period.

(7.8.1) Disclose or restate your Scope 3 emissions data for previous years.

Past year 1

(7.8.1.1) End date

03/31/2023

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

911000

(7.8.1.3) Scope 3: Capital goods (metric tons CO2e)

67000

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

261000

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

36000

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

1000

(7.8.1.7) Scope 3: Business travel (metric tons CO2e)

1000

(7.8.1.8) Scope 3: Employee commuting (metric tons CO2e)

3000

(7.8.1.9) Scope 3: Upstream leased assets (metric tons CO2e)

0

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

0

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

0

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

1382000

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

0

(7.8.1.14) Scope 3: Downstream leased assets (metric tons CO2e)

0

(7.8.1.15) Scope 3: Franchises (metric tons CO2e)

0

(7.8.1.16) Scope 3: Investments (metric tons CO2e)

679000
[Fixed row]

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

	Verification/assurance status
Scope 1	*Select from:* ☑ Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	*Select from:* ☑ Third-party verification or assurance process in place

	Verification/assurance status
Scope 3	*Select from:* ☑ Third-party verification or assurance process in place

[Fixed row]

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

Row 1

(7.9.1.1) Verification or assurance cycle in place

Select from:
☑ Annual process

(7.9.1.2) Status in the current reporting year

Select from:
☑ Complete

(7.9.1.3) Type of verification or assurance

Select from:
☑ Limited assurance

(7.9.1.4) Attach the statement

Third party verification_20230401 – 20240331.pdf

(7.9.1.5) Page/section reference

p1

(7.9.1.6) Relevant standard

Select from:
☑ ISAE3000

(7.9.1.7) Proportion of reported emissions verified (%)

100
[Add row]

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

Row 1

(7.9.2.1) Scope 2 approach

Select from:
☑ Scope 2 market-based

(7.9.2.2) Verification or assurance cycle in place

Select from:
☑ Annual process

(7.9.2.3) Status in the current reporting year

Select from:
☑ Complete

(7.9.2.4) Type of verification or assurance

Select from:
☑ Limited assurance

(7.9.2.5) Attach the statement

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(7.9.2.6) Page/ section reference

p1

(7.9.2.7) Relevant standard

Select from:
☑ ISAE3000

(7.9.2.8) Proportion of reported emissions verified (%)

100
[Add row]

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

Row 1

(7.9.3.1) Scope 3 category

Select all that apply
☑ Scope 3: Investments
☑ Scope 3: Capital goods
☑ Scope 3: Downstream leased assets
☑ Scope 3: Purchased goods and services

☑ Scope 3: Business travel
☑ Scope 3: Employee commuting
☑ Scope 3: Use of sold products
☑ Scope 3: Waste generated in operations
☑ Scope 3: Upstream transportation and distribution
☑ Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)

(7.9.3.2) Verification or assurance cycle in place

Select from:
☑ Annual process

(7.9.3.3) Status in the current reporting year

Select from:
☑ Complete

(7.9.3.4) Type of verification or assurance

Select from:
☑ Limited assurance

(7.9.3.5) Attach the statement

Third party verification _20230401 – 20240331.pdf

(7.9.3.6) Page/section reference

p1

(7.9.3.7) Relevant standard

Select from:
☑ ISAE3000

(7.9.3.8) Proportion of reported emissions verified (%)

100
[Add row]

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

Select from:
☑ Decreased

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

Change in renewable energy consumption

(7.10.1.1) Change in emissions (metric tons CO2e)

2000

(7.10.1.2) Direction of change in emissions

Select from:
☑ Decreased

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

New renewable energy sources were installed in some establishments. The reduction rate was calculated as 2,000/5,664,000＝approximately 0.035%.

Other emissions reduction activities

(7.10.1.1) Change in emissions (metric tons CO2e)

50080

(7.10.1.2) Direction of change in emissions

Select from:
☑ Decreased

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Equipment replacement and other reduction activities. 50080/5,664,000= approximately 0.88%.

Change in output

(7.10.1.1) Change in emissions (metric tons CO2e)

161000

(7.10.1.2) Direction of change in emissions

Select from:
☑ Decreased

(7.10.1.3) Emissions value (percentage)

3

(7.10.1.4) Please explain calculation

ASU production in FYE2024 was 94% of the previous year's level. The decrease was calculated as 161,000/5,664,000= approximately 2.8%.

Change in boundary

(7.10.1.1) Change in emissions (metric tons CO2e)

44000

(7.10.1.2) Direction of change in emissions

Select from:

☑ Decreased

(7.10.1.4) Please explain calculation

Sakai Gas Centre Inc. was excluded from the boundary from FYE 2024 as it changed from a consolidated subsidiary to a joint operation. The decrease was calculated as 44,000/5,664,000= approximately 0.78%.

Unidentified

(7.10.1.1) Change in emissions (metric tons CO2e)

53080

(7.10.1.2) Direction of change in emissions

Select from:

☑ Increased

(7.10.1.3) Emissions value (percentage)

1

(7.10.1.4) Please explain calculation

53,080/5,664,000 = approximately 0.93％

[Fixed row]

(7.10.2) Are your emissions performance calculations in 7.10 and 7.10.1 based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Select from:
☑ Market-based

(7.12) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

Select from:
☑ No

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

Select from:
☑ Yes

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

Row 1

(7.15.1.1) Greenhouse gas

Select from:
☑ CO2

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

1049000

(7.15.1.3) GWP Reference

Select from:
☑ IPCC Fifth Assessment Report (AR5 – 100 year)

Row 2

(7.15.1.1) Greenhouse gas

Select from:
☑ CH4

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

2

(7.15.1.3) GWP Reference

Select from:
☑ IPCC Fifth Assessment Report (AR5 – 100 year)

Row 3

(7.15.1.1) Greenhouse gas

Select from:
☑ N2O

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

5723

(7.15.1.3) GWP Reference

Select from:
☑ IPCC Fifth Assessment Report (AR5 – 100 year)

Row 4

(7.15.1.1) Greenhouse gas

Select from:
☑ HFCs

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

1832

(7.15.1.3) GWP Reference

Select from:
☑ IPCC Fifth Assessment Report (AR5 – 100 year)

Row 5

(7.15.1.1) Greenhouse gas

Select from:
☑ PFCs

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

718

(7.15.1.3) GWP Reference

Select from:
☑ IPCC Fifth Assessment Report (AR5 – 100 year)

Row 6

(7.15.1.1) Greenhouse gas

Select from:
☑ SF6

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

2688

(7.15.1.3) GWP Reference

Select from:
☑ IPCC Fifth Assessment Report (AR5 – 100 year)

Row 7

(7.15.1.1) Greenhouse gas

Select from:
☑ NF3

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

0

(7.15.1.3) GWP Reference

Select from:
☑ IPCC Fifth Assessment Report (AR5 – 100 year)

Row 8

(7.15.1.1) Greenhouse gas

Select from:
☑ Other, please specify :CFC、HFO

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

2253

(7.15.1.3) GWP Reference

Select from:
☑ IPCC Fifth Assessment Report (AR5 – 100 year)
[Add row]

(7.16) Break down your total gross global Scope 1 and 2 emissions by country/area.

Australia

(7.16.1) Scope 1 emissions (metric tons CO2e)

10800

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

22900

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

22900

Belgium

(7.16.1) Scope 1 emissions (metric tons CO2e)

11700

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

55400

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

57600

Cambodia

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

0

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

0

Canada

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

0

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

0

China

(7.16.1) Scope 1 emissions (metric tons CO2e)

100

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

100200

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

93800

Denmark

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

400

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

0

France

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

100

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

200

Germany

(7.16.1) Scope 1 emissions (metric tons CO2e)

13400

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

352600

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

617800

India

(7.16.1) Scope 1 emissions (metric tons CO2e)

2200

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

30100

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

30100

Indonesia

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

0

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

0

Ireland

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

200

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

200

Italy

(7.16.1) Scope 1 emissions (metric tons CO2e)

25500

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

72400

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

56000

Japan

(7.16.1) Scope 1 emissions (metric tons CO2e)

31500

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

1424300

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

1841700

Malaysia

(7.16.1) Scope 1 emissions (metric tons CO2e)

200

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

9500

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

8800

Myanmar

(7.16.1) Scope 1 emissions (metric tons CO2e)

40

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

4600

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

4600

Netherlands

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

20500

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

25300

Norway

(7.16.1) Scope 1 emissions (metric tons CO2e)

30

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

700

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

58200

Peru

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

0

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

0

Philippines

(7.16.1) Scope 1 emissions (metric tons CO2e)

3900

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

144300

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

144300

Poland

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

0

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

0

Portugal

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

100

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

0

Republic of Korea

(7.16.1) Scope 1 emissions (metric tons CO2e)

300

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

4700

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

4700

Saudi Arabia

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

0

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

0

Singapore

(7.16.1) Scope 1 emissions (metric tons CO2e)

800

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

35200

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

37400

Spain

(7.16.1) Scope 1 emissions (metric tons CO2e)

2400

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

96100

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

112500

Sweden

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

500

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

1600

Taiwan, China

(7.16.1) Scope 1 emissions (metric tons CO2e)

200

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

13300

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

11600

Thailand

(7.16.1) Scope 1 emissions (metric tons CO2e)

4700

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

121400

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

121400

United Arab Emirates

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

0

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

0

United Kingdom of Great Britain and Northern Ireland

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

4800

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

6900

United States of America

(7.16.1) Scope 1 emissions (metric tons CO2e)

953900

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

1192300

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

1211300

Viet Nam

(7.16.1) Scope 1 emissions (metric tons CO2e)

100

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

136800

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

136800
[Fixed row]

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

Select all that apply
☑ By business division

(7.17.1) Break down your total gross global Scope 1 emissions by business division.

	Business division	Scope 1 emissions (metric ton CO2e)
Row 1	*HyCO (hydrogen and carbon monoxide production unit)*	*911000*
Row 2	*Transport*	*109000*
Row 3	*Liquefied carbon dioxide gas and dry ice production*	*14000*
Row 4	*ASU (air separation unit)*	*12000*
Row 5	*Other*	*16000*

[Add row]

(7.19) Break down your organization’s total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e
Chemicals production activities	*1062000*

[Fixed row]

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

Select all that apply

☑ By business division

(7.20.1) Break down your total gross global Scope 2 emissions by business division.

	Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Row 1	*ASU (air separation unit)*	*3589000*	*4299000*
Row 2	*Liquefied carbon dioxide gas and dry ice production*	*143000*	*180000*
Row 3	*HyCO (hydrogen and carbon monoxide production unit)*	*53000*	*65000*
Row 4	*High-pressure gas filling stations*	*6000*	*8000*
Row 5	*Other*	*52000*	*53000*

[Add row]

(7.21) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e
Chemicals production activities	*3843000*	*4605000*

[Fixed row]

(7.22) Break down your gross Scope 1 and Scope 2 emissions between your consolidated accounting group and other entities included in your response.

Consolidated accounting group

(7.22.1) Scope 1 emissions (metric tons CO2e)

1062000

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

3109000

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

3529000

(7.22.4) Please explain

Emissions of consolidated subsidiaries.

All other entities

(7.22.1) Scope 1 emissions (metric tons CO2e)

12

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

734000

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

1076000

(7.22.4) Please explain

Emissions of some companies in joint operations
[Fixed row]

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

Select from:
☑ Yes

(7.23.1) Break down your gross Scope 1 and Scope 2 emissions by subsidiary.

Row 1

(7.23.1.1) Subsidiary name

TAIYO NIPPON SANSO CORPORATION

(7.23.1.2) Primary activity

Select from:
☑ Other base chemicals

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

Select all that apply
☑ No unique identifier

(7.23.1.12) Scope 1 emissions (metric tons CO2e)

9900

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

56300

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

58100
[Add row]

(7.25) Disclose the percentage of your organization’s Scope 3, Category 1 emissions by purchased chemical feedstock.

Row 1

(7.25.1) Purchased feedstock

Select from:

☑ Other (please specify) **:**Propane gas + butane gas

(7.25.2) Percentage of Scope 3, Category 1 tCO2e from purchased feedstock

23

(7.25.3) Explain calculation methodology

The appropriate emission factor (0.8978 kg-CO2/kg) from the emission intensity database IDEAv3.4 was used.

Row 2

(7.25.1) Purchased feedstock

Select from:

☑ Other (please specify) **:**

Semiconductor material gases

(7.25.2) Percentage of Scope 3, Category 1 tCO2e from purchased feedstock

31

(7.25.3) Explain calculation methodology

[Add row]

The appropriate emission factor (11.38 tCO2/million yen) from the emission intensity database IDEAv3.4 was used.

(7.25.1) Disclose sales of products that are greenhouse gases.

Carbon dioxide (CO2)

(7.25.1.1) Sales, metric tons

181

Methane (CH4)

(7.25.1.1) Sales, metric tons

4

Nitrous oxide (N2O)

(7.25.1.1) Sales, metric tons

686

(7.25.1.2) Comment

Medical laughing gas not included

Hydrofluorocarbons (HFC)

(7.25.1.1) Sales, metric tons

42

Perfluorocarbons (PFC)

(7.25.1.1) Sales, metric tons

455

Sulphur hexafluoride (SF6)

(7.25.1.1) Sales, metric tons

78

Nitrogen trifluoride (NF3)

(7.25.1.1) Sales, metric tons

903
[Fixed row]

	Do you plan to develop your capabilities to allocate emissions to your customers in the future?
	Select from: ☑ No

[Fixed row]

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

Select from:
☑ More than 15% but less than or equal to 20%

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

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	*Select from:* ☑ Yes
Consumption of purchased or acquired electricity	*Select from:* ☑ Yes
Consumption of purchased or acquired heat	*Select from:* ☑ Yes
Consumption of purchased or acquired steam	*Select from:* ☑ Yes
Consumption of purchased or acquired cooling	*Select from:* ☑ Yes
Generation of electricity, heat, steam, or cooling	*Select from:* ☑ Yes

[Fixed row]

(7.30.1) Report your organization’s energy consumption totals (excluding feedstocks) in MWh.

Consumption of fuel (excluding feedstock)

(7.30.1.1) Heating value

Select from:

☑ HHV (higher heating value)

(7.30.1.2) MWh from renewable sources

0

(7.30.1.3) MWh from non-renewable sources

3095000

(7.30.1.4) Total (renewable and non-renewable) MWh

3095000

Consumption of purchased or acquired electricity

(7.30.1.1) Heating value

Select from:
☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

295000

(7.30.1.3) MWh from non-renewable sources

9755000

(7.30.1.4) Total (renewable and non-renewable) MWh

10050000

Consumption of purchased or acquired heat

(7.30.1.1) Heating value

Select from:
☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

0

(7.30.1.3) MWh from non-renewable sources

2000

(7.30.1.4) Total (renewable and non-renewable) MWh

2000

Consumption of purchased or acquired steam

(7.30.1.1) Heating value

Select from:
☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

0

(7.30.1.3) MWh from non-renewable sources

218000

(7.30.1.4) Total (renewable and non-renewable) MWh

218000

Consumption of purchased or acquired cooling

(7.30.1.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

0

(7.30.1.3) MWh from non-renewable sources

2000

(7.30.1.4) Total (renewable and non-renewable) MWh

2000

Consumption of self-generated non-fuel renewable energy

(7.30.1.1) Heating value

Select from:
☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

5000

(7.30.1.4) Total (renewable and non-renewable) MWh

5000

Total energy consumption

(7.30.1.1) Heating value

Select from:
☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

300000

(7.30.1.3) MWh from non-renewable sources

13072000

(7.30.1.4) Total (renewable and non-renewable) MWh

13372000
[Fixed row]

(7.30.3) Report your organization’s energy consumption totals (excluding feedstocks) for chemical production activities in MWh.

Consumption of fuel (excluding feedstocks)

(7.30.3.1) Heating value

Select from:
☑ HHV (higher heating value)

(7.30.3.2) MWh consumed from renewable sources inside chemical sector boundary

0

(7.30.3.3) MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

3095000

(7.30.3.4) MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

(7.30.3.5) Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

3095000

Consumption of purchased or acquired electricity

(7.30.3.2) MWh consumed from renewable sources inside chemical sector boundary

295000

(7.30.3.3) MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

9755000

(7.30.3.4) MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

(7.30.3.5) Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

10050000

Consumption of purchased or acquired heat

(7.30.3.2) MWh consumed from renewable sources inside chemical sector boundary

0

(7.30.3.3) MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

2000

(7.30.3.4) MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

(7.30.3.5) Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

2000

Consumption of purchased or acquired steam

(7.30.3.2) MWh consumed from renewable sources inside chemical sector boundary

0

(7.30.3.3) MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

218000

(7.30.3.4) MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

(7.30.3.5) Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

218000

Consumption of purchased or acquired cooling

(7.30.3.2) MWh consumed from renewable sources inside chemical sector boundary

0

(7.30.3.3) MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

2000

(7.30.3.4) MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

(7.30.3.5) Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

2000

Consumption of self-generated non-fuel renewable energy

(7.30.3.2) MWh consumed from renewable sources inside chemical sector boundary

5000

(7.30.3.5) Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

5000

Total energy consumption

(7.30.3.2) MWh consumed from renewable sources inside chemical sector boundary

300000

(7.30.3.3) MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

13072000

(7.30.3.4) MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

(7.30.3.5) Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

13372000
[Fixed row]

(7.30.6) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	*Select from:* ☑ No

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of heat	*Select from:* ☑ Yes
Consumption of fuel for the generation of steam	*Select from:* ☑ Yes
Consumption of fuel for the generation of cooling	*Select from:* ☑ Yes
Consumption of fuel for co-generation or tri-generation	*Select from:* ☑ No

[Fixed row]

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

Sustainable biomass

(7.30.7.1) Heating value

Select from:

☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.6) MWh fuel consumed for self-generation of cooling

0

Other biomass

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.6) MWh fuel consumed for self-generation of cooling

0

Other renewable fuels (e.g. renewable hydrogen)

(7.30.7.1) Heating value

Select from:

☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.6) MWh fuel consumed for self-generation of cooling

0

Coal

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.6) MWh fuel consumed for self-generation of cooling

0

Oil

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

441000

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.6) MWh fuel consumed for self-generation of cooling

0

(7.30.7.8) Comment

Fuel consumed for on-site generation of heat, steam and cold will be considered for disaggregation in the future.

Gas

(7.30.7.1) Heating value

Select from:

☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

936000

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.6) MWh fuel consumed for self-generation of cooling

0

(7.30.7.8) Comment

Fuel consumed for on-site generation of heat, steam and cold will be considered for disaggregation in the future.

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

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

1719000

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.6) MWh fuel consumed for self-generation of cooling

0

(7.30.7.8) Comment

Fuel consumed for on-site generation of heat, steam and cold will be considered for disaggregation in the future.

Total fuel

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

3096000

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.6) MWh fuel consumed for self-generation of cooling

0

(7.30.7.8) Comment

[Fixed row]
Fuel consumed for on-site generation of heat, steam and cold will be considered for disaggregation in the future.

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

Electricity

(7.30.9.1) Total Gross generation (MWh)

5000

(7.30.9.2) Generation that is consumed by the organization (MWh)

5000

(7.30.9.3) Gross generation from renewable sources (MWh)

5000

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

5000

Heat

(7.30.9.1) Total Gross generation (MWh)

0

(7.30.9.2) Generation that is consumed by the organization (MWh)

0

(7.30.9.3) Gross generation from renewable sources (MWh)

0

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

0

Steam

(7.30.9.1) Total Gross generation (MWh)

0

(7.30.9.2) Generation that is consumed by the organization (MWh)

0

(7.30.9.3) Gross generation from renewable sources (MWh)

0

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

0

Cooling

(7.30.9.1) Total Gross generation (MWh)

0

(7.30.9.2) Generation that is consumed by the organization (MWh)

0

(7.30.9.3) Gross generation from renewable sources (MWh)

0

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

0
[Fixed row]

(7.30.11) Provide details on electricity, heat, steam, and cooling your organization has generated and consumed for chemical production activities.

Electricity

(7.30.11.1) Total gross generation inside chemicals sector boundary (MWh)

5000

(7.30.11.2) Generation that is consumed inside chemicals sector boundary (MWh)

5000

(7.30.11.3) Generation from renewable sources inside chemical sector boundary (MWh)

5000

(7.30.11.4) Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)

5000

Heat

(7.30.11.1) Total gross generation inside chemicals sector boundary (MWh)

0

(7.30.11.2) Generation that is consumed inside chemicals sector boundary (MWh)

0

(7.30.11.3) Generation from renewable sources inside chemical sector boundary (MWh)

0

(7.30.11.4) Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)

0

Steam

(7.30.11.1) Total gross generation inside chemicals sector boundary (MWh)

0

(7.30.11.2) Generation that is consumed inside chemicals sector boundary (MWh)

0

(7.30.11.3) Generation from renewable sources inside chemical sector boundary (MWh)

0

(7.30.11.4) Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)

0

Cooling

(7.30.11.1) Total gross generation inside chemicals sector boundary (MWh)

0

(7.30.11.2) Generation that is consumed inside chemicals sector boundary (MWh)

0

(7.30.11.3) Generation from renewable sources inside chemical sector boundary (MWh)

0

(7.30.11.4) Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)

0
[Fixed row]

(7.30.14) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero or near-zero emission factor in the market-based Scope 2 figure reported in 7.7.

Row 1

(7.30.14.1) Country/area

Select from:
☑ Italy

(7.30.14.2) Sourcing method

Select from:
☑ Unbundled procurement of energy attribute certificates (EACs)

(7.30.14.3) Energy carrier

Select from:

☑ Electricity

(7.30.14.4) Low-carbon technology type

Select from:
☑ Solar

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

100400

(7.30.14.6) Tracking instrument used

Select from:
☑ GO

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

Select from:
☑ Italy

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

Select from:
☑ Yes

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

2020

Row 2

(7.30.14.1) Country/area

Select from:

☑ Germany

(7.30.14.2) Sourcing method

Select from:
☑ Unbundled procurement of energy attribute certificates (EACs)

(7.30.14.3) Energy carrier

Select from:
☑ Electricity

(7.30.14.4) Low-carbon technology type

Select from:
☑ Solar

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

56200

(7.30.14.6) Tracking instrument used

Select from:
☑ GO

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

Select from:
☑ Germany

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

Select from:
☑ Yes

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

2020

Row 3

(7.30.14.1) Country/area

Select from:
☑ United Kingdom of Great Britain and Northern Ireland

(7.30.14.2) Sourcing method

Select from:
☑ Unbundled procurement of energy attribute certificates (EACs)

(7.30.14.3) Energy carrier

Select from:
☑ Electricity

(7.30.14.4) Low-carbon technology type

Select from:
☑ Solar

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

9900

(7.30.14.6) Tracking instrument used

Select from:
☑ GO

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

Select from:

☑ United Kingdom of Great Britain and Northern Ireland

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

Select from:

☑ Yes

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

2020

Row 4

(7.30.14.1) Country/area

Select from:

☑ Denmark

(7.30.14.2) Sourcing method

Select from:

☑ Unbundled procurement of energy attribute certificates (EACs)

(7.30.14.3) Energy carrier

Select from:

☑ Electricity

(7.30.14.4) Low-carbon technology type

Select from:

☑ Solar

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

4200

(7.30.14.6) Tracking instrument used

Select from:
☑ GO

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

Select from:
☑ Denmark

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

Select from:
☑ Yes

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

2020

Row 5

(7.30.14.1) Country/area

Select from:
☑ Spain

(7.30.14.2) Sourcing method

Select from:
☑ Unbundled procurement of energy attribute certificates (EACs)

(7.30.14.3) Energy carrier

Select from:

☑ Electricity

(7.30.14.4) Low-carbon technology type

Select from:

☑ Solar

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

106000

(7.30.14.6) Tracking instrument used

Select from:

☑ GO

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

Select from:

☑ Spain

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

Select from:

☑ Yes

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

2020

Row 6

(7.30.14.1) Country/area

Select from:

☑ Portugal

(7.30.14.2) Sourcing method

Select from:

☑ Unbundled procurement of energy attribute certificates (EACs)

(7.30.14.3) Energy carrier

Select from:

☑ Electricity

(7.30.14.4) Low-carbon technology type

Select from:

☑ Solar

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

500

(7.30.14.6) Tracking instrument used

Select from:

☑ GO

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

Select from:

☑ Portugal

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

Select from:
☑ Yes

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

2020

Row 7

(7.30.14.1) Country/area

Select from:
☑ Belgium

(7.30.14.2) Sourcing method

Select from:
☑ Unbundled procurement of energy attribute certificates (EACs)

(7.30.14.3) Energy carrier

Select from:
☑ Electricity

(7.30.14.4) Low-carbon technology type

Select from:
☑ Solar

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

10000

(7.30.14.6) Tracking instrument used

Select from:
☑ GO

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

Select from:
☑ Belgium

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

Select from:
☑ Yes

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

2020

Row 8

(7.30.14.1) Country/area

Select from:
☑ United States of America

(7.30.14.2) Sourcing method

Select from:
☑ Physical power purchase agreement (physical PPA) with a grid-connected generator

(7.30.14.3) Energy carrier

Select from:
☑ Electricity

(7.30.14.4) Low-carbon technology type

Select from:
☑ Solar

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

7000

(7.30.14.6) Tracking instrument used

Select from:
☑ Contract

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

Select from:
☑ United States of America

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

Select from:
☑ Yes

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

2022

Row 9

(7.30.14.1) Country/area

Select from:
☑ Japan

(7.30.14.2) Sourcing method

Select from:

☑ Purchase from an on-site installation owned by a third party (on-site PPA)

(7.30.14.3) Energy carrier

Select from:

☑ Electricity

(7.30.14.4) Low-carbon technology type

Select from:

☑ Solar

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

270

(7.30.14.6) Tracking instrument used

Select from:

☑ Contract

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

Select from:

☑ Japan

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

Select from:

☑ Yes

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

2022

Row 10

(7.30.14.1) Country/area

Select from:

☑ Japan

(7.30.14.2) Sourcing method

Select from:

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

(7.30.14.3) Energy carrier

Select from:

☑ Electricity

(7.30.14.4) Low-carbon technology type

Select from:

☑ Solar

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

30

(7.30.14.6) Tracking instrument used

Select from:

☑ Contract

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

Select from:

☑ Japan

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

Select from:

☑ Yes

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

2023
[Add row]

(7.30.16) Provide a breakdown by country/area of your electricity/heat/steam/cooling consumption in the reporting year.

Australia

(7.30.16.1) Consumption of purchased electricity (MWh)

36235

(7.30.16.2) Consumption of self-generated electricity (MWh)

936

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

37171.00

Belgium

(7.30.16.1) Consumption of purchased electricity (MWh)

408666

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

303

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

408969.00

Cambodia

(7.30.16.1) Consumption of purchased electricity (MWh)

0

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

0.00

Canada

(7.30.16.1) Consumption of purchased electricity (MWh)

0

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

0.00

China

(7.30.16.1) Consumption of purchased electricity (MWh)

164415

(7.30.16.2) Consumption of self-generated electricity (MWh)

7

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

164422.00

Denmark

(7.30.16.1) Consumption of purchased electricity (MWh)

3763

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

3763.00

France

(7.30.16.1) Consumption of purchased electricity (MWh)

1341

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

1341.00

Germany

(7.30.16.1) Consumption of purchased electricity (MWh)

1010227

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

10303

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

1020530.00

India

(7.30.16.1) Consumption of purchased electricity (MWh)

42253

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

42253.00

Indonesia

(7.30.16.1) Consumption of purchased electricity (MWh)

0

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

0.00

Ireland

(7.30.16.1) Consumption of purchased electricity (MWh)

391

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

391.00

Italy

(7.30.16.1) Consumption of purchased electricity (MWh)

253762

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

5092

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

258854.00

Japan

(7.30.16.1) Consumption of purchased electricity (MWh)

3168829

(7.30.16.2) Consumption of self-generated electricity (MWh)

91

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

157935

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

3326855.00

Malaysia

(7.30.16.1) Consumption of purchased electricity (MWh)

15905

(7.30.16.2) Consumption of self-generated electricity (MWh)

587

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

16492.00

Myanmar

(7.30.16.1) Consumption of purchased electricity (MWh)

10352

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

10352.00

Netherlands

(7.30.16.1) Consumption of purchased electricity (MWh)

37906

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

48231

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

86137.00

Norway

(7.30.16.1) Consumption of purchased electricity (MWh)

115794

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

115794.00

Peru

(7.30.16.1) Consumption of purchased electricity (MWh)

0

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

0.00

Philippines

(7.30.16.1) Consumption of purchased electricity (MWh)

204038

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

204038.00

Poland

(7.30.16.1) Consumption of purchased electricity (MWh)

0

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

0.00

Portugal

(7.30.16.1) Consumption of purchased electricity (MWh)

403

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

403.00

Republic of Korea

(7.30.16.1) Consumption of purchased electricity (MWh)

10287

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

10287.00

Saudi Arabi

(7.30.16.1) Consumption of purchased electricity (MWh)

0

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

0.00

Singapore

(7.30.16.1) Consumption of purchased electricity (MWh)

92259

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

92259.00

Spain

(7.30.16.1) Consumption of purchased electricity (MWh)

641322

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

641322.00

Sweden

(7.30.16.1) Consumption of purchased electricity (MWh)

40979

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

40979.00

Taiwan, China

(7.30.16.1) Consumption of purchased electricity (MWh)

23431

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

23431.00

Thailand

(7.30.16.1) Consumption of purchased electricity (MWh)

260722

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

260722.00

United Arab Emirates

(7.30.16.1) Consumption of purchased electricity (MWh)

0

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

0.00

United Kingdom of Great Britain and Northern Ireland

(7.30.16.1) Consumption of purchased electricity (MWh)

23512

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

23512.00

United States of America

(7.30.16.1) Consumption of purchased electricity (MWh)

3241616

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

3241616.00

Viet Nam

(7.30.16.1) Consumption of purchased electricity (MWh)

246956

(7.30.16.2) Consumption of self-generated electricity (MWh)

3539

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

0

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

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

250495.00
[Fixed row]

(7.31) Does your organization consume fuels as feedstocks for chemical production activities?

Select from:
☑ Yes

(7.31.1) Disclose details on your organization’s consumption of feedstocks for chemical production activities.

Row 1

(7.31.1.1) Fuels used as feedstocks

Select from:
☑ Natural gas

(7.31.1.2) Total consumption

368000

(7.31.1.3) Total consumption unit

Select from:
☑ thousand cubic metres

(7.31.1.4) Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit

1.96

(7.31.1.5) Heating value of feedstock, MWh per consumption unit

10.67

(7.31.1.6) Heating value

Select from:
☑ HHV
[Add row]

(7.31.2) State the percentage, by mass, of primary resource from which your chemical feedstocks derive.

Oil

(7.31.2.1) Percentage of total chemical feedstock (%)

0

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:
☑ No change

Natural Gas

(7.31.2.1) Percentage of total chemical feedstock (%)

100

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:
☑ No change

Coal

(7.31.2.1) Percentage of total chemical feedstock (%)

0

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:
☑ No change

Biomass

(7.31.2.1) Percentage of total chemical feedstock (%)

0

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:
☑ No change

Waste (non-biomass)

(7.31.2.1) Percentage of total chemical feedstock (%)

0

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:
☑ No change

Fossil fuel (where coal, gas, oil cannot be distinguished)

(7.31.2.1) Percentage of total chemical feedstock (%)

0

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:
☑ No change

Unknown source or unable to disaggregate

(7.31.2.1) Percentage of total chemical feedstock (%)

0

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:
☑ No change
[Fixed row]

(7.39) Provide details on your organization’s chemical products.

Row 1

(7.39.1) Output product

Select from:
☑ Other, please specify nitrogen gas

(7.39.2) Production (metric tons)

7948000

(7.39.3) Capacity (metric tons)

7948000

(7.39.4) Direct emissions intensity (metric tons CO2e per metric ton of product)

0

(7.39.5) Electricity intensity (MWh per metric ton of product)

0.244

(7.39.6) Steam intensity (MWh per metric ton of product)

0

(7.39.7) Steam/ heat recovered (MWh per metric ton of product)

0

(7.39.8) Comment

Direct emissions (Scope 1) and steam use in the production of nitrogen gas by air separation units (ASUs) are very low and are therefore answered as '0'.

Row 2

(7.39.1) Output product

Select from:

☑ Other, please specify **:**

liquid nitrogen

(7.39.2) Production (metric tons)

3938000

(7.39.3) Capacity (metric tons)

3938000

(7.39.4) Direct emissions intensity (metric tons CO2e per metric ton of product)

0

(7.39.5) Electricity intensity (MWh per metric ton of product)

0.799

(7.39.6) Steam intensity (MWh per metric ton of product)

0

(7.39.7) Steam/ heat recovered (MWh per metric ton of product)

0

(7.39.8) Comment

Direct emissions (Scope 1) and steam use in the production of nitrogen gas by air separation units (ASUs) are very low and are therefore answered as ‘0’.

Row 3

(7.39.1) Output product

Select from:
☑ Other, please specify oxygen gas

(7.39.2) Production (metric tons)

7106000

(7.39.3) Capacity (metric tons)

7106000

(7.39.4) Direct emissions intensity (metric tons CO2e per metric ton of product)

0

(7.39.5) Electricity intensity (MWh per metric ton of product)

0.235

(7.39.6) Steam intensity (MWh per metric ton of product)

0

(7.39.7) Steam/ heat recovered (MWh per metric ton of product)

0

(7.39.8) Comment

Direct emissions (Scope 1) and steam use in the production of nitrogen gas by air separation units (ASUs) are very low and are therefore answered as ‘0’.

Row 4

(7.39.1) Output product

Select from:
☑ Other, please specify **:** liquid oxygen

(7.39.2) Production (metric tons)

1715000

(7.39.3) Capacity (metric tons)

1715000

(7.39.4) Direct emissions intensity (metric tons CO2e per metric ton of product)

0

(7.39.5) Electricity intensity (MWh per metric ton of product)

0.77

(7.39.6) Steam intensity (MWh per metric ton of product)

0

(7.39.7) Steam/ heat recovered (MWh per metric ton of product)

0

(7.39.8) Comment

Direct emissions (Scope 1) and steam use in the production of nitrogen gas by air separation units (ASUs) are very low and are therefore answered as ‘0’.

Row 5

(7.39.1) Output product

Select from:
☑ Other, please specify Gas argon + liquid argon

(7.39.2) Production (metric tons)

400000

(7.39.3) Capacity (metric tons)

400000

(7.39.4) Direct emissions intensity (metric tons CO2e per metric ton of product)

0

(7.39.5) Electricity intensity (MWh per metric ton of product)

1.122

(7.39.6) Steam intensity (MWh per metric ton of product)

0

(7.39.7) Steam/ heat recovered (MWh per metric ton of product)

0

(7.39.8) Comment

[Add row]
Direct emissions (Scope 1) and steam use in the production of nitrogen gas by air separation units (ASUs) are very low and are therefore answered as ‘0’.

(7.45) 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.

Row 1

(7.45.1) Intensity figure

0

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

5667000

(7.45.3) Metric denominator

Select from:
☑ unit total revenue

(7.45.4) Metric denominator: Unit total

1255081000000

(7.45.5) Scope 2 figure used

Select from:
☑ Market-based

(7.45.6) % change from previous year

9

(7.45.7) Direction of change

Select from:

☑ Decreased

(7.45.8) Reasons for change

Select all that apply

☑ Other emissions reduction activities

☑ Change in revenue

(7.45.9) Please explain

[Add row]

For the fiscal year ending 2024, sales amounted to 1,255,081 million yen, compared to 1,186,683 million yen for the fiscal year ending 2023. The increase in revenue was due to rising sales prices driven by global energy cost increases, inflation, and the depreciation of the yen. As a result, despite the increase in sales, which is the denominator for emission intensity calculations, the emission intensity itself decreased.

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

	Description
Row 1	*Select from:* ☑ Waste

[Add row]

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

Select all that apply

☑ Absolute target

(7.53.1) Provide details of your absolute emissions targets and progress made against those targets.

Row 1

(7.53.1.1) Target reference number

Select from:

☑ Abs 1

(7.53.1.2) Is this a science-based target?

Select from:

☑ No, but we anticipate setting one in the next two years

(7.53.1.5) Date target was set

03/31/2021

(7.53.1.6) Target coverage

Select from:

☑ Organization-wide

(7.53.1.7) Greenhouse gases covered by target

Select all that apply

☑ Methane (CH4)

☑ Nitrous oxide (N2O)

☑ Carbon dioxide (CO2)

☑ Perfluorocarbons (PFCs)

☑ Hydrofluorocarbons (HFCs)

☑ Sulphur hexafluoride (SF6)

☑ Nitrogen trifluoride (NF3)

(7.53.1.8) Scopes

Select all that apply

☑ Scope 1

☑ Scope 2

(7.53.1.9) Scope 2 accounting method

Select from:

☑ Market-based

(7.53.1.11) End date of base year

03/31/2018

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

1045000

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

5643000

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

0.000

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

6688000.000

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

100

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

100

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

100

(7.53.1.54) End date of target

03/31/2031

(7.53.1.55) Targeted reduction from base year (%)

32

(7.53.1.56) Total emissions at end date of target covered by target in all selected Scopes (metric tons CO2e)

4547840.000

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

1062000

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

4605000

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

5667000.000

(7.53.1.78) Land-related emissions covered by target

Select from:

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

(7.53.1.79) % of target achieved relative to base year

47.71

(7.53.1.80) Target status in reporting year

Select from:

☑ Underway

(7.53.1.82) Explain target coverage and identify any exclusions

This goal is company-wide and covers nearly 100% of Scope 1 and Scope 2 emissions. However, there are some exclusions due to difficulties in obtaining data from certain small-scale locations, such as overseas business sites.

(7.53.1.83) Target objective

NSHD is committed to strengthening sustainability management and contributing as The Gas Professionals to both the development of a globally sustainable society and the resolution of global issues. Under the direction of top management, NSHD will harmonize its business activities with the environment and strive to reduce its environmental impact, thereby contributing to a resource-recycling society through technology and contributing to the development of a sustainable society. To realize our environmental policy, we have set our own Scope 1 and 2 reduction targets.

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

The majority of NSHD's GHG emissions stem from electricity use, with approximately 83% classified as Scope 2 emissions. Looking ahead, we anticipate a reduction in the CO2 emission factor as the electricity grid becomes greener. For instance, the IEA has projected that the global CO2 emission factor for the fiscal year ending 2030 could be roughly halved compared to the fiscal year ending 2019.
To reduce electricity consumption, NSHD is investing in a state-of-the-art air separation unit, enhancing computerized operations and improving energy efficiency. Additionally, we are implementing strategies to lower GHG emissions by partnering with power suppliers that have lower emission factors and purchasing green power certificates.
In the HyCO business, we aim to reduce Scope 1 emissions by integrating Carbon Capture, Utilization, and Storage (CCUS) technology and exploring the transition to blue hydrogen. While our current hydrogen production relies on natural gas, we are also committed to promoting the use of biofuels in the future to further decrease GHG emissions in Scope 1.

(7.53.1.85) Target derived using a sectoral decarbonization approach

Select from:

☑ No

Row 2

(7.53.1.1) Target reference number

Select from:
☑ Abs 2

(7.53.1.2) Is this a science-based target?

Select from:
☑ No, but we anticipate setting one in the next two years

(7.53.1.5) Date target was set

03/31/2021

(7.53.1.6) Target coverage

Select from:
☑ Organization-wide

(7.53.1.7) Greenhouse gases covered by target

Select all that apply
☑ Methane (CH4)
☑ Nitrous oxide (N2O)
☑ Carbon dioxide (CO2)
☑ Perfluorocarbons (PFCs)
☑ Hydrofluorocarbons (HFCs)
☑ Sulphur hexafluoride (SF6)
☑ Nitrogen trifluoride (NF3)

(7.53.1.8) Scopes

Select all that apply

☑ Scope 1

☑ Scope 2

(7.53.1.9) Scope 2 accounting method

Select from:

☑ Market-based

(7.53.1.11) End date of base year

03/31/2018

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

1045000

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

5643000

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

0.000

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

6688000.000

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

100.0

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

100.0

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

100.0

(7.53.1.54) End date of target

03/31/2051

(7.53.1.55) Targeted reduction from base year (%)

100

(7.53.1.56) Total emissions at end date of target covered by target in all selected Scopes (metric tons CO2e)

0.000

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

1062000

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

4605000

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

5667000.000

(7.53.1.78) Land-related emissions covered by target

Select from:

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

(7.53.1.79) % of target achieved relative to base year

15.27

(7.53.1.80) Target status in reporting year

Select from:

☑ Underway

(7.53.1.82) Explain target coverage and identify any exclusions

This target is company-wide and covers almost 100% of Scope 1 and 2 emissions. However, there are some minor exclusions for some smaller sites, such as overseas sales offices, due to difficulties in obtaining data.

(7.53.1.83) Target objective

NSHD is committed to strengthening sustainability management and contributing as The Gas Professionals to both the development of a globally sustainable society and the resolution of global issues. Under the direction of top management, NSHD will harmonize its business activities with the environment and strive to reduce its environmental impact, thereby contributing to a resource-recycling society through technology and contributing to the development of a sustainable society. To realize our environmental policy, we have set our own Scope 1 and 2 reduction targets.

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

The majority of NSHD's GHG emissions originate from electricity use, with approximately 83% classified as Scope 2 emissions. Looking ahead, we expect the CO2 emission factor to decline as electricity generation becomes greener. For instance, the IEA has projected that the global CO2 emission factor for the fiscal year ending 2030 could be about half of what it was in the fiscal year ending 2019.
To reduce electricity consumption, NSHD is investing in state-of-the-art air separation units, optimizing computerized operations and enhancing energy efficiency. We are also implementing initiatives to lower GHG emissions, such as partnering with power suppliers that have lower emission factors and purchasing green power certificates.
In our HyCO business, we aim to reduce Scope 1 emissions by integrating Carbon Capture, Utilization, and Storage (CCUS) technology and exploring the transition to blue hydrogen. While our current hydrogen production relies primarily on natural gas, we are committed to promoting the use of biofuels in the future as part of our efforts to further reduce GHG emissions in Scope 1.

(7.53.1.85) Target derived using a sectoral decarbonization approach

Select from:

☑ No

[Add row]

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

Select all that apply

☑ Net-zero targets

(7.54.3) Provide details of your net-zero target(s).

Row 1

(7.54.3.1) Target reference number

Select from:

☑ NZ1

(7.54.3.2) Date target was set

03/31/2021

(7.54.3.3) Target Coverage

Select from:

☑ Organization-wide

(7.54.3.4) Targets linked to this net zero target

Select all that apply

☑ Abs1

(7.54.3.5) End date of target for achieving net zero

03/31/2051

(7.54.3.6) Is this a science-based target?

Select from:

☑ No, but we anticipate setting one in the next two years

(7.54.3.8) Scopes

Select all that apply

☑ Scope 1

☑ Scope 2

(7.54.3.9) Greenhouse gases covered by target

Select all that apply

☑ Methane (CH4)

☑ Nitrous oxide (N2O)

☑ Carbon dioxide (CO2)

☑ Perfluorocarbons (PFCs)

☑ Hydrofluorocarbons (HFCs)

☑ Sulphur hexafluoride (SF6)

☑ Nitrogen trifluoride (NF3)

(7.54.3.10) Explain target coverage and identify any exclusions

NSHD has a Carbon Neutral Program I as part of its sustainability program outlined in the medium term management plan. The base year is set as FYE 2019, which includes the European gas business, and the U.S. HyCO business added to the NSHD Group, with a target of achieving carbon neutrality by FYE 2051.

(7.54.3.11) Target objective

NSHD will strengthen its sustainability management and contribute to the development of a globally sustainable society and solutions to global issues as The Gas Professionals. Under the direction of top management, we will strive to harmonize our business activities with the environment and reduce our environmental impact, thereby contributing to a resource-recycling society through technology and contributing to the development of a sustainable society. To realize our environmental policy, we have set our own Scope 1 and 2 reduction targets.

(7.54.3.12) Do you intend to neutralize any residual emissions with permanent carbon removals at the end of the target?

Select from:

☑ Yes

(7.54.3.13) Do you plan to mitigate emissions beyond your value chain?

Select from:
☑ No, but we plan to within the next two years

(7.54.3.14) Do you intend to purchase and cancel carbon credits for neutralization and/or beyond value chain mitigation?

Select all that apply
☑ Yes, we plan to purchase and cancel carbon credits for neutralization at the end of the target

(7.54.3.15) Planned milestones and/or near-term investments for neutralization at the end of the target

The goal is to achieve net zero Scope 1 and 2 emissions by 2050, with an intermediate goal of a 32% reduction by 2030.

(7.54.3.17) Target status in reporting year

Select from:
☑ Underway

(7.54.3.19) Process for reviewing target

[Add row]
Progress in reducing Scope 1 and 2 emissions is monitored annually, and targets are reviewed as necessary.

(7.55) 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.

Select from:
☑ Yes

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	*4*	*`Numeric input*
To be implemented	*1*	*11004*
Implementation commenced	*0*	*0*
Implemented	*2*	*50080*
Not to be implemented	*0*	*`Numeric input*

[Fixed row]

(7.55.2) Provide details on the initiatives implemented in the reporting year in the table below.

Row 1

(7.55.2.1) Initiative category & Initiative type

Energy efficiency in production processes

☑ Process optimization

(7.55.2.2) Estimated annual CO2e savings (metric tonnes CO2e)

433

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

Select all that apply

☑ Scope 2 (location-based)

(7.55.2.4) Voluntary/Mandatory

Select from:
☑ Voluntary

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

22000000

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

51600000

(7.55.2.7) Payback period

Select from:
☑ 4-10 years

(7.55.2.8) Estimated lifetime of the initiative

Select from:
☑ 6-10 years

Row 2

(7.55.2.1) Initiative category & Initiative type

Energy efficiency in production processes
☑ Machine/equipment replacement

(7.55.2.2) Estimated annual CO2e savings (metric tonnes CO2e)

49647

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

Select all that apply
☑ Scope 2 (market-based)

(7.55.2.4) Voluntary/Mandatory

Select from:
☑ Voluntary

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

2548000000

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

6913000000

(7.55.2.7) Payback period

Select from:
☑ 4-10 years

(7.55.2.8) Estimated lifetime of the initiative

Select from:
☑ 21-30 years
[Add row]

(7.55.3) What methods do you use to drive investment in emissions reduction activities?

Row 1

(7.55.3.1) Method

Select from:

☑ Dedicated budget for energy efficiency

(7.55.3.2) Comment

[Add row]
Various energy saving projects at gas production plants are reviewed to determine which projects to invest in in terms of business environment and cost-effectiveness.

	Requesting member
Row 1	*Select from:*

[Add row]

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

Select from:
☑ Yes

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

Row 1

(7.74.1.1) Level of aggregation

Select from:
☑ Product or service

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

Select from:

☑ No taxonomy used to classify product(s) or service(s) as low carbon

(7.74.1.3) Type of product(s) or service(s)

Other

☑ Other, please specify **:**

MG Shield, an alternative to SF6, a high GWP gas (23,500)

(7.74.1.4) Description of product(s) or service(s)

Molten magnesium oxidizes, i.e., ignites and burns, when exposed to air. Therefore, a protective gas is necessary to shut off the molten metal surface from the air during the melting process; NSHD sells MG Shield as a molten magnesium alloy cover gas, which is an alternative to SF6, a high GWP gas (23,500), contributing to the reduction of SF6 release into the atmosphere.

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

Select from:

☑ Yes

(7.74.1.6) Methodology used to calculate avoided emissions

Select from:

☑ Other, please specify **:** Guidelines for Quantifying Contribution to Greenhouse Gas Reduction (Ministry of Economy, Trade and Industry)

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

Select from:

☑ Use stage

(7.74.1.8) Functional unit used

MG Shield gas cylinder 1 pc.

(7.74.1.9) Reference product/service or baseline scenario used

The baseline scenario is based on the use of SF6 as a cover gas for molten magnesium.

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

Select from:

☑ Use stage

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

311

(7.74.1.12) Explain your calculation of avoided emissions, including any assumptions

The use of three MG Shield units results in the avoided emissions equivalent to one SF6 cylinder. Considering the prevention of atmospheric release from a 50 kg SF6 cylinder (with 10.25 kg of residual gas) that has a GWP of 23,500, it is estimated that one MG Shield gas cylinder can avoid emissions of 311 tons of CO2.

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

0.01

Row 2

(7.74.1.1) Level of aggregation

Select from:

☑ Product or service

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

Select from:

☑ No taxonomy used to classify product(s) or service(s) as low carbon

(7.74.1.3) Type of product(s) or service(s)

Power

☑ Other, please specify

SCOPE-JET, an oxygen burner

(7.74.1.4) Description of product(s) or service(s)

NSHD will contribute to the electric furnace industry by replacing part of the electric heating with NSHD's oxygen burner: SCOPE-JET, thereby helping users reduce power consumption. The oxygen combustion also contributes to fuel reduction.

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

Select from:

☑ Yes

(7.74.1.6) Methodology used to calculate avoided emissions

Select from:

☑ Other, please specify **:**

Guidelines for Quantifying Contribution to Greenhouse Gas Reduction (Ministry of Economy, Trade and Industry)

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

Select from:

☑ Use stage

(7.74.1.8) Functional unit used

One electric furnace with SCOPE-JET

(7.74.1.9) Reference product/service or baseline scenario used

A normal electric furnace without SCOPE-JET was used as the baseline scenario.

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

Select from:

☑ Use stage

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

31800

(7.74.1.12) Explain your calculation of avoided emissions, including any assumptions

The energy-saving effect per Nm^3 of injected oxygen is calculated based on measured values from two electric arc furnace manufacturers that have implemented SCOPE-JET. The reduction effect is determined by multiplying the crude steel production volume by the amount of oxygen consumed by SCOPE-JET, the electricity reduction per unit of oxygen, and the CO2 emission factor for electricity.

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

0.01
[Add row]

(7.79) Has your organization canceled any project-based carbon credits within the reporting year?

Select from:
☑ No

C9. Environmental performance - Water security

(9.1) Are there any exclusions from your disclosure of water-related data?

Select from:
☑ No

(9.2) Across all your operations, what proportion of the following water aspects are regularly measured and monitored?

Water withdrawals – total volumes

(9.2.1) % of sites/facilities/operations

Select from:
☑ 100%

(9.2.2) Frequency of measurement

Select from:
☑ Continuously

(9.2.3) Method of measurement

The total water withdrawal is usually measured using a flow meter.

(9.2.4) Please explain

Considering the importance of water in NSHD's product manufacturing process (cooling), water intake is measured at all production sites, including the use of automatic measuring devices (flow meters). The monthly results are reported to the management of each production site and are used to evaluate whether water resources are being used effectively (KPI).
Water withdrawals - volumes by source

Water withdrawals – volumes by source

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Continuously

(9.2.3) Method of measurement

Water withdrawals by source are usually measured using flow meters.

(9.2.4) Please explain

Considering the importance of water in NSHD's product manufacturing process (cooling), all production sites measure water intake by source, including the use of automatic measuring devices (flow meters). Monthly total results are reported to the management of each production site and are used to evaluate whether water resources are being used effectively (KPI). At production sites where a large amount of groundwater and surface water is used, monitoring is also conducted to evaluate the efficiency of water intake.

Water withdrawals quality

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Continuously

(9.2.3) Method of measurement

Water quality (turbidity, pH, etc.) is measured at all production sites that use surface water and groundwater by installing automatic measuring devices and conducting sampling

at the time of water intake.

(9.2.4) Please explain

Water quality at the time of intake is measured once a month at all production sites to confirm that there are no abnormal values. The quality of water supplied by third parties is usually stable, and NSHD does not directly measure the quality of the water. The quality of water taken from third-party sources is monitored regularly, usually once a month, using data obtained from the supplier. The supplier constantly and automatically measures the quality of the water it supplies. If any abnormalities in water quality are detected, NSHD must be notified immediately. Including these indirect measurements, NSHD monitors the quality of the water at the time of intake on a virtually constant basis.

Water discharges – total volumes

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Because wastewater is not continuous at NSHD's sites, it is difficult to measure the volume of wastewater using measuring instruments such as flow meters. Therefore, the water intake and wastewater discharge are measured on a test basis at a typical gas production plant, and the following formula is used to calculate the wastewater discharge based on the measurement results. (Formula) Effluent: Water intake (always measured)/3

(9.2.4) Please explain

At NSHD, 87% of the total wastewater volume is measured. The characteristic of the sites that are not measured is that their wastewater is routed through pits (ditches) rather than pipelines. After consulting with an external organization, a formula is applied to the establishments that do not measure their wastewater discharge to calculate the amount of wastewater discharged. The frequency of calculation of these effluent volumes is about once a month. On the other hand, for Europe, HyCO, and others, wastewater discharge is measured automatically. Although wastewater is not continuous, it is constantly monitored because it is easily measured by flow meters. The data, along with data from establishments that do not measure wastewater volume, are compiled about once a month.

Water discharges – volumes by destination

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Because wastewater is not continuous at NSHD's sites, it is difficult to measure the volume of wastewater using measuring instruments such as flow meters. Therefore, we test-measure water intake and effluent discharge at typical gas production plants and use the following formula from the measurement results to calculate the volume of effluent discharged. The following formula is used to calculate the volume of wastewater discharged. Calculation Formula Volume of effluent (1/3) Amount of water intake (always measured)

(9.2.4) Please explain

At NSHD, 87% of the total wastewater volume is measured. The characteristic of the sites that are not measured is that the drainage is routed through pits (ditches) rather than pipelines. After consulting with an external organization, a formula is applied to the establishments that do not measure their wastewater discharge to calculate the amount of wastewater discharged. The frequency of calculation of these effluent volumes is about once a month. On the other hand, for Europe, HyCO, and others, wastewater discharge is measured automatically. Although wastewater is not continuous, it is constantly monitored because it is easily measured by flow meters. The data, along with data from offices that do not measure wastewater volume, is compiled on a monthly basis. Wastewater discharges are monitored by destination, such as sewers, rivers, lakes, marshes, groundwater, and oceans.
Water discharges - volumes by treatment method

Water discharges – volumes by treatment method

(9.2.1) % of sites/facilities/operations

Select from:

☑ Not relevant

(9.2.4) Please explain

NSHD does not require wastewater treatment facilities as there are no processes that could lead to freshwater pollution during operations. Therefore, we have

determined that there is no relevance to wastewater treatment methods. All freshwater drawn by NSHD is supplied to cooling towers and then used as a coolant in heat exchangers, which are components of rotating machinery. After heat exchange, the warmed freshwater returns to the cooling tower, where it is cooled to a temperature equivalent to that of the surrounding atmosphere.
The cooled freshwater is then pumped back to the heat exchangers and returns to the cooling tower along the same route. This creates a closed-loop system, with minimal factors that could degrade water quality. In the cooling tower, some of the high-temperature freshwater that returns from the heat exchangers evaporates, and due to the influence of large fans, some water is aerosolized and released into the atmosphere. Consequently, the volume of cooling water gradually decreases as it circulates through the cooling tower.
Given that we do not anticipate significant changes in our business operations, we expect no changes in our current water intake and discharge conditions.

y – by standard effluent parameters

(9.2.1) % of sites/facilities/operations

Select from:
☑ 100%

(9.2.2) Frequency of measurement

Select from:
☑ Monthly

(9.2.3) Method of measurement

When discharging into the public sewage system, freshwater inside the cooling tower is sampled and analyzed by a third-party organization at least once/month as well.

(9.2.4) Please explain

NSHD measures the composition of freshwater in the water tanks inside the cooling towers where the water is used, rather than in the drains. Because NSHD has a freshwater circulation system, freshwater is discharged from the cooling tower intermittently and is not always discharged. Because of the high temperature of the freshwater returned from the heat exchangers in the cooling tower, some of the freshwater evaporates and is released into the atmosphere as droplets under the influence of the large air propellers installed in the cooling tower. For this reason, we believe that it is appropriate to control the water quality of the wastewater inside the water tank. We sample freshwater inside the cooling tower at least once a month, and monitor COD, nitrogen, and other regulated substances that are subject to monitoring for discharges to public waters by requesting analysis from a third-party organization. More than 75% of NSHD sites discharge directly into public sewage systems.

Water discharge quality – emissions to water (nitrates, phosphates, pesticides, and/or other priority substances)

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Hazardous substances such as nitrates and phosphates are sampled and the water quality is monitored at the time of discharge by a third-party organization.

(9.2.4) Please explain

NSHD measures the composition of fresh water in the water tank inside the cooling tower where the water is used, rather than in the drainage outlet. Because the freshwater is circulating in the NSHD system, the water from the cooling tower is intermittent and is not always discharged. Because of the high temperature of the freshwater returned from the heat exchangers in the cooling tower, some of the freshwater evaporates and is released into the atmosphere as droplets under the influence of the large air propellers installed in the cooling tower. For this reason, we believe that it is appropriate to control the water quality of the wastewater inside the water tank. We sample freshwater inside the cooling tower at least once a month, and monitor COD, nitrogen, and other regulated substances that are subject to monitoring for discharges to public waters by requesting analysis from a third-party organization. More than 75% of NSHD sites discharge directly into public sewage systems.

Water discharge quality – temperature

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Continuously

(9.2.3) Method of measurement

The water temperature is constantly monitored using an automatic measuring device installed in the water tank inside the cooling tower.

(9.2.4) Please explain

NSHD measures the composition of freshwater in the water tank inside the cooling tower where the water is used, rather than in the drainage outlet. Because the freshwater is circulating in the NSHD system, the water is discharged from the cooling tower intermittently and is not always discharged. Because of the high temperature of the freshwater returned from the heat exchangers in the cooling tower, some of the freshwater evaporates and is released into the atmosphere as droplets under the influence of the large air propellers installed in the cooling tower. For this reason, we believe that it is appropriate to control the water quality of the wastewater inside the water tank. We sample freshwater inside the cooling tower at least once a month, and monitor COD, nitrogen, and other regulated substances that are subject to monitoring for discharges to public waters by requesting analysis from a third-party organization. More than 75% of NSHD sites discharge directly into public sewage systems.

Water consumption – total volume

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Because wastewater is not continuous at NSHD's sites, it is difficult to measure the volume of wastewater using measuring instruments such as flow meters. Therefore, the water intake and wastewater discharge are measured on a test basis at a typical gas production plant, and the following formula is used to calculate the wastewater discharge based on the measurement results. Formula Wastewater (1/3) Water intake (constantly measured) Total water consumption is determined from the total water intake and total wastewater discharge.

(9.2.4) Please explain

NSHD, in consultation with an outside agency, applies the formula to establishments that do not measure their wastewater discharge and calculates their wastewater discharges. The frequency of calculation of these wastewater amounts is about once a month. On the other hand, for Europe, HyCO, etc., wastewater discharge is measured automatically. Although wastewater is not continuous, it is constantly monitored because it is easily measured by flow meters. The data, along with data from offices that do not measure wastewater volume, is compiled on a monthly basis. Usage is tabulated monthly to identify any anomalies. In cases where wastewater is small and not constantly measured (e.g., offices), water withdrawal and wastewater discharge are assumed to be the same and water consumption is set to zero. Total water consumption is determined from the total water withdrawal and total wastewater discharge.

Water recycled/reused

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

We conveniently apply monitoring from two key perspectives:

1. Comparison of Historical Water Intake to Actual Water Intake
2. Monitoring the Concentration Levels of Recycled Water

By evaluating these two aspects, we can assess whether the volume of recycled water is being maintained within an acceptable range.

(9.2.4) Please explain

Since the only use of freshwater at NSHD is in the cooling water circulation system, which is centered on the cooling towers, all the sites that make up this cooling water circulation system fall under the category of sites where freshwater recycling is performed. Although efforts are underway to improve water withdrawal efficiency, it is extremely difficult to accurately determine the amount of water recycled. This is since it is extremely difficult to quantitatively determine the evaporation and splash volumes, which fluctuate with temperature. Water withdrawals and enrichment are compiled monthly. In the future, we believe it is important to optimize the type and frequency of injected chemicals in order to slow the degree of increase in concentration, and to promote activities that will result in a decrease in water withdrawal.

The provision of fully-functioning, safely managed WASH services to all workers

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Yearly

(9.2.3) Method of measurement

Safe water and sanitation facilities are in place at all locations at all times. Safe water and sanitation conditions are reported annually through employee health care monitoring.

(9.2.4) Please explain

[Fixed row]

Safe water is supplied by a third party. The supplier constantly monitors the safety of its water. If there is a problem with the data being monitored by the third party, the supplier is to immediately shut off the water supply and report the results to NSHD.

(9.2.2) What are the total volumes of water withdrawn, discharged, and consumed across all your operations, how do they compare to the previous reporting year, and how are they forecasted to change?

Total withdrawals

(9.2.2.1) Volume (megaliters/year)

40879

(9.2.2.2) Comparison with previous reporting year

Select from:

☑ Lower

(9.2.2.3) Primary reason for comparison with previous reporting year

Select from:

☑ Other, please specify **:**

Due to the change in status of some companies from consolidated subsidiaries to joint operations.

(9.2.2.4) Five-year forecast

Select from:

☑ Lower

(9.2.2.5) Primary reason for forecast

Select from:

☑ Increase/decrease in efficiency

(9.2.2.6) Please explain

NSHD applies the following criteria to evaluate changes in water volume. [Evaluation Criteria (compared to previous year)] ±5% about the same ±5-10% more/less ±10% or more significantly more/substantially less Total water withdrawal in FYE2023 (previous year) was 44,988 ML, while in FYE2024 it was 40,879 ML. We rate this as “less” because it represents a decrease of approximately 9% in water withdrawal from the previous fiscal year. The main reason for the change is that the company with the smaller water intensity changed from our consolidated subsidiary to a joint operation and is no longer in the boundary. We expect the total water withdrawal to decrease in the future due to continued water conservation activities.

Total discharges

(9.2.2.1) Volume (megaliters/year)

27674

(9.2.2.2) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.2.3) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.2.4) Five-year forecast

Select from:

☑ About the same

(9.2.2.5) Primary reason for forecast

Select from:

☑ Increase/decrease in efficiency

(9.2.2.6) Please explain

NSHD applies the following criteria to evaluate changes in water volume.

[Evaluation Criteria (compared to the previous year)] ±5% about the same ±5-10% more/less ±10% or more significantly more/substantially less

Total water discharge in FYE2023 (the previous year) was 28,530 ML, while in FYE2024 it was 27,674 ML. Since this is a decrease of approximately 3% in water consumption from the previous year, we rate this as “about the same”. The main reason for the change is that the company with the smaller water intensity changed from our consolidated subsidiary to a joint operation, and although it was out of the boundary, the original wastewater volume was smaller. Since no major changes in water use are expected in NSHD's operations, we expect that the total volume of wastewater will remain about the same as before.

Total consumption

(9.2.2.1) Volume (megaliters/year)

13205

(9.2.2.2) Comparison with previous reporting year

Select from:

☑ Much lower

(9.2.2.3) Primary reason for comparison with previous reporting year

Select from:

☑ Other, please specify **:**

Due to the change in status of some companies from consolidated subsidiaries to joint operations.

(9.2.2.4) Five-year forecast

Select from:

☑ About the same

(9.2.2.5) Primary reason for forecast

Select from:

☑ Increase/decrease in efficiency

(9.2.2.6) Please explain

[Fixed row]

NSHD evaluates changes in water consumption by applying the following criteria

[Evaluation Criteria (compared to previous year)] ±5% about the same ±5-10% more/less ±10% or more significantly more/substantially less

Total water consumption in FYE2023 (previous year) was 16,458ML, while in FYE2024 it was 13,205ML. This is a decrease of approximately 20% in water consumption from the previous fiscal year, and is therefore rated as “significantly less”. The main reason for the change is that the company with the smaller water intensity changed from our consolidated subsidiary to a joint operation and was removed from the boundary, resulting in a decrease in water withdrawal and wastewater discharge. Since no major changes in water use are expected in NSHD's operations, we expect that total water consumption will remain about the same in the future.

(9.2.4) Indicate whether water is withdrawn from areas with water stress, provide the volume, how it compares with the previous reporting year, and how it is forecasted to change.

(9.2.4.1) Withdrawals are from areas with water stress

Select from:

☑ Yes

(9.2.4.2) Volume withdrawn from areas with water stress (megaliters)

5720

(9.2.4.3) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.4.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.4.5) Five-year forecast

Select from:

☑ Lower

(9.2.4.6) Primary reason for forecast

Select from:

☑ Increase/decrease in efficiency

(9.2.4.7) % of total withdrawals that are withdrawn from areas with water stress

13.99

(9.2.4.8) Identification tool

Select all that apply

☑ WRI Aqueduct

(9.2.4.9) Please explain

[Fixed row]

NSHD conducts water stress surveys at all of its production sites in order to understand the risks associated with the use of water resources and to more effectively address water risks. Aqueduct, a water risk assessment tool developed by the World Resources Institute (WRI), is used to assess water stress at 121 sites, which are classified into five risk levels (low, low-medium, medium, medium-high, and high). While no sites in Japan were identified as having “medium-high” or “high” water stress, a total of 21 sites overseas were identified. These 21 sites account for approximately 14% of NSHD's total water intake. Based on a comprehensive assessment of the scale of water intake, our own assessment of the Physical Risks Quantity, and the results of interviews with local residents, we have concluded that there is no significant risk of water stress at NSHD.

(9.2.7) Provide total water withdrawal data by source.

Fresh surface water, including rainwater, water from wetlands, rivers, and lakes

(9.2.7.1) Relevance

Select from:

☑ Relevant

(9.2.7.2) Volume (megaliters/year)

25047

(9.2.7.3) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.7.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in efficiency

(9.2.7.5) Please explain

NSHD applies the following criteria to evaluate changes in water quantity.

[Evaluation Criteria (compared to the previous year)] ±5% about the same ±5-10% more/less ±10% or more significantly more/substantially less

The amount of water withdrawn from surface water in FYE2023 (the previous year) was 24,440 ML, while in FYE2024 the amount was 25,047 ML. This is an increase of approximately 2% in water volume over the previous fiscal year and is therefore rated as “about the same”. The main reason for the change is that business activities were conducted at the same level as in the previous year.

Brackish surface water/Seawater

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

NSHD has not used seawater or brackish water in its operations since FYE 2020. NSHD has not used seawater or brackish water in its operations since FYE2020 and does not plan to use seawater or brackish water in the future.

Groundwater – renewable

(9.2.7.1) Relevance

Select from:

☑ Relevant

(9.2.7.2) Volume (megaliters/year)

2377

(9.2.7.3) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.7.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in efficiency

(9.2.7.5) Please explain

NSHD evaluates changes in water quantity by applying the following criteria

[Evaluation Criteria (compared to previous year)] ±5% about the same ±5-10% more/less ±10% or more significantly more/substantially less

The amount of water withdrawn from renewable groundwater in FYE2023 (the previous year) was 2,366 ML, while in FYE2024 the amount was 2,377 ML. This is an increase of approximately 0.4% over the previous fiscal year and is therefore assessed as “about the same” water volume. The main reason for the change is that business activities were conducted at the same level as in the previous year.

Groundwater – non-renewable

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

NSHD does not rely on non-renewable water resources from the standpoint of efficient use of limited water resources. Although we have not conducted a separate study from renewable groundwater, we do not currently use non-renewable groundwater and do not believe we should in the future.

Produced/Entrained water

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

At NSHD, the use of stable quality freshwater is essential for reliable operations, which is why we do not utilize connate water or contaminated water. We believe this practice should continue in the future. However, in the event of a drought, there may be a possibility that facilities located in water-stressed regions could temporarily use connate or contaminated water. This consideration arises from the need to effectively manage water resources in light of potential future freshwater scarcity.

Third party sources

(9.2.7.1) Relevance

Select from:

☑ Relevant

(9.2.7.2) Volume (megaliters/year)

13455

(9.2.7.3) Comparison with previous reporting year

Select from:

☑ Much lower

(9.2.7.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.7.5) Please explain

[Fixed row]

NSHD applies the following criteria to evaluate changes in water quantity.

[Evaluation Criteria (compared to previous year)] ±5% about the same ±5-10% more/less ±10% or more significantly more/substantially less

In FYE2023 (previous year), water withdrawal from third-party sources was 18,182 ML, while in FYE2024 it was 13,455 ML. This is a decrease of approximately 26% from the previous year's water consumption, which we rate as “significantly less”. The main reason for the change is that the company with the smaller water intensity changed from our consolidated subsidiary to a joint operation and is no longer in the boundary.

(9.2.8) Provide total water discharge data by destination.

Fresh surface water

(9.2.8.1) Relevance

Select from:

☑ Relevant

(9.2.8.2) Volume (megaliters/year)

22544

(9.2.8.3) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.8.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in efficiency

(9.2.8.5) Please explain

[Evaluation Criteria (compared to previous year)] ±5% about the same ±5-10% more/less ±10% or more significantly more/substantially less

The amount of freshwater discharged to surface water in FYE2023 (previous year) was 21,815 ML, while in FYE2024 it was 22,544 ML. This is an increase of approximately 3% over the previous year's volume of water and is therefore rated as “about the same”. The main reason for the change is that business activities were conducted at the same level as in the previous fiscal year.

Brackish surface water/seawater

(9.2.8.1) Relevance

Select from:

☑ Relevant

(9.2.8.2) Volume (megaliters/year)

62

(9.2.8.3) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.8.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in efficiency

(9.2.8.5) Please explain

[Rating Criteria (compared to previous year)] ±5% about the same ±5-10% more/less ±10% or more significantly more/ much less

The volume of brackish and seawater discharged to surface water in FYE2023 (the previous year) was 64 ML, while in FYE2024 it was 62 ML. Since this is a decrease of approximately 3% in water volume from the previous fiscal year, we rate this as “about the same”. The main reason for the change is that business activities were

conducted at the same level as in the previous fiscal year.

Groundwater

(9.2.8.1) Relevance

Select from:

☑ Relevant

(9.2.8.2) Volume (megaliters/year)

138

(9.2.8.3) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.8.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in efficiency

(9.2.8.5) Please explain

[Evaluation Criteria (compared to previous year)] ±5% about the same ±5-10% more/less ±10% or more significantly more/ much less

The amount of water discharged to groundwater in FYE2023 (previous year) was 134ML, while in FYE2024 it was 138ML. Since this is an increase of approximately 3% over the previous fiscal year, we rate the volume of water discharged as “about the same”. The main reason for the change is that business activities were conducted at the same level as in the previous year.

Third-party destinations

(9.2.8.1) Relevance

Select from:

☑ Relevant

(9.2.8.2) Volume (megaliters/year)

4930

(9.2.8.3) Comparison with previous reporting year

Select from:

☑ Much lower

(9.2.8.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.8.5) Please explain

[Fixed row]

[Evaluation Criteria (compared to the previous year)] ±5% about the same ±5-10% more/less ±10% or more significantly more/substantially less

The amount of water discharged to groundwater in FYE2023 (the previous year) was 6,516 ML, while in FYE2024 the amount was 4,930 ML. Since this is a decrease of approximately 24% from the previous fiscal year, we rate this as “significantly less,” primarily due to the fact that JFE Sanso Center and Sakai Gas Center changed from our consolidated subsidiaries to joint operations and are no longer in the boundary.

(9.2.10) Provide details of your organization’s emissions of nitrates, phosphates, pesticides, and other priority substances to water in the reporting year.

(9.2.10.1) Emissions to water in the reporting year (metric tons)

3

(9.2.10.2) Categories of substances included

Select all that apply

☑ Nitrates

☑ Phosphates

(9.2.10.4) Please explain

[Fixed row]

NSHD believes that the impact on water quality at the wastewater sites is minimal, as the water is mainly withdrawn for indirect cooling. In this context, there are five sites, among which some subsidiaries and Taiyo Nippon Sanso, are subject to concentration restrictions for hazardous substances (phosphate, nitrate, etc.) contained in wastewater. The total emissions of hazardous substances across these five sites are less than one ton each. Nitrate nitrogen is decomposed into nitrogen and oxygen by anaerobic microorganisms and discharged to seawater after being adjusted to a pH of 5.8-8.6.

(9.3) In your direct operations and upstream value chain, what is the number of facilities where you have identified substantive water-related dependencies, impacts, risks, and opportunities?

Direct operations

(9.3.1) Identification of facilities in the value chain stage

Select from:

☑ No, we have assessed this value chain stage but did not identify any facilities with water-related dependencies, impacts, risks, and opportunities

(9.3.4) Please explain

The water risk assessment at NSHD uses WRI Aqueduct to evaluate flood risk and water stress and analyze water-related risks in NSHD's value chain. Each risk is evaluated in terms of probability of occurrence, financial impact, and impact on business strategy, and is considered to be a risk with significant impact on NSHD's operations if it has a financial impact of 2,000 million yen or more. Based on our examination of NSHD's value chain in accordance with the above criteria, we have determined that there are no significant water risks at this time. In addition, given that the raw material for industrial gas is air, we do not believe that NSHD faces any water risk in the procurement of raw materials.

Upstream value chain

(9.3.1) Identification of facilities in the value chain stage

Select from:

☑ No, we have assessed this value chain stage but did not identify any facilities with water-related dependencies, impacts, risks, and opportunities

(9.3.4) Please explain

[Fixed row]
The water risk assessment at NSHD uses WRI Aqueduct to evaluate flood risk and water stress and analyze water-related risks in NSHD's value chain. Each risk is evaluated in terms of probability of occurrence, financial impact, and impact on business strategy, and is considered to be a risk with significant impact on NSHD's operations if it has a financial impact of 2,000 million yen or more. Based on our examination of NSHD's value chain in accordance with the above criteria, we have determined that there are no significant water risks at this time. In addition, given that the raw material for industrial gas is air, we do not believe that NSHD faces any water risk in the procurement of raw materials.

(9.5) Provide a figure for your organization's total water withdrawal efficiency.

	Revenue (currency)	Total water withdrawal efficiency	Anticipated forward trend
	1255081000000	*30702341.06*	*Since NSHD has established KPIs for each operating company and is working to reduce water withdrawal, further improvement in total water withdrawal efficiency is expected in the future.*

[Fixed row]

(9.6) Do you calculate water intensity for your activities in the chemical sector?

Select from:
☑ Yes

(9.6.1) For your top five products by production weight/volume, provide the following water intensity information associated with your activities in the chemical sector.

Row 1

(9.6.1.1) Product type

Bulk inorganic chemicals

☑ Oxygen

(9.6.1.2) Product name

Oxygen

(9.6.1.3) Water intensity value (m3/denominator)

1.3

(9.6.1.4) Numerator: water aspect

Select from:

☑ Freshwater withdrawals

(9.6.1.5) Denominator

Select from:

☑ Other, please specify **:**KNm3

(9.6.1.6) Comparison with previous reporting year

Select from:

☑ About the same

(9.6.1.7) Please explain

The water intensity of oxygen in FYE2023 (previous year) was 0.9, while the water intensity of oxygen in FYE2024 was 1.3. The water unit of oxygen is defined as “the amount of water withdrawal (m3) required to produce oxygen (kNm3). Therefore, in FYE2024, the amount of freshwater required to produce oxygen (1.0 kNm3) was “1.3 m3”. The main reason for this change is that the company with the smallest oxygen water consumption rate changed from a consolidated subsidiary to a joint operation and was excluded from the boundary. The water intensity will be almost the same. Water withdrawals are basically proportional to product flow rates, and the fact that the water intensity figure is almost the same as the previous year means that there was no increase in water withdrawals per product and that production activities were carried out smoothly. This water intensity can be used as one of the strategic indicators for reducing water withdrawal. Therefore, it is desirable for production sites to monitor this water intensity as a KPI and use it to reduce water withdrawal.

Row 2

(9.6.1.1) Product type

Bulk inorganic chemicals

☑ Other industrial gases

(9.6.1.2) Product name

nitrogen

(9.6.1.3) Water intensity value (m3/denominator)

2.5

(9.6.1.4) Numerator: water aspect

Select from:

☑ Freshwater withdrawals

(9.6.1.5) Denominator

Select from:

☑ Other, please specify **:**KNm3

(9.6.1.6) Comparison with previous reporting year

Select from:

☑ About the same

(9.6.1.7) Please explain

For the fiscal year ending 2023 (FYE2023), the water intensity for nitrogen was 2.3, while for the fiscal year ending 2024 (FYE2024), it increased to 2.5. The calculation of water intensity is defined as the ratio of the water intake required for nitrogen production (m^3) to the amount of nitrogen produced (kNm^3). Thus, for FYE2024, it takes 2.5 m^3 of

freshwater to produce 1.0 kNm³ of nitrogen.
A significant change contributing to this increase is that a company with a lower nitrogen water intensity transitioned from being a consolidated subsidiary to a joint operation, resulting in its exclusion from our boundaries. If we exclude this company from our calculations, the nitrogen water intensity for FYE2023 would also be 2.5, meaning that FYE2024's water intensity remains the same as the previous year.
This consistent water intensity indicates that there has been no increase in water usage per product, and production activities have been running smoothly. This water intensity can serve as a strategic indicator for reducing water intake. Therefore, it is advisable to monitor this water intensity as a KPI at manufacturing sites and use it to support initiatives for reducing water intake.

Row 3

(9.6.1.1) Product type

Bulk inorganic chemicals

☑ Other industrial gases

(9.6.1.2) Product name

argon

(9.6.1.3) Water intensity value (m3/denominator)

1.4

(9.6.1.4) Numerator: water aspect

Select from:

☑ Freshwater withdrawals

(9.6.1.5) Denominator

Select from:

☑ Other, please specify :KNm3

(9.6.1.6) Comparison with previous reporting year

Select from:

☑ About the same

(9.6.1.7) Please explain

For the fiscal year ending 2023 (FYE2023), the water intensity for argon was 1.2, whereas for the fiscal year ending 2024 (FYE2024), it increased to 1.4. The calculation of water intensity is defined as the ratio of the water intake required for argon production (m^3) to the amount of argon produced (kNm^3). Thus, for FYE2024, it takes 1.4 m^3 of freshwater to produce 1.0 kNm^3 of argon.
A significant factor contributing to this change is that a company with a lower argon water intensity transitioned from being a consolidated subsidiary to a joint operation, resulting in its exclusion from our boundaries. If we exclude this company from our calculations, the argon water intensity for FYE2023 would also be 1.4, indicating that FYE2024's water intensity remains consistent with the previous year.
This stable water intensity suggests that there has been no increase in water usage per product, and production activities have proceeded smoothly. This water intensity can serve as a strategic indicator for reducing water intake. Therefore, it is advisable to monitor this water intensity as a KPI at manufacturing sites and use it to support initiatives for reducing water intake.

Row 4

(9.6.1.1) Product type

Bulk inorganic chemicals

☑ Hydrogen

(9.6.1.2) Product name

hydrogen

(9.6.1.3) Water intensity value (m3/denominator)

2.4

(9.6.1.4) Numerator: water aspect

Select from:

☑ Freshwater withdrawals

(9.6.1.5) Denominator

Select from:

☑ Other, please specify :KNm3

(9.6.1.6) Comparison with previous reporting year

Select from:

☑ About the same

(9.6.1.7) Please explain

For the fiscal year ending 2023 (FYE2023), the water intensity for hydrogen was 2.3, while for the fiscal year ending 2024 (FYE2024), it increased to 2.4. The calculation of water intensity is defined as the ratio of the water intake required for hydrogen production (m^3) to the amount of hydrogen produced (kNm^3). Thus, for FYE2024, it takes 2.4 m^3 of freshwater to produce 1.0 kNm^3 of hydrogen.
This water usage is generally proportional to the product flow rate. The consistent water intensity indicates that there has been no increase in water usage per product, suggesting that production activities have proceeded smoothly. This water intensity can serve as a strategic indicator for reducing water intake. Therefore, it is advisable to monitor this water intensity as a KPI at manufacturing sites and use it to support initiatives aimed at reducing water intake.

Row 5

(9.6.1.1) Product type

Bulk inorganic chemicals

☑ Other industrial gases

(9.6.1.2) Product name

carbon monoxide

(9.6.1.3) Water intensity value (m3/denominator)

6.9

(9.6.1.4) Numerator: water aspect

Select from:

☑ Freshwater withdrawals

(9.6.1.5) Denominator

Select from:

☑ Other, please specify :KNm3

(9.6.1.6) Comparison with previous reporting year

Select from:

☑ Lower

(9.6.1.7) Please explain

[Add row]

For the fiscal year ending 2023 (FYE2023), the water intensity for carbon monoxide was 7.7, while for the fiscal year ending 2024 (FYE2024), it decreased to 6.9. The calculation of water intensity is defined as the ratio of the water intake required for carbon monoxide production (m^3) to the amount of carbon monoxide produced (kNm^3). Thus, for FYE2024, it takes 6.9 m^3 of freshwater to produce 1.0 kNm^3 of carbon monoxide.

This water usage is generally proportional to the product flow rate. The reduction in water intensity compared to the previous year indicates that the water usage per product has decreased, allowing for more efficient production activities. This water intensity can serve as a strategic indicator for reducing water intake. Therefore, it is advisable to monitor this water intensity as a KPI at manufacturing sites and use it to support initiatives aimed at reducing water intake.

(9.13) Do any of your products contain substances classified as hazardous by a regulatory authority?

	Products contain hazardous substances
	Select from: ☑ No

[Fixed row]

(9.14) Do you classify any of your current products and/or services as low water impact?

	Products and/or services classified as low water impact	Definition used to classify low water impact	Please explain
	Select from: ☑ Yes	Products and services that have no adverse effect on water quality or consume less water than usual are defined as having less impact on water.	NSHD offers air separation units designed to enhance the efficiency of gas-liquid contact. By implementing energy-efficient air separation units, we can reduce the amount of water used for cooling, thereby also decreasing overall water intake.

[Fixed row]

(9.15) Do you have any water-related targets?

Select from:
☑ Yes

(9.15.1) Indicate whether you have targets relating to water pollution, water withdrawals, WASH, or other water-related categories.

Water pollution

(9.15.1.1) Target set in this category

Select from:
☑ Yes

Water withdrawals

(9.15.1.1) Target set in this category

Select from:
☑ Yes

Water, Sanitation, and Hygiene (WASH) services

(9.15.1.1) Target set in this category

Select from:

☑ No, but we plan to within the next two years

(9.15.1.2) Please explain

[Fixed row]

We have not set a specific target for WASH services in Japan, as clean and easy-to-use WASH services are already widespread in the country. However, since it is conceivable that WASH services may not be 100% in some overseas factories, we will investigate the status of WASH services in overseas factories and consider setting a target in the future.

(9.15.2) Provide details of your water-related targets and the progress made.

Row 1

(9.15.2.1) Target reference number

Select from:

☑ Target 1

(9.15.2.2) Target coverage

Select from:

☑ Organization-wide (direct operations only)

(9.15.2.3) Category of target & Quantitative metric

Water pollution

☑ Reduction in water discharges per product

(9.15.2.4) Date target was set

03/31/2022

(9.15.2.5) End date of base year

03/31/2020

(9.15.2.6) Base year figure

0

(9.15.2.7) End date of target year

03/31/2026

(9.15.2.8) Target year figure

10

(9.15.2.9) Reporting year figure

30

(9.15.2.10) Target status in reporting year

Select from:

☑ Achieved and maintained

(9.15.2.12) Global environmental treaties/initiatives/ frameworks aligned with or supported by this target

Select all that apply

☑ Sustainable Development Goal 6

(9.15.2.13) Explain target coverage and identify any exclusions

Actions taken by NSHD's European operating companies (35 companies including Nippon Gases Euro-Holding S.L.U.).

(9.15.2.15) Actions which contributed most to achieving or maintaining this target

NSHD has set targets for reduction of water intensity (water withdrawal per product) at each operating company as necessary, and if the reduction is greater than the water intensity target set by each operating company by FYE 2025, the target is considered to have been achieved.

(9.15.2.16) Further details of target

The Sustainable Water Program established by NSHD calls for a 10% reduction in water use intensity at European operating companies. The reduction of water intensity is also related to the reduction of wastewater per product.

Row 2

(9.15.2.1) Target reference number

Select from:

☑ Target 2

(9.15.2.2) Target coverage

Select from:

☑ Organization-wide (direct operations only)

(9.15.2.3) Category of target & Quantitative metric

Water withdrawals

☑ Reduction in withdrawals per product

(9.15.2.4) Date target was set

03/31/2022

(9.15.2.5) End date of base year

03/31/2020

(9.15.2.6) Base year figure

0

(9.15.2.7) End date of target year

03/31/2026

(9.15.2.8) Target year figure

10.0

(9.15.2.9) Reporting year figure

30

(9.15.2.10) Target status in reporting year

Select from:

☑ Achieved and maintained

(9.15.2.12) Global environmental treaties/initiatives/ frameworks aligned with or supported by this target

Select all that apply

☑ Sustainable Development Goal 6

(9.15.2.13) Explain target coverage and identify any exclusions

The report covers NSHD's European operating companies (35 companies including Nippon Gases Euro-Holding S.L.U.).

(9.15.2.15) Actions which contributed most to achieving or maintaining this target

NSHD sets reduction targets for water intensity (water withdrawal per product) on an as-needed basis for each operating company. If the reduction is greater than the water intensity target set by each operating company by FYE 2025, the target is considered to have been achieved.

(9.15.2.16) Further details of target

The Sustainable Water Program established by NSHD calls for a 10% reduction in water use intensity at NSHD's European operating companies.

Row 3

(9.15.2.1) Target reference number

Select from:
☑ Target 2

(9.15.2.2) Target coverage

Select from:
☑ Organization-wide (direct operations only)

(9.15.2.6) Base year figure

10.0

(9.15.2.8) Target year figure

10.0
[Add row]

C10. Environmental performance - Plastics

(10.1) Do you have plastics-related targets, and if so what type?

	Targets in place
	Select from: ☑ No, but we plan to within the next two years

[Fixed row]

C11. Environmental performance - Biodiversity

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

(11.2.1) Actions taken in the reporting period to progress your biodiversity-related commitments

Select from:

☑ Yes, we are taking actions to progress our biodiversity-related commitments

(11.2.2) Type of action taken to progress biodiversity- related commitments

Select all that apply

☑ Land/water management

☑ Species management

☑ Law & policy

☑ Other, please specify ：

Investment in and business collaboration with Algar Bio, a microalgae venture of Taiyo Nippon Sanso, an NSHD Group company

[Fixed row]

(11.3) Does your organization use biodiversity indicators to monitor performance across its activities?

	Does your organization use indicators to monitor biodiversity performance?
	Select from: ☑ No, we do not use indicators, but plan to within the next two years

[Fixed row]

(11.4) Does your organization have activities located in or near to areas important for biodiversity in the reporting year?

	Indicate whether any of your organization's activities are located in or near to this type of area important for biodiversity
Legally protected areas	*Select from:* ☑ No
UNESCO World Heritage sites	*Select from:* ☑ No
UNESCO Man and the Biosphere Reserves	*Select from:* ☑ No
Ramsar sites	*Select from:* ☑ No
Key Biodiversity Areas	*Select from:* ☑ No
Other areas important for biodiversity	*Select from:* ☑ No

[Fixed row]

C13. Further information & sign off

(13.1) Indicate if any environmental information included in your CDP response (not already reported in 7.9.1/2/3, 8.9.1/2/3/4, and 9.3.2) is verified and/or assured by a third party?

	Other environmental information included in your CDP response is verified and/or assured by a third party
	Select from: ☑ Yes

[Fixed row]

(13.1.1) Which data points within your CDP response are verified and/or assured by a third party, and which standards were used?

Row 1

(13.1.1.1) Environmental issue for which data has been verified and/or assured

Select all that apply

☑ Water

(13.1.1.2) Disclosure module and data verified and/or assured

Environmental performance – Water security

☑ Other data point in module 9, please specify **:**

Total freshwater withdrawals and total wastewater discharges

(13.1.1.3) Verification/assurance standard

General standards

☑ ISAE 3000

(13.1.1.4) Further details of the third-party verification/assurance process

NSHD has obtained third-party verification based on the performance data for the fiscal year ending 2020 (FYE2020). We have also conducted this verification for the fiscal year ending 2024 (FYE2024). An independent third-party verification report can be found on page 95.

(13.1.1.5) Attach verification/assurance evidence/report (optional)

Integrated Report_2024.pdf
[Add row]

(13.2) 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.

(13.2.1) Additional information

[Fixed row]
[Supplementary information to question 3.6.2] In the "Climate Change" section of the "Financial Evaluation Criteria," we were unable to select "CAPEX" as an option. Consequently, we chose "our onshore wind power and geothermal power generation" instead.
[Supplementary information to questions 7.16 and 7.30.16] For the UAE (United Arab Emirates), Peru, Cambodia, and Poland, there are no ASU, HyCO, or LCO2 plants; therefore, GHG emissions are reported as 0.

(13.3) Provide the following information for the person that has signed off (approved) your CDP response.

(13.3.1) Job title

President

(13.3.2) Corresponding job category

Select from:

☑ Chief Executive Officer (CEO)

[Fixed row]

(13.4) Please indicate your consent for CDP to share contact details with the Pacific Institute to support content for its Water Action Hub website.

Select from:

☑ No