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

2025 CDP Corporate Questionnaire 2025

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.
Read full terms of disclosure

09/17/2025, 10:59 pm

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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

Nippon Sanso Holdings Corporation (NSHD) traces its origins back to Nippon Sanso Nippon Sanso Ltd., which we established in 1910. In 1918, we renamed the company Nippon Sanso Corporation. In 2004, Nippon Sanso Co., Ltd. and Taiyo Toyo Sanso Co., Ltd. merged to form Taiyo Nippon Sanso Corporation (TNSC). Later, in 2014, TNSC became a consolidated subsidiary of Mitsubishi Chemical Holdings Corporation, now known as Mitsubishi Chemical Group Corporation.
In 2018, through Nippon Gases Euro-Holding S.L.U. and other entities, we acquired shares in a company operating part of Praxair,Inc. European business. The following year, in 2019, through Matheson Tri-Gas, Inc., we acquired a portion of the HyCO business and related assets of Linde Gas North America LLC. On October 1, 2020, we transitioned to a holding company structure.
As of March 31, 2025, our Group consists of 189 consolidated subsidiaries employing a total of 19,754 people worldwide. Classified within the chemical industry, our core business involves the production and sale of major industrial gases such as oxygen, nitrogen, and argon, as well as other gases including carbon dioxide, hydrogen, helium, LPG, and specialty gases for semiconductors.
During our previous medium-term management plan, "Ortus Stage 2," covering the fiscal years from 2018 to 2021, we achieved significant progress: expanding our presence and advancing globalization through the acquisition of European operations and the U.S. HyCO business, expanding our specialty gases business for electronics in East Asia, and increasing production capacity and business growth in the U.S. and Asia. In October 2020, we transitioned to a pure holding company system.
We have since formulated the medium-term management plan “NS Vision 2026,” which concludes in the fiscal year ending March 2026. Under our business operation framework, “Global + 4 Pole Thermos,” NS Vision 2026 establishes not only financial KPI targets but also new non-financial KPIs. Through five priority strategies—promoting

sustainability management, exploring new businesses aimed at a decarbonized society, expanding our electronics business, pursuing operational excellence, and implementing a digital transformation (DX) strategy to create new value—we aim to strengthen our overall capabilities and drive 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

03/31/2025

(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?

1308024000000

(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.)?

ISIN code - bond

(1.6.1) Does your organization use this unique identifier?

Select from:
☑ No

ISIN code - equity

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ Yes

(1.6.2) Provide your unique identifier

JP3711600001

CUSIP number

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ No

Ticker symbol

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ Yes

(1.6.2) Provide your unique identifier

4091

SEDOL code

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ No

LEI number

(1.6.1) Does your organization use this unique identifier?

Select from:
☑ No

D-U-N-S number

(1.6.1) Does your organization use this unique identifier?

Select from:
☑ No

Other unique identifier

(1.6.1) Does your organization use this unique identifier?

Select from:
☑ No
[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
☑ Viet Nam
☑ Spain
☑ Canada
☑ France
☑ Norway
☑ Poland
☑ Myanmar
☑ Cambodia
☑ Malaysia
☑ Portugal
☑ Thailand
☑ Philippines

☑ Australia
☑ Indonesia
☑ Singapore
☑ Netherlands
☑ United States of America
☑ United Kingdom of Great Britain and Northern Ireland
☑ 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

For our Tier 1 suppliers, we collect and manage their address and other information when registering them in our purchasing system and related platforms.

(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

Since the NSHD Group does not engage in businesses that directly handle plastics, such as plastic manufacturing, we do not conduct mapping specifically focused on plastics. However, under the "NS Vision 2026" medium-term management plan, which promotes sustainability management, one of the non-financial programs we are implementing is the "Zero Waste Program" across the entire NSHD Group. Through this program, each of our operating companies is working to reduce waste emissions and landfill disposal volumes.

Additionally, as part of our environmental initiatives, we are working to reduce greenhouse gas emissions and promote the efficient use of water resources. Currently, however, we do not consider plastics to be 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

It is aligned with our 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

It is aligned with our 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

It is aligned with our climate change goals.

(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

Process Details

The identification, assessment, and deliberation of company-wide material risks and opportunities at NSHD are conducted under the annual Global Risk Management Committee where short-term (1 year), medium-term (10 years), and long-term (30 years) risks are discussed before being reported to the Board of Directors. When selecting risks and opportunities, not only direct operations but also upstream and downstream value chain partners, including suppliers and customers, are taken into consideration. The incorporation of identified risks and opportunities into the business strategy is conducted through the Global Strategic Review Committee, which is also held once a year as part of the budget planning process for the following fiscal year. During this meeting, each operating company reports on its sustainability strategies, including climate-related issues, based on the risks and opportunities identified. The outcomes are reported to the Board of Directors in the form of a budget proposal. The Technology Risk Liaison Conference plays a central role in responding to identified risks and opportunities. Based on the discussions held in the Global Strategic Review Committee, each operating company, together with NSHD, conducts further deliberation and coordination on how to address and capture climate-related risks and opportunities. The Technological Risk Liaison Conference is held at least twice a year at each group company, ensuring that risk countermeasures—including those related to climate change—are implemented across the entire organization.

Identification, Evaluation, and Management Process for Climate-related Risks

To enable early detection of long-term climate-related risks and prevent their materialization, as well as to facilitate rapid response if they do materialize, the NSHD Group's risk management system primarily addresses these matters through the Technical Risk Liaison Conference, the Global Strategy Review Committee, and the Global Risk Management Committee.

The importance of risks and opportunities is determined by the Global Risk Management Committee based on their "frequency of occurrence" and "impact on financial or strategic aspects." The business impact is decided annually by the Global Strategy Review Committee, chaired by the CEO. Subsequently, after concrete countermeasures are decided at the Technical Risk Liaison Conference held by NSHD and each operating company based on the matters decided at the Global Strategy Review Committee, these countermeasures are 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 promotes the acquisition of ISO 14001 certification across the organization, with several subsidiaries having successfully achieved certification. In doing so, the Group remains committed to regulatory compliance and continuously assesses and works to reduce the environmental impact of its business activities.

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

Process Details

The identification, assessment, and deliberation of company-wide material risks and opportunities at NSHD, including those related to water, are conducted under the annual Global Risk Management Committee where short-term (1 year), medium-term (10 years), and long-term (30 years) risks are discussed before being reported to the Board of Directors. When selecting risks and opportunities, not only direct operations but also upstream and downstream value chain partners, including suppliers and customers, are taken into consideration. The integration of identified risks and opportunities into business strategies is carried out through the Global Strategic Review Committee, which is also held once a year as part of the next fiscal year's budgeting process. During this meeting, each operating company reports its sustainability strategy based on the identified risks and opportunities, including climate-related issues related to water. The results are submitted to the Board of Directors as part of the budget proposal. Following this, individual discussions are conducted between NSHD and each operating company to address and capture risks and opportunities, including those related to water and climate change. The Technology Risk Liaison Conference, which takes place at least twice per year at each operating company, heads the implementation of risk countermeasures across the entire Group—including those related to water-related climate risks.

Identification, Assessment, and Management Process for Water-related Climate Risks

To ensure early detection and prevention of long-term water-related climate risks, and to enable a rapid response in the event of materialization, risk management within NSHD Group is conducted primarily through the following three platforms:

・Technology Risk Liaison Conference

・Global Strategic Review Committee

・Global Risk Management Committee

The materiality of risks and opportunities is determined during the Global Risk Management Committee, based on their likelihood of occurrence and potential impact on finance or business strategy.
Subsequently, the Global Strategic Review Committee, chaired by the CEO, assesses their potential business impact annually. Based on the decisions made at this meeting, the Technology Risk Liaison Conference, comprised of NSHD and our operating company, defines countermeasures, which are then deployed globally across the organization.

(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

At NSHD, the identification of environmental risks and opportunities is conducted with careful consideration of the Group's dependencies and impacts on natural capital. The identified risks and opportunities are reported to the Global Strategic Review Committee. At this meeting, discussions extend beyond addressing individual environmental challenges to include initiatives aimed at contributing to the resolution of broader societal issues through business activities, as well as measures to resolve trade-offs among competing objectives.

(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

At NSHD, to effectively identify and manage water-related risks, we conduct water stress assessments across all production sites. Using the water risk assessment tool “Aqueduct”, developed by the World Resources Institute (WRI), we evaluated water stress levels at 121 sites. Aqueduct categorizes risk levels into five tiers: Low, Low-Medium, Medium-High, High and Extremely High. While no sites in Japan were found to be in the High or Extremely High-water stress categories, we identified a total of 21 sites overseas that fall within these categories. The water withdrawal volume from these 21 sites accounts for approximately 14% of NSHD’s total water intake. After considering the scale of water usage, conducting a proprietary evaluation of physical risk quantity, and reviewing the results of on-site interviews, we have concluded that NSHD does not face any significant risks related to severe water stress.

(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

At NSHD, we strive to strengthen risk management systems across all group companies. This enables the early detection and prevention of long-term risks (those exceeding 10 years) that could hinder business objectives, as well as ensuring a quick response when such risks materialize. The materiality of risks is determined based on the frequency of occurrence and their financial or strategic impact on NSHD. A significant impact is defined as a financial effect that is expected to exceed 2 billion yen and occur at least once per year. The process for determining financial and strategic impacts on the business involves the Global Strategic Review Committee, chaired by the CEO and attended by representatives from domestic and international operating companies, held at least once a year. At this meeting, significant risks requiring group-wide initiatives are deliberated, identified, and approved. Following this, the decisions made at the Global Strategic Review Committee are further examined at the Technology Risk Liaison Conference, which is held individually by NSHD and its regional representative companies at least twice a year, where countermeasures against the identified risks are discussed. Climate change is treated as one of these risks. To address climate change, regional representative companies are actively engaged in formulating plans such as GHG emissions reduction initiatives.

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

At NSHD, a significant impact is defined as a financial effect that is expected to exceed 2 billion yen and occur at least once per year. The Global Strategic Review Committee, chaired by the CEO and attended by representatives from domestic and international operating companies, is held at least once annually. This meeting determines financial or strategic impacts related to the business. During this meeting, key opportunities requiring group-wide initiatives are discussed, identified, and approved. Climate change is treated as one of these key opportunities. To address climate change, regional representative companies actively develop plans, such as initiatives to reduce greenhouse gas (GHG) emissions.

(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

NSHD identifies and classifies water pollutants that may adversely affect ecosystems and human health, in accordance with the following activity policies and principles.

Activity Policies and Principles:
Based on the NSHD Group Environmental Policy, NSHD conducts its business with full consideration for the environment, complying with relevant laws and regulations in each country and region (such as the Water Pollution Prevention Act) and respecting international standards. Water pollutants are classified and managed according to local regulations, and effluent discharge is conducted only after measuring parameters such as pH, phosphorus, nitrogen, and COD.

Furthermore, NSHD manages its freshwater usage in a closed-loop system designed to prevent water pollution. Specifically, all the freshwater withdrawn by NSHD is supplied to cooling towers, where it is circulated by pumps as a coolant for heat exchangers. These heat exchangers are components of rotating machinery. After heat exchange, the warmed freshwater returns to the cooling towers and is cooled to an equivalent temperature to that of the ambient air. Then, the cooled water is pumped back to the heat exchangers, continuing the cycle. Due to this closed-loop circulation, water quality deterioration is minimal. For example, under the Water Pollution Prevention Act, the discharge standard for pH is set within the range of 5.0 to 9.0. However, NSHD's internal management standards are stricter, set between pH 6.3 and pH 8.1. Facilities required to comply with this standard have guards who record the pH level of the integrated purification tank daily. If the pH falls below 6.3 or exceeds 8.1, the operations department is immediately notified via an emergency protocol.

(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 1

(2.5.1.1) Water pollutant category

Select from:
☑ Inorganic pollutants

(2.5.1.2) Description of water pollutant and potential impacts

At NSHD, the following substances are identified as water pollutants, and we recognize their potential impacts on ecosystems and human health.

Water Pollutants:
- Nitrate and nitrate compounds: High concentrations of nitrate and nitrite nitrogen in drinking water can cause methemoglobinemia, which impairs the blood's oxygen-carrying capacity and may harm human health.

- Fluorine and fluorine compounds: Known for environmental persistence and carcinogenicity.
- Hexavalent chromium: A highly toxic heavy metal with carcinogenic properties.
- Boron and boron compounds: Can cause severe eye damage or eye irritation.
- Ammonium compounds: high levels of nitrates and nitrate-nitrogen in drinking water can induce methemoglobinemia, impairing oxygen transport in the blood and posing health risks.

(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

NSHD strictly manages wastewater quality to ensure compliance with established standards and to prevent the discharge, infiltration, or leakage of regulated substances. Waste liquids are stored in dedicated tanks and collected by specialized contractors as industrial waste, which prevents any external release. Each business site manages and verifies compliance with the rule that waste liquids are treated by third parties and not discharged into the drainage system. Water pollutants are monitored through regular wastewater quality assessments. Preventative measures against pollutant leakage include visual inspections of equipment and sensors, alongside periodic monitoring to ensure that pollutant levels in wastewater do not exceed municipal regulatory standards. The evaluation criterion for success is that pollutant concentrations in wastewater remain within regulated limits. NSHD is committed to preventing leakage incidents and the external discharge of chemical substances. For example, while the Water Pollution Prevention Act sets the permissible pH range for discharge at 5.0 to 9.0, NSHD has established an internal management standard of pH 6.3 to 8.1. Facilities subject to this standard have security personnel who record the pH levels of the integrated purification tanks daily. If pH levels fall below 6.3 or exceed 8.1, an emergency response protocol is triggered, and the Operations Department is notified.

Subsequently, the Operations Department takes measures such as cutting off the water supply and adding pH adjusting agents to restore appropriate pH levels. This entire management process is subject to an annual review by NSHD’s Technical 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

At NSHD, we use the WRI Aqueduct tool to evaluate flood, water, and water stress risks within our value chain. We evaluate each risk based on its likelihood of occurrence, financial impact, and effect on business strategy. We consider a risk to have a significant impact on NSHD's management if the financial impact exceeds 2 billion yen. Based on this criterion, we have investigated our value chain and determined that there are currently no significant water-related risks.

Furthermore, since the raw material for industrial gases is air, we do not face water-related risks in procurement. Regarding delivery, we supply large customers via piping, medium-sized customers by tanker trucks, and small customers with high-pressure gas cylinders; therefore, water-related risks do not arise in this area. Generally, our group's products do not use large amounts of water. Although there are exceptions, such as raw water for oxygen-18 stable isotopes and water used in fish farming, we consider the water risks in our value chain to be minimal.

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

Since we are not directly involved in businesses related to plastic manufacturing, such as producing plastic materials, we have not conducted risk identification specifically related to plastics. However, promoting sustainability management is one of the key strategic pillars under the NSHD Group's medium-term management plan, "NS Vision 2026." As part of this initiative, the group is implementing a non-financial program called the "Zero Waste Program." Through this program, each operating company works to reduce waste generation and minimize landfill disposal volumes. Additionally, the group is pursuing environmental initiatives, such as reducing greenhouse gas (GHG) emissions and using water resources efficiently. Nevertheless, plastics are not currently a strategic priority in our environmental agenda.

(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 recent years, the Paris Agreement took effect in response to abnormal weather caused by climate change. The world has begun to respond. Japan has announced a policy aimed at achieving carbon neutrality by the FYE2050 fiscal year. In this business environment, over 50% of sales at Taiyo Nippon Sanso, an NSHD subsidiary, come from the industrial gas business, which consumes large amounts of electricity during the manufacturing process. Specifically, of the 9,950 GWh of electricity used by NSHD in fiscal year 2025 (FYE2025), over 99% was consumed by the industrial gas business operating worldwide, primarily for operating air separation units. Therefore, there is a risk that customers in the steel and chemical sectors, who are promoting decarbonization efforts, may avoid the existing industrial gas manufacturing process due to its high electricity consumption. This could lead to a decrease in sales. For instance, if 10% of customers excluded NSHD from their industrial gas supply, sales would likely decrease by about 27,573 million yen.

(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

As we progress toward a decarbonized society and achieve the 1.5°C target of the Paris Agreement, we assess the risk that customers in the steel and chemical sectors, who are promoting decarbonization efforts, may avoid our industrial gas manufacturing processes due to their high electricity consumption. This could result in a decline in sales. We estimate that this risk, caused by changes in customer behavior, will impact sales in 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)

27573000000

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

27573000000

(3.1.1.25) Explanation of financial effect figure

Of NSHD’s total revenue of JPY 1.308 trillion for FYE2025, 31% was generated in the Japanese market. Within this segment, 68% (excluding equipment and engineering sales) corresponds to NSHD’s industrial gas business in Japan.
If 10% of customers in this segment were to exclude NSHD from their supply chains due to increasing environmental awareness regarding the carbon intensity of the industrial gas supply process, this could potentially result in a revenue loss of approximately JPY 27,573 million
(calculated as: JPY 1,308,000 million × 31% × 68% × 10%).
(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

296000000

(3.1.1.28) Explanation of cost calculation

As part of our efforts to develop environmentally friendly products, primarily carbon-free (H2 and NH3) combustion technologies, we plan to invest 296 million yen in FYE 2025. This includes 225 million yen for research and development and 71 million yen for capital expenditures. We believe that establishing these technologies will significantly reduce the risk of sales decline.

(3.1.1.29) Description of response

[Situation]

In the wake of the Paris Agreement, there has been progress worldwide in reducing CO2 and other greenhouse gas (GHG) emissions across supply chains. This has prompted us to review our supply chains in Japan, Europe, and North America. However, this poses a risk of a decline in sales. For example, if we lose 10% of our customers in Japan's industrial gas sector, sales are projected to decrease by approximately JPY 27,573 million

[Task]

For this reason, it is essential for our group to reduce greenhouse gas (GHG) emissions to satisfy our environmentally conscious clients.

[Action]

To address this, we are revising existing industrial gas processes by promoting the adoption of carbon-free (H2, NH3) combustion technologies and conducting research and development on oxygen combustion based on more than 50 years of experience. Specifically, since 1989, Taiyo Nippon Sanso's R&D Hub, Yamanashi Technology Solution Center, has been developing oxygen combustion technologies for various applications. Oxygen combustion technology involves adding high-purity oxygen to air, increasing oxygen concentration beyond 21%, thereby improving combustion efficiency. This leads to higher flame temperatures and reduces nitrogen content in combustion gases, which decreases energy loss via exhaust gases. As a result, technology contributes to energy savings and CO2 emission reductions, applicable to high-temperature electric arc furnaces, melting furnaces, and other industrial uses. For FYE2025, we plan to invest JPY 296 million in total for R&D (JPY 225 million) and capital expenditure (JPY 71 million) related to these technologies.

[Result]

With advancements in oxygen combustion technology, we expect to largely reduce GHG emissions from general industrial furnaces. Expanding this technology will enable the conversion of air combustion to oxygen-enriched combustion across various industries, helping us align to the needs of environmentally conscious customers and contribute to carbon-free (H2, NH3) combustion.

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 abnormal weather caused by recent climate change, the Paris Agreement, an international framework for countering global warming, has come into effect, prompting countries around the world to act. Japan has also announced a policy aimed at achieving carbon neutrality by 2050. To achieve this goal, Japan is expected to introduce regulations and initiatives such as carbon taxes and emissions trading systems, which have been implemented and evaluated in Europe. This could lead to increased direct costs for NSHD.
If carbon pricing mechanisms, such as carbon taxes, are implemented, there is a possibility of increased direct costs due to higher tax burdens. According to the IEA's 2022 report, for example, if a carbon tax is introduced to achieve carbon neutrality by 2050, the carbon tax would be set at 15,365 yen per ton in 2030. In this scenario, the tax

burden would increase by approximately 26,259-million-yen, equivalent to the operating profit of the Taiyo Nippon Sanso Group. This poses a significant risk to our business. Furthermore, if gas production increases in the future, Scope 2 emissions will also increase, leading to additional tax burdens. This issue could substantially decrease our profits and pose a considerable risk to our company.

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

As the transition to a decarbonized society progresses and carbon pricing mechanisms, such as carbon taxes, are introduced, we recognize the possibility of increased direct costs due to higher tax burdens. Additionally, we predict 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)

26305000000

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

26305000000

(3.1.1.25) Explanation of financial effect figure

NSHD's total greenhouse gas (GHG) emissions are approximately 5,258 thousand tons of CO2 equivalent for FYE2025. Specifically, the Taiyo Nippon Sanso Group's emissions amount to 1,712 thousand tons of CO_2 equivalent for FYE2025. According to the IEA's 2022 report, a carbon tax of 15,365 yen per ton of CO2 is expected to be imposed by FYE2030 if a carbon tax is introduced to achieve carbon neutrality by FYE2050. In that case, Japan's increased tax burden would be approximately 26,259 million yen. The calculation is as follows: 1,712 thousand tons of CO_2 × 15,365 yen per ton of CO_2.

(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

The installation cost for a large air separation unit was approximately 10 billion yen. The breakdown is as follows: the cold box accounts for 20%; other equipment and machinery, 30%; construction and engineering, 40%; and engineering and other expenses, 10%.

(3.1.1.29) Description of response

[Situation]
Strengthened environmental regulations, such as carbon pricing, are expected to be implemented globally, particularly in Japan. By FYE2025, Taiyo Nippon Sanso's greenhouse gas (GHG) emissions are projected to reach 1,712 thousand tons of CO2 equivalent (t-CO2). Without efforts to reduce these emissions, the company could face a tax burden of approximately 26,305 million yen if environmental regulations such as carbon taxes are imposed.
[Task]
At Taiyo Nippon Sanso, a key player in NSHD's main business, over 98% of CO_2 emissions stem from the electricity used to manufacture the main products: nitrogen, oxygen, and argon. Given the risk of strengthened environmental regulations in Japan, reducing these emissions must be prioritized.
[Action]
NSHD established the "Carbon Neutral Program I" with the goal of achieving carbon neutrality by FYE2050. To achieve this, in FYE2017, we replaced the air separation units used for gas manufacturing at the JFESC Kurashiki Plant, suppressing approximately 40,000 tons of CO_2 emissions. In FYE2024, we replaced the air separation unit at the

JFESC Fukuyama Plant with a state-of-the-art facility with production capacities of 48,000 Nm^3/h of oxygen, 82,000 Nm^3/h of nitrogen, and 1,580 Nm^3/h of liquefied argon. This replacement suppressed over 10,000 t-CO_2 of emissions. Additionally, we found that introducing automatic control through simulators for operating the air separation units improves the plant's product yield. This increases the flow rate of product gases using the same amount of electricity, thereby reducing CO_2 emissions. Although this has so far been implemented at only one site in Japan, we are actively working to expand this practice.
[Result]
Including these activities, we achieved a reduction of 50,378 t-CO2 in Scope 1 and 2 emissions by FYE2025.

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

Taiyo Nippon Sanso, a subsidiary of NSHD, primarily manufactures industrial gases and operates 37 gas production plants. As climate change intensifies and the possibility of increased heavy rain and strong winds grows, the air separation units used to produce industrial gases at these plants could malfunction due to weather-related impacts. If these units malfunction, it could become difficult to reliably supply products to our customers, which could result in significant profit losses. Additionally, the expected costs of equipment failures caused by abnormal weather could reach several hundred million yen. Therefore, it is necessary to address the risk of malfunctions in the air separation unit components.

(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

We have analyzed that, if average temperatures continue to rise and climate change intensifies, resulting in heavier rainfall and stronger winds, the air separation units used to produce industrial gases at our plants could malfunction due to these impacts. Additionally, we assess that damage to our sites caused by intensified abnormal weather events would lead to increased 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 cost of damage caused by equipment failure in air separation units varies greatly depending on the type of equipment that fails. It also depends on the size of the air separation unit. For example, if a compressor fails due to a lightning strike, we expect costs ranging from 100 million to 3 billion yen per unit. These costs are calculated based on equipment expenses and associated labor costs. Additionally, since multiple air separation units are installed at each gas production plant, the total damage amount could increase to several hundred million yen if the air compressors of many units are affected.

(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 costs we pay to the insurance company for the global insurance are calculated as a lump sum of approximately 100 million yen for the Sanso Center and about 10 million yen for the Taiyo Nippon Sanso Total Gas Center, resulting in an annual total of around 110 million yen.

(3.1.1.29) Description of response

[Situation]
In recent years, typhoons and other weather-related disasters have intensified in Japan due to factors such as global warming. Typhoon No. 14, which occurred in FYE2022, caused flooding and building collapses across Japan. The increase in climate-related damage due to abnormal weather poses a risk of equipment failure at Taiyo Nippon Sanso, a subsidiary of NSHD.
[Task]
Currently, Taiyo Nippon Sanso operates 37 gas production plants, each of which is equipped with multiple air separation units. If an air separation unit experiences equipment failure due to flooding or wind damage caused by abnormal weather, the repair costs, including equipment expenses and personnel response costs, would exceed 100 million yen per unit. This would lead to a significant increase in expenses. Therefore, it is necessary to reduce NSHD’s financial risk by purchasing insurance.

[Action]
Taiyo Nippon Sanso has purchased a global insurance policy covering fire, accidents, and recovery related to abnormal weather for air separation units and other manufacturing equipment at its 37 gas production plants nationwide. The policy covers fire, water damage, lightning, rupture, explosion, wind damage, hail damage, snow damage, theft, and electrical and mechanical accidents. Therefore, if an air separation unit component is damaged by an abnormal weather event, the loss will not exceed the insured amount. We will maintain this global insurance coverage through FYE2025.
[Result]
To date, no significant financial damage due to abnormal weather has occurred. By continuing to maintain this insurance, we can also manage financial risks from 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)

27573000000

(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

The Paris Agreement, the international framework for countering global warming, came into effect due to abnormal weather caused by recent climate change, and the world has begun responding. In Japan, a policy aiming for carbon neutrality by FYE2050 was announced in October 2020. Under this business environment, Taiyo Nippon Sanso, part of NSHD, generates over 50% of its sales from the industrial gas business, which consumes large amounts of electricity in its manufacturing process. Specifically, more than 99% of the electricity consumed by NSHD in FYE2025 was used in the industrial gas business operating worldwide, with the majority spent on operating air separation units. Therefore, customers in the steel and chemical sectors promoting decarbonization efforts may avoid existing industrial gas manufacturing processes, which consume large amounts of electricity, potentially leading to a decline in sales.
Taiyo Nippon Sanso primarily manufactures industrial gases and operates 37 gas production plants. As climate change intensifies, with expected increases in heavy rainfall and strong winds, there is a possibility that air separation units producing industrial gases at these plants may malfunction due to such impacts. If these units fail, stable product supply to customers will become difficult, potentially causing significant profit losses. Additionally, the anticipated costs incurred from equipment failures caused by abnormal weather could reach several hundred million yen. It is necessary to address the risk of failures in components of the air separation units.
Of NSHD's total sales of 1,308 billion yen in FYE2025, 31% comes from the Japanese market. Excluding sales from equipment and construction, 68% of that amount is from NSHD's industrial gas business in Japan. If 10% of customers exclude NSHD from their industrial gas supply process due to heightened environmental awareness, sales are expected to decrease by approximately 27,573 million yen (calculated as 1,308,000 million yen × 31% × 68% × 10%). [Amounts below one million yen are rounded down]

(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

5.2

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

17.8

(3.5.2.3) Period start date

04/01/2024

(3.5.2.4) Period end date

03/31/2025

(3.5.2.5) Allowances allocated

5720

(3.5.2.6) Allowances purchased

0

(3.5.2.7) Verified Scope 1 emissions in metric tons CO2e

56422

(3.5.2.8) Verified Scope 2 emissions in metric tons CO2e

746500

(3.5.2.9) Details of ownership

Select from:

☑ Facilities we own and operate

(3.5.2.10) Comment

Nippon Gases (Europe)'s Scope 1 and part of Scope 2 emissions are covered. Scope 2 emissions arise from the electricity and steam we consume. The generation of this electricity and steam is included in the EU ETS. It is currently uncertain whether the Ravenna hydrogen plant will be covered under the ETS from January 1, 2024, due to delays in national regulations. Currently, allowances allocated or purchased for this plant are not included. However, the percentage of Scope 1 emissions covered by the ETS includes emissions from the Ravenna hydrogen plant.

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

In a broad sense, carbon pricing (per t-CO2) encompasses energy prices, energy taxes, FIT surcharges, emission trading allowances, and carbon taxes. In NSHD's operations, producing key gases such as nitrogen (N_2), oxygen (O_2), and argon (Ar) consumes a significant amount of electricity. Currently, Japan's carbon tax rate is relatively low, so the direct financial impact of the carbon tax remains limited. However, as global warming regulations tighten in the future, both tax rates and the scope of applicable taxes are expected to increase. This could substantially impact businesses, particularly in Japan, where many companies have energy-intensive operations. Accordingly, under stricter regulatory scenarios based on the IEA's 2-Degree Scenario (2DS), NSHD analyzes the risks to energy-intensive businesses (such as industrial gases) in Japan to identify potential business and financial impacts.
To mitigate the effects of broad carbon pricing, NSHD proactively utilizes Japan's surcharge exemption system. This system is designed to maintain and strengthen the international competitiveness of electricity-intensive businesses by allowing for partial exemptions from certain surcharges. NSHD has been leveraging this system continuously since its introduction in 2012. Depending on the efficiency improvements related to sales, certified business sites may receive exemptions of either 80% or 40% of applicable surcharges. Currently, 19 domestic NSHD companies have applied for and received exemptions totaling approximately 2.4 billion yen.

(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

The formulation of the Paris Agreement has brought increased attention to initiatives aimed at achieving carbon neutrality. NSHD's industrial gas business supports a wide range of industries, including core sectors such as steel, chemicals, automotive, and construction, as well as the food and medical fields. This business accounts for over 50% of NSHD's sales. NSHD sees an opportunity to expand revenue by entering new markets related to carbon neutrality. Specifically, NSHD plans to enter new markets by responding to the growing demand for oxygen gas burners that convert fossil fuels to green fuels without emitting CO_2 during combustion. There is also increasing demand for CO_2 capture in CCUS (carbon capture, utilization, and storage) technologies.

(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 an opportunity to expand sales by entering new markets related to carbon neutrality. Specifically, we anticipate growing demand for oxygen gas burners that convert fossil fuels to green fuels without CO_2 emissions during combustion, as well as increased demand for CO_2 capture associated with CCUS (carbon capture, utilization, and storage) technologies. We analyze that this shift towards decarbonized products will lead to significant sales growth opportunities.

(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

At Taiyo Nippon Sanso, which operates the Japan gas business within NSHD, we sell various industrial gases such as oxygen, nitrogen, and argon, as well as manufacture and sell related equipment. Through the expanded sales of hydrogen-oxygen burners that emit no CO_2 during combustion, we aim to help customers reduce their GHG emissions by approximately 20 million t-CO_2e. Additionally, we expect to achieve sales of around 400 million yen by FYE2030.
(FYE2030 sales forecast: 400 million yen, comprising 40 oxygen burners priced at 10 million yen each)

(3.6.1.24) Cost to realize opportunity

267000000

(3.6.1.25) Explanation of cost calculation

For the social implementation of CCUS and green fuels, NSHD has invested a total of 267 million yen, including 220 million yen in R&D expenses (including labor costs) and 47 million yen in equipment costs. These investments have led to successful developments such as CO_2 liquefaction facilities and hydrogen-oxygen burners.

(3.6.1.26) Strategy to realize opportunity

[Situation]
Following the formulation of the Paris Agreement, various initiatives aimed at achieving carbon neutrality are being implemented worldwide. For example, demand is growing

for green fuels that emit no CO2 during combustion, as well as for CO2 capture related to CCUS (Carbon Capture, Utilization, and Storage). Attention to these emerging markets is increasing. NSHD, whose industrial gases business supports a wide range of industries—from core sectors such as steel, chemicals, automotive, and construction to food and medical fields—and which accounts for more than 50% of its sales, sees an opportunity to expand sales by entering new markets related to carbon neutrality, such as CCUS and green fuels.
[Task]
In light of this situation, it is necessary to enter these new carbon-neutral-related markets and expand sales.
[Action]
In response to these challenges, NSHD is collaborating with Taiheiyo Cement Corporation on the CO_2 liquefaction process as part of NEDO's (New Energy and Industrial Technology Development Organization) carbon-circulating cement manufacturing process technology development project. In FYE2022, CO2 liquefaction equipment was installed at Taiheiyo Cement's Kumagaya Plant. At this facility, CO2 emitted during the cement manufacturing process is recycled and reused for cement and civil engineering materials.
Regarding green fuels, NSHD was selected as the commissioned party for NEDO's "Technology Development for the Utilization and Production of Ammonia as Fuel" project, we are actively promoting the project's development. In April 2022, a demonstration test using a hydrogen-oxygen burner successfully achieved 100% hydrogen combustion for glass melting, significantly reducing CO_2 emissions from the melting furnace. Building on this success, NSHD has introduced oxygen burners for glass melting furnaces. Research activities in this area will continue through FYE2025.
[Result]
With these new market entries, NSHD expects annual sales of approximately 400 million yen by 2030. Furthermore, to accelerate entry into carbon-neutral-related markets, NSHD has decided in its 2022 medium-term management plan, "NS Vision 2026," to allocate 38 billion yen over four years toward strategic investments, including those related to 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: Aquaculture

(3.6.1.8) Organization specific description

Although the global demand for seafood is increasing, the decline in fish catches worldwide due to the impacts of recent climate change poses a significant challenge to food security. Taiyo Nippon Sanso, a member of the NSHD Group, offers high-efficiency oxygen dissolution systems for aquaculture ponds. These systems enable high-density farming and prevent diseases in cultivated fish, such as eel, trout, flounder, and shrimp. As a result, they help increase yields cost-effectively. We believe that Taiyo Nippon Sanso's high-efficiency oxygen dissolution equipment can help solve the global problem of declining fishery harvests.
Maintaining healthy farmed fish requires careful management of dissolved oxygen (DO) levels in the breeding water. The amount of oxygen that can dissolve in water varies significantly depending on aeration intensity, water temperature, and salinity. Taiyo Nippon Sanso's high-efficiency oxygen dissolution systems efficiently dissolve oxygen into water, achieving optimal DO levels for fish farming and enhancing productivity.
Introducing this equipment to enrich the oxygen content of breeding water makes it possible to achieve high-density farming, accelerated growth, and reduced wastewater discharge. This system has been widely adopted for various species, including eels, trout, and flounders. We conduct on-site visits to offer the most suitable oxygen supply solutions tailored to our customers' specific conditions, drawing on our extensive expertise.

(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 growing societal awareness of the importance of biodiversity conservation, there is an increasing desire to secure food through aquaculture rather than through the capture of wild fish. Taiyo Nippon Sanso is actively engaged in efforts to stabilize the food supply through land-based aquaculture.
However, there is room for improvement in the efficient dissolution of oxygen and optimization of dissolved oxygen (DO) levels specific to each fish species in the land-based aquaculture systems that Taiyo Nippon Sanso is focusing on developing. We are working closely with customers to collect data, resolve these issues, and increase demand.
We believe that the transition to land-based aquaculture presents an opportunity for sales growth.

(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

Since FYE2021, Taiyo Nippon Sanso has been continuously accumulating the necessary expertise as a manufacturer of high-efficiency oxygen dissolution equipment for aquaculture. While contributing to the high operational efficiency of these devices, the company is also considering expanding its market globally.
Between FYE2016 and FYE2025, the number of installations at Taiyo Nippon Sanso increased from 29 to 55 companies, a 1.9-fold growth. Considering recent food supply challenges, sales of oxygen related to aquaculture are expected to grow, and the company plans to acquire up to 75 customers by FYE2031.
By further expanding the demand for oxygen gas in aquaculture, the sales managed by the relevant department could reach approximately 450 million yen in FYE2031 alone.

(3.6.1.24) Cost to realize opportunity

200000000

(3.6.1.25) Explanation of cost calculation

In order to acquire 55 customers, it is necessary to install Cold Evaporators (CEs), which are liquefied gas storage tanks. The required equipment investment is 200 million yen (20 units at 10 million yen each).

(3.6.1.26) Strategy to realize opportunity

[Situation]
Leveraging our industry-leading position in industrial gas infrastructure, our company can provide a stable supply of oxygen gas to aquaculture companies. However, there is still room for improvement in terms of efficient oxygen dissolution methods and optimal dissolved oxygen (DO) levels for each species of fish, which will require further research going forward.
[Task]
It is necessary to establish efficient oxygen dissolution techniques and collect data on oxygen efficacy for each fish species. Overcoming these technical challenges requires close collaboration with users.
[Action]
To address these challenges, we are engaged in data collection for each fish species and joint product development with users. By clarifying technical issues together with users, we have secured exclusive supply agreements for our oxygen gas.
[Result]
Between FYE2016 and FYE2025, Taiyo Nippon Sanso increased its customer base from 29 to 55 companies, a 1.9-fold increase. Considering recent food supply challenges, we anticipate further growth in oxygen sales related to aquaculture and plan to acquire up to 75 customers by FYE2031.

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 industrial gas business in Japan under NSHD, is engaged in the sale of various industrial gases such as oxygen, nitrogen, and argon, as well as the manufacturing and sales of related equipment. With the recent rise in environmental awareness across society, there is a growing expectation for companies to take climate action, particularly through the reduction of CO_2 emissions in business activities. This trend also applies to the industrial gas customers that form the core of NSHD's business.

A market analysis of potential oxygen demand for industrial furnaces has revealed a latent demand of 2.1 billion Nm^3. Assuming a market capture rate of 50% and a sales price of 10 yen per Nm^3, this represents a potential revenue opportunity of over JPY 10 billion. This equates to approximately 1% of NSHD's total revenue, amounting to significant business potential.

In addition, Taiyo Nippon Sanso has been actively developing oxygen burners capable of enabling ammonia combustion in industrial furnaces. Since ammonia combustion emits zero CO_2, demand for such technologies is expected to increase further, in line with accelerating climate change mitigation efforts.

(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 growing environmental awareness across society, there is an increasing expectation for companies to implement climate change measures. Among these, the reduction of CO_2 emissions from business activities has become a key focus.
NSHD is actively developing oxygen burners that enable ammonia combustion in industrial furnaces. Since ammonia combustion generates zero CO_2 emissions, demand for this technology is expected to grow in line with the global shift toward climate change mitigation.
We analyze that the transition to low-carbon products presents a significant opportunity for 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

In Japan, NSHD operates its industrial gas business through Taiyo Nippon Sanso, which is engaged in the sales of various industrial gases such as oxygen, nitrogen, and

argon, as well as the manufacturing and sales of related equipment.
Based on an estimation of latent oxygen demand for industrial furnaces, it has been identified that there is a potential demand of 2.1 billion Nm^3. Assuming a market share acquisition rate of 50% and an oxygen gas sales price of ¥10 per Nm^3, this translates to potential sales of over ¥10.5 billion.
The estimated sales figure is calculated as follows:
(Total market oxygen demand: 2,100,000,000 Nm^3) × (Market share: 50%) × (Sales price: ¥10/Nm^3) = ¥10,500,000,000

(3.6.1.24) Cost to realize opportunity

1600000000

(3.6.1.25) Explanation of cost calculation

To meet the anticipated demand for oxygen supply, it will be necessary to install approximately 40 Pressure Swing Adsorption (PSA) oxygen generation units, each with a capacity of 3,000 Nm^3/h and a capital cost of around ¥400 million per unit.
As a result, this will require a capital investment of approximately ¥1.6 billion, calculated as follows:
(Cost per PSA unit: ¥400 million ÷ Depreciation period: 10 years) × 40 units = ¥1,600 million

(3.6.1.26) Strategy to realize opportunity

[Situation]
Driven by the global momentum toward carbon neutrality—initiated in the U.S. and Europe—Japanese companies are increasingly expected to take steps to reduce their greenhouse gas (GHG) emissions. This also applies to companies operating industrial gas furnaces, where a transition from fossil fuels to carbon-free alternatives, such as ammonia (NH_3), is under consideration. In response, NSHD is advancing the development of oxygen burners that utilize ammonia, which is expected to lead to increased demand for oxygen gas used in industrial furnace combustion.

[Task]
The use of ammonia in combustion poses several technical challenges. Ammonia contains nitrogen, which, when combusted, can lead to the generation of large amounts of nitrogen oxides (NO_x)—harmful air pollutants. Additionally, unlike carbon-based fuels, ammonia does not produce soot or particulates during combustion. As a result, it lacks radiative heat transfer, which is typically essential for efficient furnace operation. These issues present significant hurdles to the practical application of ammonia as a fuel.

[Action]
NSHD's domestic gas business, led by Taiyo Nippon Sanso Corporation, has been actively developing ammonia-based oxygen burners since FYE2014. By FYE2019, the company successfully established a method that combines oxygen-enriched combustion with a mixed fuel containing 30% ammonia and city gas. This method enhances radiative heat transfer while simultaneously suppressing the formation of nitrogen oxides (NO_x), achieving a breakthrough in balancing efficiency and environmental performance.

[Result]
These advancements are expected to significantly reduce CO_2 emissions from industrial gas furnaces. Moreover, since the technology is based on oxygen-enriched

combustion, its adoption is likely to boost demand for oxygen gas. NSHD plans to start supplying oxygen generation systems (such as oxygen PSA units) to customers who adopt ammonia-based burners in their actual industrial furnaces starting from FYE2030.
Looking ahead, NSHD aims to secure 40 contracts by FYE2035 for the installation of these oxygen burners, along with corresponding long-term oxygen gas supply agreements. This initiative aligns with NSHD's broader carbon-neutral strategy and positions the company to benefit from the global shift toward low-carbon industrial processes.

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, companies across industries have increasingly been expected to act on climate change, particularly through the reduction of CO_2 emissions from their business operations. One of NSHD's core businesses is the supply of oxygen gas, and a key end-user sector is the steel industry, which is known to be a major emitter of greenhouse gases (GHGs).
Given the global push toward decarbonization, the steel industry faces growing pressure to significantly reduce its CO_2 emissions. NSHD recognizes this as a critical area of opportunity. In response, NSHD is advancing R&D efforts at the Yamanashi Solution Center, focusing on the development of oxygen combustion technologies.

If successful, this technology is expected to see strong demand from steel producers aiming to decarbonize their operations. As a result, demand for oxygen gas supplied by NSHD would expand accordingly.
Specifically, the adoption of oxygen-based blast furnace technology is projected to result in an increase in oxygen demand of approximately 2.5 billion Nm^3 per year.
Assuming a selling price of 10 yen per Nm^3, this represents a potential sales increase of 25 billion yen, equivalent to approximately 3% of NSHD’s total consolidated revenue.
This projection highlights a significant business opportunity for NSHD, both in terms of revenue and strategic positioning within the transition to a low-carbon economy.

(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, companies have been increasingly expected to implement measures to address climate change, with particular emphasis on reducing CO_2 emissions from their business activities. One of NSHD’s core businesses is the supply of oxygen gas, and one of its major customer industries is steelmaking—an industry with high greenhouse gas (GHG) emissions.
Given the global push toward decarbonization, the steel industry faces significant pressure to reduce its CO_2 emissions. NSHD recognizes the urgency and importance of supporting these efforts.
If NSHD succeeds in developing advanced oxygen combustion technologies at its Yamanashi Technology Solution Center, the demand for such technologies is expected to rise. This would in turn lead to increased demand for oxygen gas supplied by NSHD.
We view this growing demand for low-carbon technologies as a significant business opportunity that could lead to increased revenue.

(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

Recently, there has been an increasing expectation for companies to implement climate change measures, with a strong focus on reducing CO_2 emissions in business activities. For the advanced oxygen blast furnace under consideration, an increase in oxygen demand of 2.5 billion Nm^3 per year is anticipated. If the oxygen gas is sold at 10 yen/Nm^3, an additional sales increase of 25 billion yen is anticipated. The calculation is as follows:

(Annual demand for advanced oxygen blast furnace: 2,500,000,000 Nm^3) × (Oxygen gas unit price: 10 yen/Nm^3) = 25,000,000,000 yen

(3.6.1.24) Cost to realize opportunity

102000000

(3.6.1.25) Explanation of cost calculation

As part of the development of oxygen combustion technology, a total investment of 102 million yen, including 82 million yen in personnel-related R&D expenses and 20 million yen in equipment costs, will be made to develop oxygen burners applicable to oxygen blast furnaces.

(3.6.1.26) Strategy to realize opportunity

[Situation]

In response to the carbon neutrality initiatives starting in the US and Europe, the steel industry, which is a major recipient of NSHD's oxygen gas supply, is also being required to reduce greenhouse gas (GHG) emissions. Since significant CO2 emissions occur during the pig iron production process using blast furnaces in the steel industry, NSHD believes that by developing CO2 emission reduction technologies, it can expand order opportunities from the steel sector.

[Task]
There is a need to develop technologies that contribute to reducing CO_2 emissions in the steel business.
[Action]
At NSHD's R&D hub, the Yamanashi Solution Center, oxygen combustion technology is being developed. This technology enhances combustion efficiency by adding high-purity oxygen to the fuel gas, creating an environment where oxygen concentration exceeds 21%, which is the concentration in ambient air. Compared to air combustion, this achieves higher flame temperatures and reduces the nitrogen content in the fuel gas, thereby decreasing the energy lost through exhaust gases. Consequently, this technology contributes to energy saving and CO_2 emission reduction and can be applied to various applications such as high temperature heating furnaces and melting furnaces.
[Result]
The oxygen demand for NSHD driven by this technology is estimated at 2.5 billion Nm^3. This technology is already being applied to various combustion applications such as heating and melting furnaces as an energy-saving and CO_2 reduction measure. Moving forward, NSHD aims to expand the use of this combustion technology to convert air combustion to oxygen combustion in new blast furnaces across the steel industry.

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
☑ Belgium
☑ Italy

☑ Norway

☑ Spain

(3.6.1.6) River basin where the opportunity occurs

Select all that apply

☑ Other, please specify: Aquaculture

(3.6.1.8) Organization specific description

While global demand for seafood is increasing, a significant food issue has arisen due to the decline in fish catches worldwide caused by the impacts of recent climate change. NGE, which operates the European gas business as part of the NSHD group, supplies high-purity oxygen for salmon aquaculture.

(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

The growth of aquaculture in Europe is expected to be around 10% annually in the medium term, and demand may not be met by traditional sources of supply.

(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)

163660000

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

327320000

(3.6.1.23) Explanation of financial effect figures

The current sales from aquaculture in Europe are approximately 2,455 million yen, with an expected annual growth rate of 10%.

(3.6.1.24) Cost to realize opportunity

4909800000

(3.6.1.25) Explanation of cost calculation

The cost calculation is related to the facilities located at the fish farms, storage facilities, supply systems, and oxygen generation facilities.

(3.6.1.26) Strategy to realize opportunity

The development of aquaculture is an important factor in protecting the natural environment.
[Add row]

(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)

6300000000

(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

Of the CAPEX, ¥63 billion, equivalent to 45%, is invested in environmental and hydrogen society contribution initiatives. These projects include HyCO plants for hydrogen production and the establishment of the Green Hydrogen Joint Company. These projects contribute to our company's and our customers' efforts toward carbon neutrality. We will continue to invest to secure 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)

3301775500

(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

For the fiscal year ending in 2025 (FYE2025), sales are projected to reach 1,308 billion yen. Annual sales related to aquaculture are expected to be 450 million yen in Japan and approximately 2,852 million yen in Europe. Although current sales are modest, we will continue to strive for growth.

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

In our Corporate Governance Principles, it is stipulated that diversity, including gender, international experience, professional background, and age, should be considered when selecting candidates for the board of directors.

(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 confirm the strategies of each operating company for preparing the budget for the following fiscal year. At this meeting, strategies related to sustainability, including issues related to climate change, are reported by each operating company. The results of the meeting are reported to the Board of Directors in the form of a budget proposal submission.
The Global Risk Management Committee is held once a year with the aim of deliberating important risks and countermeasures. Climate change risk is included among the risks to be reviewed at this meeting, and the results are reported to the Board of Directors.
The Executive Committee deliberates on the formulation and monitoring of the medium-term management plan as well as investment projects. In formulating the medium-term management plan, NSHD's initiatives and goal setting regarding climate change issues during the plan period are discussed. Additionally, in the deliberation of individual investment projects, the impact of the investment on climate change issues is also considered. The medium-term management plan and investment projects are proposed to the Board of Directors after deliberation from the Executive Committee.
Regarding MOS Indices, targets for reducing GHG emissions and other environmental burdens, as well as next fiscal year targets related to quality, security, and safety, are reported to the Board of Directors annually along with the previous fiscal year's results. 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
☑ Approving and/or overseeing employee incentives
☑ 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

NSHD has established the NSHD Group Environmental Policy by resolution of the Board of Directors. This policy states that "under the leadership of top management, we will strive to harmonize our business activities with the environment, reduce environmental impact, contribute to a resource-circulating society through technology, and contribute

to the development of a sustainable society." In accordance with this policy, the President and CEO of NSHD bears the responsibility, delegated by the Board of Directors, for addressing climate change-related issues including water intake and water resource matters.
Based on regulations established by the Board of Directors, the President and CEO serve as the chairperson of both the Global Strategy Review Committee and the Global Risk Management Committee. The former is responsible for deciding the overall group business strategy, and the latter ensures the effectiveness of risk management across the NSHD Group. Through these meetings, the President and CEO reviews specific responses of NSHD to climate change-related issues, including water-related challenges.
An example of a resolution by the President and CEO regarding water-related issues is the announcement of the "Sustainable Water Program (SWP)" as part of the promotion of sustainability management in the medium-term management plan "NS Vision 2026 Enabling the Future," published on May 11, 2022. Effective use of water resources is a critical issue, and through efficient water utilization, NSHD aims to conserve water resources in its business activities by understanding water risks and responding to high-risk sites.
The SWP includes water stress surveys using the water risk assessment tool "Aqueduct," developed by the World Resources Institute (WRI), to identify gas production plants (ASU, HyCO sites) located in high-risk areas. At gas production plants in high-risk areas, efforts are made to reduce the intake and consumption of water through measures such as water recycling. The President and CEO holds responsibility for the progress of sustainability management promotion, 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:*

	Management-level responsibility for this environmental issue
	☑ Yes
Biodiversity	*Select from:* ☑ 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
☑ Implementing the business strategy related to environmental issues
☑ 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 holds responsibility for climate change-related issues and serves as the chairperson of both 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 deciding the group-wide business strategy, while the latter oversees ensuring the effectiveness of NSHD's risk management. Through these meetings, the President and CEO reviews and considers specific responses by NSHD to climate change issues.
The Global Strategy Review Committee meets once a year to review the strategies of each operating company in preparation for the formulation of the next fiscal year's budget. During this meeting, the Chief Sustainability Officer (CSO), who is responsible for NSHD's sustainability activities, reports on the group-wide sustainability performance over the past year, including progress in reducing GHG emissions, and sets targets for the following year. The meeting's outcomes are reported to the Board of Directors in the form of budget proposals, while sustainability activities are also reported separately to the Board.
The Global Risk Management Committee, also held annually, is responsible for selecting NSHD's critical risks and deliberating upon countermeasures. The meeting evaluates business risks that NSHD faces based on their frequency of occurrence and their financial or strategic impact and decides upon appropriate responses. For the fiscal year ending 2025 (FYE2025), the development of technologies necessary for NSHD's GHG reduction efforts was identified as a risk, and strategies for addressing this were discussed.
The Executive Committee deliberates on the formulation and monitoring of the medium-term management plan as well as investment projects. The medium-term management plan and investment proposals are presented to the Board of Directors after reviewing by the Executive Committee. The current medium-term management plan was announced on May 11, 2022, following discussions at the Executive Committee and the Board, covering the four-year period from FYE2023 to FYE2026.

Within this plan, NSHD has defined five priority strategies, two of which are “Promotion of Sustainability Management” and “Exploration of New Businesses toward a Decarbonized Society.” The plan also sets targets to reduce GHG emissions by 18% by FYE2026 and 32% by FYE2031 compared to FYE2019 levels and aims for carbon neutrality by FYE2050. Additionally, by FYE2026, the number of avoided emissions due to environmental product offerings and applications is expected to exceed NSHD’s own GHG emissions, accelerating our efforts to address climate change issues. The President and CEO bears responsibility for executing and achieving these targets. Progress on the medium-term management plan is regularly monitored by the Board of Directors. At both the Executive Committee and the Board, individual investment projects are reviewed, including discussions on whether and to what extent the projects may increase GHG emissions and how they contribute to reducing customers’ GHG emissions and the impact of these projects on climate change issues.

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

At NSHD, the President and CEO holds responsibility for climate change issues, including water-related challenges, and serves as the chairperson of both 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 deciding the group-wide business strategy, while the latter is responsible for ensuring the effectiveness of NSHD’s risk management. The CEO is accountable for the overall management of the NSHD Group.
Furthermore, the "NSHD Group Environmental Policy" stipulates that the CEO should lead the group to harmonize business activities with the environment, strive to reduce environmental impact, contribute technologically to a resource-circulating society, and support the development of a sustainable society.
Matters related to water risks discussed at the Global Strategy Review Committee are reported to the Board of Directors. The Board reviews these matters and, if necessary, provides instructions to the CEO.
At the Global Strategy Review Committee, the Chief Sustainability Officer (CSO) reports on progress related to sustainability, including the reduction of GHG emissions and other environmental impacts.

(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

10

(4.5.3) Please explain

As part of its sustainability management, NSHD assigns the Chief Sustainability Officer (CSO), who is also an Executive Managing Officer, responsibility for risk management related to safety, security, and the environment. Achieving zero incidents in safety, security, and environmental accidents is included as a performance evaluation metric for the CSO. The CSO's performance evaluation also includes targets for GHG emission reductions.
Furthermore, NSHD's directors' remuneration consists of (i) a basic monthly salary, (ii) performance-linked compensation, and (iii) non-financial indicator linked compensation, generally allocated in a ratio of approximately 5:4:1, which is reflected in total pay of each employee. Starting from July 2024, the number of avoided emissions due to environmental product offerings and applications products has been added to the non-financial indicator linked compensation.

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

22

(4.5.3) Please explain

As part of its sustainability management, NSHD assigns the Chief Sustainability Officer (CSO), who is also an Executive Managing Officer, with risk management responsibilities related to safety, security, and the environment. The CSO's performance evaluation includes achieving zero incidents in safety, security, and environmental accidents. This includes environmental accidents related to water, which are also part of the CSO's performance assessment.

(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

As part of its sustainability management, NSHD assigns risk management related to safety, security, and the environment to the Chief Sustainability Officer (CSO), who is an Executive Managing Officer. Achieving zero incidents in safety, security, and environmental accidents is included in the CSO's performance evaluation. The CSO's performance evaluation also includes targets for GHG reduction.

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

The CSO's performance evaluation includes targets for GHG reduction.

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: Environmental incidents include water-related environmental incidents and are subject to CSO 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 its sustainability management, NSHD assigns the Chief Sustainability Officer (CSO), who is an Executive Officer, the responsibility for managing risks related to safety, security, and the environment. Achieving zero incidents in safety, security, and environmental matters, including water-related environmental incidents, is also 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

Environmental incidents include those related to water, and these are also included in the CSO's performance evaluation.

Climate change

(4.5.1.1) Position entitled to monetary incentive

Board or executive level

☑ Director on board

(4.5.1.2) Incentives

Select all that apply

☑ Bonus – set figure

(4.5.1.3) Performance metrics

Emission reduction

☑ Other emission reduction-related metrics, please specify: Amount of avoided emissions

(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 compensation for NSHD directors consists of (i) fixed monthly remuneration, (ii) performance-linked remuneration, and (iii) non-financial indicator-linked remuneration, which are generally composed of a ratio of approximately 5:4:1 and reflected in the amount paid to each employee. Starting from July 2024, the non-financial indicator-linked remuneration includes the contribution to avoided emissions through environmental product offerings and applications.

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

The indicators for determining the amount or calculation method of directors' compensation include contributions to avoided emissions.

(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

Environmental issues are recognized as one of the most important challenges and apply to the entire NSHD group, covering all areas 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

☑ Science-Based Targets Initiative (SBTi)

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

☑ Task Force on Nature-related Financial Disclosures (TNFD)

☑ UN Global Compact

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

[SBTi] Nippon Gases, NSHD's European operating company, has obtained SBTi certification for its Scope 1, 2, and 3 GHG emissions.

[TCFD] Since November 2019, NSHD has expressed its support for the Task Force on Climate-related Financial Disclosures (TCFD). Through this endorsement, NSHD will further accelerate its efforts to reduce environmental impact, promote energy-saving activities, and expand products that contribute to GHG emissions reductions, while gradually enhancing its information disclosure.

[United Nations Global Compact] NSHD has signed the United Nations Global Compact (UNGC) and was registered as a participating company on January 18, 2022. NSHD is also a member of the Global Compact Network Japan, which consists of Japanese companies that have signed the UNGC. Furthermore, Nippon Gases Euro-Holding S.L.U, NSHD's European operating company, has also signed the UNGC and is registered as a participating company.

[TNFD] NSHD is registered as a TNFD Adopter and has committed to disclosing in accordance with TNFD recommendations by fiscal year 2025.

(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

The Japanese government's declaration of carbon neutrality by FYE2050 is an ambitious goal, but we believe it represents the ideal vision for a sustainable society. This policy is also extremely important for maintaining the international competitiveness of Japan's chemical industry. To realize this goal, the chemical industry will accelerate efforts to further advance processes and expand reduction contributions. Through the development and social implementation of technologies such as CCU (Carbon Capture and Utilization), artificial photosynthesis, and chemical recycling, aimed at building a resource-circulating society, we will make maximum efforts to reduce GHG emissions originating from energy and raw materials. Based on the above policy, NSHD incorporates and promotes climate change-related initiatives within 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 Environmental Action Plan – Member companies strive to improve energy consumption efficiency to reduce CO2 emissions.
2. To promote greenhouse gas (GHG) emission reductions, JCIA advocates and endorses the Carbon Life Cycle Analysis (cLCA) method, which provides a comprehensive overview of the entire life cycle and quantifies the contributions of GHG avoided emissions of our products.

JCIA’s activities are managed by several working teams within a technical committee composed of participants from its major member companies. Representatives from NSHD participate in many of these working teams and strongly support JCIA’s initiatives, including proposals to the Japanese government regarding the introduction of emissions trading systems and global development projects to promote emission reduction products (global value chains).

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

8370000

(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. Voluntary Environmental Action Plan – Member companies strive to improve their energy consumption efficiency to reduce CO2 emissions. Through financial support, these activities are further encouraged, contributing to the decarbonization of the entire industry and the reduction of GHG emissions in line with the Paris Agreement.

(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

Financial Statements for the Fiscal Year Ending March 2025

(4.12.1.7) Attach the relevant publication

Annual Securities Report for the Year Ended March 31, 2025.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

Financial Statements for the Fiscal Year Ending March 2025 p32 (② Environment)

(4.12.1.7) Attach the relevant publication

Annual Securities Report for the Year Ended March 31, 2025.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

☑ Acute physical

☑ Chronic physical

(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

Since the adoption of the Paris Agreement in 2015 and the 1.5°C goal established at COP26 in 2021, countries worldwide have strengthened their decarbonization policies and regulations. These shifts, along with associated market changes, are expected to significantly impact the transition toward a decarbonized society. According to reports by the International Energy Agency (IEA), carbon pricing in advanced economies that have declared carbon neutrality is projected to reach approximately $205 per ton of CO_2 by FYE2040 and $250 per ton of CO_2 by FYE 2050. NSHD recognizes the potential increase in carbon tax burden as a transition risk. However, NSHD also envisions opportunities to differentiate itself from competitors and gain new business opportunities by proactively expanding the use of renewable energy through mechanisms such as Power Purchase Agreements (PPAs) and green electricity certificates.

(5.1.1.11) Rationale for choice of scenario

To assess the potential impacts on our company in a world where the global market is actively pursuing carbon neutrality by 2050, we have adopted the NZE2050 scenario. As NSHD is working toward achieving net-zero GHG emissions across the Group by 2050, we believe this scenario is effective for analyzing our future outlook.

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 referenced the global warming scenario (RCP8.5) from the Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report, published in FYE2014. This scenario assumes a CO_2 concentration of 1000 ppm and a projected temperature increase of 3.2–5.4°C by the FYE2100. Based on these parameters, we assessed the potential impact on revenue due to the decreased efficiency of air separation units. Regarding sea level rise, we estimated the risks of flooding and other related hazards using parameters of 13 cm by FYE2030 and 25 cm by FYE2050.

(5.1.1.11) Rationale for choice of scenario

The purpose of using the RCP scenario is to identify the physical risks associated with climate change and to assess the scale of their potential impacts. According to the IPCC Fifth Assessment Report, there is a correlation between anthropogenic CO_2 emissions and global warming, and if carbon emissions continue, the physical impacts of climate change—such as extreme weather events—are projected to intensify and expand by the year 2100. Due to the nature of scenario analysis, it cannot be assumed that climate mitigation measures or the achievement of the 1.5°C target will be realized with certainty. Therefore, it is necessary to also consider the potential physical impacts resulting from a rise in average global temperatures. In this context, we refer to the RCP8.5 scenario, which assumes a world where decarbonization efforts are given the lowest priority due to socio-economic conditions, leading to a global average temperature rise of more than 4°C above 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

☑ Acute physical

☑ Chronic physical

(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 assume a global landscape in which policies and regulations will become more stringent to achieve the targets set by the Paris Agreement adopted in 2015. Under this scenario, we anticipate that green and blue hydrogen will account for 36% of oxygen production by FYE2030 and 88% by FYE2050. We view this as a business opportunity, as demand for our products is expected to increase accordingly.

(5.1.1.11) Rationale for choice of scenario

To envision a world that achieves the targets set by the Paris Agreement, we use the SDS (Sustainable Development Scenario). As NSHD is committed to achieving net-zero GHG emissions across the Group by 2050, we consider this scenario to be effective for analyzing our future outlook.

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

For the "Physical Climate Scenario," we referenced the global warming scenario (RCP8.5) from the Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report, published in FYE2014. This scenario assumes a CO_2 concentration of 1000 ppm and a projected temperature increase of 3.2–5.4°C by the year 2100. Based on these parameters, we assessed the potential impact on revenue due to the decreased efficiency of air separation units. Regarding sea level rise, we estimated the risks of flooding and other related hazards using parameters of 13 cm by FYE2030 and 25 cm by FYE2050.

(5.1.1.11) Rationale for choice of scenario

The purpose of using the RCP scenario is to understand the physical risks caused by climate change and to assess the scale of their impact. According to the IPCC Fifth Assessment Report, there is a correlation between human-induced CO_2 emissions and global warming, and as long as carbon emissions continue, the physical impacts of climate change—such as extreme weather events—are expected to increase and intensify by 2100. Due to the nature of scenario analysis, it cannot be assumed that climate mitigation efforts or the achievement of the 1.5°C target will be successful, and the physical effects of a rise in average temperature must also be considered. Therefore, we refer to the RCP8.5 scenario, which assumes a world where decarbonization efforts are deprioritized due to social circumstances and the global average temperature rises by more than 4°C above pre-industrial levels by 2100.

Water

(5.1.1.1) Scenario used

Water scenarios

☑ WRI Aqueduct

(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

(5.1.1.7) Reference year

2023

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2050

☑ Other, please specify :2024

(5.1.1.9) Driving forces in scenario

Local ecosystem asset interactions, dependencies and impacts

☑ Changes to the state of nature

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

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

Based on the simulation from Aqueduct Floods by the World Resources Institute (WRI), we assessed flood risk projections for 130 major production sites of our group under the "4°C scenario for 2050" and a "1-in-100-year flood event." As a result, 17 sites in Japan and overseas were identified as being at risk of inundation of 0.1 meters or more.

(5.1.1.11) Rationale for choice of scenario

The purpose of using the Aqueduct scenario in physical water risk assessment is to identify and evaluate the scale of physical risks associated with climate change. The World Resources Institute (WRI)'s Aqueduct tool provides data on water stress, enabling the assessment of current and future water-related risks in specific regions. Due to the inherent uncertainties of scenario analysis, global fluctuations in water resources and regional imbalances in water supply and demand cannot be predicted with certainty. Therefore, it is essential to consider water-related risks at the level of individual sites. For this reason, our company conducts water stress assessments using Aqueduct for each operating company, considering local conditions and business characteristics, with the aim of conserving water resources.

(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 Paris Agreement, the international framework for global warming countermeasures, has entered into force and countries around the world have begun to respond. In Japan as well, a policy aiming for carbon neutrality by FYE 2050 was announced in October 2020. To achieve this goal, it is expected that regulations and initiatives evaluated in Europe—such as carbon taxes and emissions trading—will also be introduced in Japan. The implementation of new regulations on CO_2 emissions carries the risk of increasing indirect costs.
The total annual emissions for Taiyo Nippon Sanso (Scope 1 + Scope 2) are approximately 2.2 million t-CO_2. Assuming a CO_2 price of USD 140 per t-CO_2 (based on an IEA carbon tax estimate for FYE2040), this would lead to a tax burden of about ¥42 billion, which would equate to a loss of about ¥10 billion in domestic operating profit. If gas production increases in the future, Scope 2 emissions will also increase, leading to further tax burdens. To address this, we are working to expand the adoption of renewable energy through mechanisms such as Power Purchase Agreements (PPAs) and Green Power certificates.
As a result, roughly 6% of NSHD's electricity is now provided by natural energy, contributing to reductions in GHG emissions.
Additionally, in March 2021 we developed "SCOPE-Jet SCAN," a technology that analyzes furnace temperature to control the supply of oxygen and fuel, thereby increasing oxygen utilization efficiency. By using fuel more efficiently, it helps reduce CO_2 emissions. In FYE2025, by introducing CO_2-free electricity, we achieved a reduction of 25,000 t-CO_2.

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

Purpose of Using RCP Scenarios
The purpose of using RCP (Representative Concentration Pathway) scenarios is to enable the Company to identify physical risks caused by climate change and assess the potential scale of their impacts. According to the IPCC's Fifth Assessment Report, there is a correlation between human-induced CO_2 emissions and global warming. If carbon emissions continue, it is projected that physical impacts such as extreme weather disasters will intensify and become more widespread by the year 2100.
Due to the nature of scenario analysis, it cannot be guaranteed that mitigation efforts will succeed or that the 1.5°C target will be achieved. Therefore, it is necessary to consider the potential physical impacts resulting from rising average temperatures. For this reason, NSHD refers to the RCP8.5 scenario, which assumes that decarbonization efforts will be deprioritized due to societal circumstances and that the average global temperature in 2100 will rise by more than 4°C compared to pre-industrial levels.
Physical Risks and NSHD Operations
Taiyo Nippon Sanso, a member of the NSHD Group, primarily engages in the production of industrial gases and currently operates 37 gas production plants. If climate change continues to intensify, leading to an increase in extreme weather events such as heavy rainfall and strong winds, there is a risk that air separation units (ASUs), which are essential to industrial gas production, may malfunction. Such malfunctions could result in an inability to stably supply products to customers, potentially causing significant profit losses.
In addition, the cost burden associated with equipment failures due to abnormal weather events could potentially reach several hundred million yen. Therefore, countermeasures to address the risk of component failures in air separation units are necessary.
Insurance and Risk Mitigation
To mitigate these risks, Taiyo Nippon Sanso has enrolled all 37 gas production plants nationwide in a comprehensive property insurance policy that covers restoration costs in the event of damage caused by abnormal weather events, such as fires or accidents affecting production equipment including air separation units. This insurance covers a wide range of incidents, including fire, lightning, rupture, explosion, windstorm, hail, snow damage, theft, electrical or mechanical accidents, and other unforeseen accidental damage. Accordingly, even if component failures in air separation units occur due to abnormal weather, the financial damage will not exceed the amount insured.
As of FYE2025, Taiyo Nippon Sanso continues to maintain this comprehensive property insurance and has also extended coverage to newly established sites. To date, no significant financial damage attributable to abnormal weather has been incurred. Continued enrollment in insurance policies ensures preparation for potential financial risks from future natural 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 reaffirmed, as a group, our understanding of the external environment surrounding us. In our business activities, we aim to enhance corporate value by balancing social and economic value through the sharing of best practices across regions and the pursuit of operational excellence.
Within our group, we use fossil-based fuels in manufacturing and other processes. While we recognize the need to transition away from fossil fuels, developing an effective transition plan remains an issue to be addressed going forward.

(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

In line with our medium-term management plan, we disclose information such as the results of our TCFD scenario analysis. We also accept questions on these topics during our financial results briefings. We publish sustainability-related disclosures on the NSHD website. Specifically, we disclose our materiality issues, our medium-term management plan, our responses to CDP, and analyses of opportunities and risks based on TCFD-recommended "transition scenarios" and "physical climate scenarios." We also disclose our processes for identifying, assessing, and managing climate-related risks.
Additionally, since FYE2005, we have published and made publicly available annual reports on our environmental and social initiatives. Starting in FYE2017, we integrated these reports into our annual report and now issue a comprehensive integrated report annually. All data from FYE2005 is available on our website.
We also hold regular investor relations (IR) seminars for individual investors and have hosted the “Web IR Conference on Sustainability initiatives” annually since 2022, providing opportunities for dialogue with investors and shareholders. Furthermore, during the financial results briefing held each May and led by our president and CEO, we accept questions related to climate change.
We have set up an inquiry form on the official NSHD website that allows stakeholders to communicate with us via email.
Through these efforts, we disclose information to our shareholders and actively provide opportunities and platforms for communication. Therefore, we believe that we have an effective mechanism in place for collecting feedback from our shareholders.

(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

Our group aims to contribute to the realization of transition plans and the reduction of greenhouse gas emissions in our customers' industries by providing environmental product offerings and applications.
We recognize that collaboration with strategic partners is essential, not only our own initiatives, but joint efforts are critical. To this end, we are strengthening our efforts in technological development and will also enhance collaboration with strategic partners to address any technological gaps.

(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 and 2 emissions by 2050.
In the reporting year, we achieved a reduction of over 400,000 t-CO_2 in Scope 1 and 2 emissions compared to the previous year. Of this, approximately 10,000 t-CO_2 was reduced through specific initiatives such as improving equipment efficiency.
We are making steady progress toward achieving the targets outlined in our transition plan.

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

Select all that apply

☑ Water

(5.2.14) Explain how the other environmental issues are considered in your climate transition plan

At our European operating company, Nippon Gases Europe, we are formulating targets based on SDG 6.

(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

The core products of NSHD are oxygen, nitrogen, and argon. Since the raw material for these products is air, raw material costs are virtually nonexistent. The primary energy cost is the electricity required to operate air separation units, which extract gases from the atmosphere.
As such, fluctuations in energy consumption directly impact profitability. To enhance sales activities based on cost competitiveness, it is essential to reduce production costs by improving the energy efficiency of air separation units that produce bulk gases—specifically by lowering the electricity consumption per unit of gas produced (measured in Nm^3/kWh).
At NSHD, we are committed to considering environmental and social impacts across all aspects of our business operations—throughout the entire value chain, including R&D, production, supply, sales, and end-use. Our efforts to reduce energy intensity include the development and design of high-efficiency systems, upgrading air separation units components to more efficient models, and optimizing plant operations based on demand trends.

Meanwhile, we recognize that climate change poses a significant challenge, and we see an opportunity to contribute to addressing this issue through the provision of innovative gas solutions. From this perspective, we calculate and disclose the volume of avoided emissions enabled by the use of NSHD products, thereby contributing to emission reductions in other companies and industries.
For example, in pursuit of a carbon-neutral society, our R&D center Taiyo Nippon Sanso's Yamanashi Technology Solution Center is actively engaged in the development of oxygen combustion technologies. Leveraging NSHD's core technologies, we are developing oxygen combustion solutions for various applications, contributing to energy savings and the reduction of environmental pollutants.
Oxygen combustion is a technology that enhances combustion efficiency by adding high-purity oxygen to the fuel gas, creating an environment with an oxygen concentration higher than 21%, the level found in ambient air. Compared to conventional air combustion, this results in higher flame temperatures and reduces the nitrogen content in the fuel gas. Consequently, it minimizes energy loss through exhaust gases and contributes to both energy efficiency and reduced emissions.

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 gases, one of NSHD's core products, are derived from air. As air is the raw material, we believe the impact on the supply chain is relatively limited.
However, within the broader value chain, industrial gas demand exists across all regions of Japan, requiring regular delivery by tank lorries. This creates an ongoing risk of supply disruption due to natural disasters such as earthquakes or typhoons.
To mitigate these risks, NSHD maintains production facilities throughout the country, enabling us to deliver liquefied gases to customers from alternative sites when necessary. Additionally, we utilize weather forecasts and other predictive information to make early deliveries in advance of potential disruptions, thereby enhancing our resilience to physical disasters.

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

We strive to live out our corporate philosophy “Proactive. Innovative. Collaborative. Making life better through gas technology. The Gas Professionals.” This philosophy guides our actions and aspirations. To realize this philosophy, we recognize that addressing carbon neutrality is an urgent and critical issue.
We are particularly focused on the utilization of hydrogen, which in recent years has gained attention as a CO_2-free, environmentally friendly energy source. Leveraging our expertise in hydrogen gas supply and handling technologies, NSHD has developed and commercialized both stationary and mobile hydrogen refueling stations.
More recently, in collaboration with our European operations, we have also intensified our research and development efforts on hydrogen and ammonia combustion technologies. Since both hydrogen and ammonia emit no CO_2 or air pollutants when burned, we believe these technologies can make a significant contribution toward achieving a carbon-neutral society.
NSHD is therefore actively investing in technologies that support carbon neutrality from multiple angles. As part of this initiative, we have set a target to ensure that by FYE2026, the avoided emissions enabled by our environmental product offerings and applications will exceed our own GHG emissions.
In FYE2025, our contribution to avoided emissions through products and services reached 8.104 million t-CO_2, an approximately 9% increase compared to the previous year. These results reflect steady progress toward our carbon neutrality goals and our broader commitment to addressing 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

The industrial gas manufacturing process, which is a core business for NSHD, is a highly electricity-intensive industry. The majority of this electricity consumption is used to operate air separation units. Therefore, fluctuations in energy consumption directly affect our profitability, making energy reduction one of the most critical challenges for NSHD.
Furthermore, reducing energy consumption contributes to lowering our Scope 1 and 2 emissions, thus effectively addressing climate change issues.
In recent years, advances in computer performance have enabled complex calculations to be completed relatively quickly. This has made it possible to optimize the operation of air separation units by controlling parameters such as valve timing and vane positioning, leading to reduced electricity consumption.
Optimizing the operation of air separation units through computer analysis represents a highly effective opportunity for NSHD, as it lowers production costs and reduces GHG emissions without requiring significant capital investment.
Accordingly, NSHD has expanded computer analysis across its gas production plants to contribute to GHG emission reductions. This initiative began in 2017 and has since been deployed at 14 domestic plants including Shinyo Sanso Co, Ltd, Ltd., Shunan, Shin-Sagami Sanso Co., Ltd., Fuji Sanso Co., Ltd., as well as two overseas plants, Leeden National Oxygen Ltd. and Nippon Sanso Ingasco, Inc. The total cost incurred was approximately 30 million yen for software implementation.
We are currently launching a new project employing advanced digital solution technologies for further optimization.
As a result of these efforts, in FYE2025 we achieved an annual electricity reduction of 12,463 MWh. Using the Tokyo Electric Power Company's FYE2025 CO_2 emission factor (0.422 t-CO_2/MWh), this equates to a GHG emissions reduction of approximately 5,259 t-CO_2. These savings were realized solely through software implementation and personnel efforts, demonstrating an effective reduction in both electricity use and associated emissions.

Regarding water-related operational risks, NSHD's core industrial gas production process relies on a cooling water circulation system centered around cooling towers. Water availability is therefore a key factor in factory site selection, and plants are strategically located where water access is reliable.
Scenario analyses suggest that climate change is increasing the frequency of natural disasters, thereby elevating risks. Increased local heavy rainfall due to global warming and flood risks from typhoons and storm surges driven by sea-level rise raise the possibility of factory closures lasting from several days to weeks.
Additionally, rising ambient temperatures lead to higher temperatures in the cooling water supplied to cooling towers. This, in turn, raises the temperature of the industrial gases discharged from the towers, reducing gas density and worsening production efficiency. To mitigate this effect, it is necessary to increase the flow rate of freshwater used for cooling, resulting in higher water intake volumes.
We recognize these factors as increasing the water-related risks associated with our operations.

(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
☑ Capital allocation
☑ Capital expenditures

☑ Direct costs

☑ Indirect costs

☑ Access to capital

(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

Since the raw material for industrial gases is air, there are essentially no raw material costs; the primary energy required is electricity to operate the air separation units that extract air from the atmosphere. Therefore, fluctuations in energy consumption have a direct impact on NSHD's profitability, making energy reduction our greatest challenge. Moreover, reducing energy consumption leads to lower Scope 1 and 2 emissions, effectively contributing to addressing climate change.
In recent years, dramatic improvements in computer performance have made it possible to complete complex calculations in relatively short timeframes. This advancement has enabled us to optimize the operation of air separation units by adjusting parameters such as valve opening timings and vane angles, resulting in reductions in electricity consumption.
Computer analysis optimizes the operation of air separation units, reducing electricity use without requiring significant capital investment. This lowers manufacturing costs and reduces greenhouse gas (GHG) emissions. This represents a highly effective opportunity for NSHD. Therefore, we have implemented computer analysis at gas production plants to reduce GHG emissions.
Since the project's inception in 2017, we have deployed this computer analysis approach at 14 domestic plants including Shinyo Sanso Co., Ltd., Shunan, 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., by FYE2024. The total investment was approximately 30 million yen, covering only software implementation costs.
We are also launching a new project utilizing digital solution technologies for further operational optimization.
As a result, in FYE2025 we achieved a reduction of 12,463 MWh in annual electricity consumption. Using TEPCO's FYE2025 CO_2 emission factor (0.422 t-CO_2/MWh), this corresponds to a GHG emissions reduction of approximately 5,259 t-CO_2. This demonstrates that by investing solely in software and labor, we have effectively reduced electricity usage and associated with GHG emissions.
By continuing to advance these initiatives, NSHD aims to reduce its GHG emissions and achieve an 18% reduction compared to FYE2019 levels by the target year of FYE2025, in line with our medium-term management plan.

Regarding water-related risks, the increased likelihood of localized heavy rainfall due to global warming, as well as typhoons and storm surges that cause flooding due to rising sea levels, may lead to natural disasters resulting in factory closures lasting from several days to several weeks. These closures could have a significant financial impact.
To mitigate these risks, we are promoting disaster preparedness measures and leveraging insurance as part of our long-term initiatives.
Starting in FYE2022, NSHD launched the Sustainable Water Program (SWP) under our medium-term management plan. This program uses the water risk assessment tool “Aqueduct,” developed by the World Resources Institute (WRI), to survey water stress and identify high-risk gas production plants, particularly overseas ASUs and HyCO facilities, and conduct ongoing monitoring.
At these high-risk gas production plants, we are actively working to reduce water intake and consumption. Efficient use of water resources is essential, and through this program, we aim to conserve water resources in our corporate activities by promoting their efficient utilization.

(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 Environmentally Beneficial Products and Technologies*

[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 1

(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

21

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

632000000

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

21

(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

Research and development investments for low-carbon products are aggregated based on the carbon-neutral (CN) related themes identified by the Sustainable Working Group (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)

562

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

-79

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

-10

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

-2

(5.9.5) Please explain

At Taiyo Nippon Sanso Corporation, we completed the installation of two new air separation units in FYE2025, coinciding with the relocation of manufacturing sites and addressing aging facilities. For FYE2026, there are no plans for large-scale investments such as new air separation unit installations. Operating expenses for FYE2025 decreased due to site closures, and no significant fluctuations are expected for FYE2026.
As part of our medium-term management plan, we established a " gas production plant" subcommittee focused on the promotion of digital transformation (DX) and increasing the use of technology. Since April 2023, a Remote Operation Center (ROC) has been in operation, enabling remote control of gas production plants. This initiative aims to realize fully automated gas production plants by FYE2031.
Although rising fuel costs, driven by recent social conditions, have increased electricity expenses related to operations, we will continue to promote these initiatives with the goal of improving productivity.

(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 to scientific guidance

☑ Alignment with the price of a carbon tax

☑ Scenario analysis

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

We regularly review the internal carbon price based on external environmental factors and adjust as necessary. The operational price is standardized across NSHD at 85 US$/t-CO2 (Reference: the company's average exchange rate during the fiscal year is 152.57 JPY/USD).

(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 anticipate that regulations related to carbon taxes will become increasingly stringent year by year. Since our internal carbon price is aligned with external carbon pricing, we expect the internal price to potentially rise in the future.

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

12968

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

12968

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

Select all that apply

☑ Capital expenditure

☑ 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: We utilize it as one of the indicators for investment decisions.

(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

Although the introduction of an internal carbon price (ICP) is outside the scope of investment calculations, it is always included in investment plans and used as an indicator in investment decision-making. Manufacturing separated gases, NSHD's core business, consumes a large amount of electricity. Reducing this electricity consumption is critical for the continuation of this business. From this perspective, upgrading to high-efficiency equipment during facility renovations is an important economic and environmental consideration.
The implementation of the ICP has also heightened environmental awareness across business divisions and group companies, promoting the replacement of equipment with more efficient models. For new capital investments within domestic business divisions and group companies, we identify the amount of CO2 emissions newly generated or reduced, as well as the potential monetary scale involved.
We regularly review the internal carbon price based on external environmental conditions and adjust as needed.

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

Suppliers

(5.11.1) Engaging with this stakeholder on environmental issues

Select from:

☑ Yes

(5.11.2) Environmental issues covered

Select all that apply

☑ Climate change

☑ Water

Customers

(5.11.1) Engaging with this stakeholder on environmental issues

Select from:

☑ Yes

(5.11.2) Environmental issues covered

Select all that apply

☑ Climate change

Investors and shareholders

(5.11.1) Engaging with this stakeholder on environmental issues

Select from:

☑ No, but we plan to within the next two years

(5.11.3) Primary reason for not engaging with this stakeholder on environmental issues

Select from:

☑ Not an immediate strategic priority

(5.11.4) Explain why you do not engage with this stakeholder on environmental issues

We engage with suppliers, customers, and other stakeholders to address climate change challenges. While we recognize that collaboration with investors and shareholders is important to accelerate our efforts, we are still in the process of considering how to implement such engagement. For now, we are focusing our efforts on the current engagement activities.

Other value chain stakeholders

(5.11.1) Engaging with this stakeholder on environmental issues

Select from:

☑ Yes

(5.11.2) Environmental issues covered

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

At our European operating company, Nippon Gases Europe (NGE), we distribute a "Supplier Code of Conduct" to our suppliers and require them to agree to and sign it. The Code of Conduct asks suppliers to make efforts to reduce environmental impacts such as climate change and water scarcity. Additionally, we require suppliers to obtain certifications related to environmental management, such as ISO 14001.

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

Select from:

☑ 1-25%

(5.11.1.6) Number of Tier 1 suppliers meeting the thresholds for substantive dependencies and/or impacts on the environment

300

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

At our European operating company, Nippon Gases Europe (NGE), we distribute a "Supplier Code of Conduct" to our suppliers and require them to agree to and sign it. The code requests that suppliers actively work to reduce environmental impacts, including those related to climate change and water scarcity. Additionally, we require our suppliers to obtain ISO 14001 certification for environmental management to ensure they are making every effort to minimize environmental impact.

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

Select from:

☑ 1-25%

(5.11.1.6) Number of Tier 1 suppliers meeting the thresholds for substantive dependencies and/or impacts on the environment

300
[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

At our European operating company, Nippon Gases Europe (NGE), we target suppliers who cover 80% of our expenditure.

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

At our European operating company, Nippon Gases Europe (NGE), we target suppliers who cover 80% of our expenditure.

(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:* ☑ Yes, environmental requirements related to this environmental issue are included in our supplier contracts	*Select from:* ☑ Yes, we have a policy in place for addressing non-compliance
Water	*Select from:* ☑ Yes, environmental requirements related to this environmental issue	*Select from:* ☑ Yes, we have a policy in place for

	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
	are included in our supplier contracts	addressing non-compliance

[Fixed row]

(5.11.6) Provide details of the environmental requirements that suppliers have to meet as part of your organization's purchasing process, and the compliance measures in place.

Climate change

(5.11.6.1) Environmental requirement

Select from:

☑ Implementation of emissions reduction initiatives

(5.11.6.2) Mechanisms for monitoring compliance with this environmental requirement

Select all that apply

☑ Supplier self-assessment

(5.11.6.3) % tier 1 suppliers by procurement spend required to comply with this environmental requirement

Select from:

☑ 1-25%

(5.11.6.4) % tier 1 suppliers by procurement spend in compliance with this environmental requirement

Select from:

☑ 1-25%

(5.11.6.7) % tier 1 supplier-related scope 3 emissions attributable to the suppliers required to comply with this environmental requirement

Select from:

☑ 1-25%

(5.11.6.8) % tier 1 supplier-related scope 3 emissions attributable to the suppliers in compliance with this environmental requirement

Select from:

☑ 1-25%

(5.11.6.9) Response to supplier non-compliance with this environmental requirement

Select from:

☑ Suspend and engage

(5.11.6.10) % of non-compliant suppliers engaged

Select from:

☑ None

(5.11.6.11) Procedures to engage non-compliant suppliers

Select all that apply

☑ Re-integrating suppliers back into upstream value chain based on the successful and verifiable completion of activities

(5.11.6.12) Comment

We focus on initiatives at NGE, our European operating company.

Water

(5.11.6.1) Environmental requirement

Select from:
☑ Substitution of hazardous substances with less harmful substances

(5.11.6.2) Mechanisms for monitoring compliance with this environmental requirement

Select all that apply
☑ Supplier self-assessment

(5.11.6.3) % tier 1 suppliers by procurement spend required to comply with this environmental requirement

Select from:
☑ 1-25%

(5.11.6.4) % tier 1 suppliers by procurement spend in compliance with this environmental requirement

Select from:
☑ 1-25%

(5.11.6.5) % tier 1 suppliers with substantive environmental dependencies and/or impacts related to this environmental issue required to comply with this environmental requirement

Select from:
☑ 1-25%

(5.11.6.6) % tier 1 suppliers with substantive environmental dependencies and/or impacts related to this environmental issue that are in compliance with this environmental requirement

Select from:
☑ 1-25%

(5.11.6.9) Response to supplier non-compliance with this environmental requirement

Select from:
☑ Suspend and engage

(5.11.6.10) % of non-compliant suppliers engaged

Select from:

☑ None

(5.11.6.11) Procedures to engage non-compliant suppliers

Select all that apply

☑ Re-integrating suppliers back into upstream value chain based on the successful and verifiable completion of activities

(5.11.6.12) Comment

We focus on initiatives at NGE, our European operating company.

(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

☑ Support suppliers to set their own environmental commitments across their operations

(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

At NGE, our European operating company, we distribute the "Supplier Code of Conduct" to our suppliers and require them to agree to and sign it. The code asks suppliers to reduce their environmental impact, including efforts to mitigate climate change and water shortages. Our goal at NGE is to cover 80% of our expenditure by FYE 2026. The plan is progressing smoothly in terms of effectiveness.

(5.11.7.10) Engagement is helping your tier 1 suppliers meet an environmental requirement related to this environmental issue

Select from:

☑ Yes, please specify the environmental requirement: This contributes to promoting environmentally conscious actions among suppliers.

(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:

☑ Substitution of hazardous substances with less harmful substances

(5.11.7.3) Type and details of engagement

Capacity building

☑ Support suppliers to set their own environmental commitments across their operations

(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

At NGE, our European operating company, we distribute the "Supplier Code of Conduct" to our suppliers and require their agreement and signature. The code requests that suppliers reduce their environmental impact, including those related to climate change and water scarcity. Our goal is to extend this policy to suppliers representing 80% of our expenditure by FYE 2026. This plan is progressing smoothly in terms of effectiveness.

(5.11.7.10) Engagement is helping your tier 1 suppliers meet an environmental requirement related to this environmental issue

Select from:

☑ Yes, please specify the environmental requirement : This contributes to promoting environmentally conscious actions among suppliers.

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

Basis for Selecting This Customer Engagement

The steel industry has traditionally been an energy-intensive sector with high CO2 emissions, accounting for approximately 9% of total CO2 emissions into the atmosphere. Therefore, achieving carbon neutrality in the steel industry requires technological innovation. For this reason, we collaborate with customers in the steel industry to drive technological advancements aimed at realizing a low-carbon society.

Scope of Collaboration

Our collaboration covers Nippon Gases Euro-Holding's (NGE) customers in the steel industry. NSE is part of NSHD and operates in Europe. The steel industry accounts for 19% of NGE's sales.

(5.11.9.6) Effect of engagement and measures of success

As a success indicator for this engagement, we continuously carry out engagement activities including technological innovation, aiming to introduce cutting-edge technology that enables the use of green hydrogen in the steelmaking process. In FYE 2024, we collaborated with NGE's customers in the steel industry to drive technological innovation toward realizing a low-carbon society. With the cooperation of our partner companies, we introduced state-of-the-art technology that uses green hydrogen in the steelmaking process at customer plants, and we continue these efforts in FYE 2025. This technology represents the world's first reheating furnace system fueled solely by green hydrogen, achieving zero CO2 emissions. Based on these achievements, we consider this initiative successful.
The steel industry has traditionally been an energy-intensive market with high CO2 emissions, accounting for approximately 9% of total atmospheric CO2 emissions. Therefore, we believe the reduction effect from this engagement is significant.

Climate change

(5.11.9.1) Type of stakeholder

Select from:

☑ Other value chain stakeholder, please specify: Research institutions and strategic partner companies

(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

Basis for Selecting This Stakeholder Engagement
At NSHD, we contribute to reducing greenhouse gas emissions in our customers' industries by providing environmentally beneficial products and solutions. To achieve this, we are strengthening initiatives for the necessary technology development and enhancing collaboration with strategic partners for technologies that are lacking. Accordingly, we are advancing cooperation on ammonia technologies.
Scope of Collaboration
NSHD collaborates with various research institutions and companies to develop technologies that enable the realization of carbon neutrality from multiple perspectives. Taiyo Nippon Sanso, a member of NSHD, participated in the Strategic Innovation Promotion Program (SIP) led by the Cabinet Office as part of the Energy Carrier project “Ammonia Hydrogen Station Basic Technology” from FYE 2014 to FYE 2019. In this program, we conducted joint research with Tokyo Institute of Technology, the National Institute of Advanced Industrial Science and Technology (AIST), Hiroshima University, Toyota Industries Corporation, and Showa Denko K.K. Additionally, Taiyo Nippon Sanso developed a technology to efficiently recover high-purity hydrogen for fuel cell vehicles from ammonia decomposition gas under the commissioned research project “Ammonia Hydrogen Station Basic Technology” of the SIP Energy Carrier.
Furthermore, Taiyo Nippon Sanso was selected as a contractor for the commissioned project “Development of Fuel Ammonia Utilization and Production Technologies / Development of Combustion Technology for Fuel Ammonia in Industrial Furnaces” by the New Energy and Industrial Technology Development Organization (NEDO). Over five years from FYE 2022 to FYE 2026, together with AGC Inc., the National Institute of Advanced Industrial Science and Technology (AIST), and Tohoku University, we are developing ammonia combustion technology for industrial furnaces where fuel ammonia utilization technologies have yet to be established, contributing to decarbonization in the industrial sector.

(5.11.9.6) Effect of engagement and measures of success

At NSHD, we collaborate with various research institutions and companies to develop technologies that enable the realization of carbon neutrality from multiple perspectives. A key success indicator for our R&D engagement with external organizations is conducting research that contributes to a decarbonized society and performing demonstration tests using ammonia as fuel in glass melting furnaces.
From FYE 2022 to FYE 2026, over a five-year period, we have been working together with AGC Inc., the National Institute of Advanced Industrial Science and Technology (AIST), and Tohoku University to develop ammonia combustion technology for industrial furnaces where fuel ammonia utilization technologies have not yet been established. This engagement contributes to decarbonization in the industrial sector.
In FYE 2024, we conducted the world's first demonstration test using ammonia as fuel in a glass melting furnace. In this test, while maintaining the temperature of the glass melting furnace, the NOx concentration in the exhaust gas was measured below environmental regulatory standards. Based on this result, we consider this initiative successful as of FYE 2025.
We believe that developing ammonia combustion technology for industrial furnaces that do not use ammonia as a fuel will advance our decarbonization efforts and contribute to the decarbonization of industry and society as a whole.

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 covers consolidated subsidiaries.*
Water	*Select from:* ☑ Financial control	*The scope covers consolidated subsidiaries.*
Plastics	*Select from:* ☑ Financial control	*The scope covers consolidated subsidiaries.*
Biodiversity	*Select from:* ☑ Financial control	*The scope covers 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?	Name of organization(s) acquired, divested from, or merged with	Details of structural change(s), including completion dates
	Select all that apply ☑ Yes, a divestment	Taiyo Nippon Sanso Energy, Kyushu Ekisou, and Suzhou Taiyo Nippon Sanso Gas (which has been liquidated)	*I*n January 2024, Taiyo Nissan Energy Corporation, merged with Astomos Retailing Corporation Kyushu Ekisou sold its shares during the first half of the 2024 fiscal year. Suzhou Taiyo Nippon Sanso was liquidated.

(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]

(7.1.3) Have your organization’s base year emissions and past years’ emissions been recalculated as a result of any changes or errors reported in 7.1.1 and/or 7.1.2?

(7.1.3.1) Base year recalculation

Select from:

☑ Yes

(7.1.3.2) Scope(s) recalculated

Select all that apply

☑ Scope 1

☑ Scope 2, location-based

☑ Scope 2, market-based

(7.1.3.3) Base year emissions recalculation policy, including significance threshold

We have recalculated the Scope 1 and Scope 2 emissions for the base year.

(7.1.3.4) Past years’ recalculation

Select from:

☑ Yes

(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

The emissions are primarily from our HyCO business in the United States.

Scope 2 (location-based)

(7.5.1) Base year end

03/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

5627500

(7.5.3) Methodological details

Japan and Europe use the market-based approach, while the United States and Asia-Oceania use the location-based approach. Emissions are not calculated using the location-based approach alone.

Scope 2 (market-based)

(7.5.1) Base year end

03/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

5627500

(7.5.3) Methodological details

Japan and Europe use the market-based approach, while the United States and Asia-Oceania use the location-based approach. Emissions are not calculated using the location-based approach alone.

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

The volume (physical or monetary data) of products and services purchased by Taiyo Nippon Sanso is multiplied by the emission factors of each product or service to calculate emissions. However, transportation services and the purchase of oxygen, nitrogen, and argon from Taiyo Nippon Sanso's consolidated subsidiaries or affiliated companies are excluded from the calculation, as these are included in the Scope 1, Scope 2, or Scope 3 (Categories 4 and 15) emissions boundary. This calculation is based on the GHG Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard.
For emission factors, we used data from the Emission Factor Database Ver.3 published on the Green Value Chain Platform and IDEAv2 (for calculating supply chain greenhouse gas emissions).

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

Emissions were calculated by multiplying the capital investment amount for the reporting year by the emission factors per unit price of capital goods.
This calculation refers to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol.
Emission factors were sourced from the Emission Factor Database Ver.3 published on the Green Value Chain Platform and from IDEAv2 (for calculating supply chain greenhouse gas emissions).
Adjustments to consumption tax were also applied.

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

(7.5.3) Methodological details

This calculation refers to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol.
Emission factors were sourced from the Emission Factor Database Ver.3 published on the Green Value Chain Platform and from IDEAv2 (for calculating supply chain greenhouse gas emissions).

This category covers GHG emissions associated with the extraction, production, and transportation of fuels purchased, as well as fuels used to generate purchased electricity and steam.

Fuels: Emissions were calculated by multiplying the annual amount of each type of fuel purchased by the corresponding emission factor.

Electricity and Steam: Emissions were calculated by multiplying the amount of electricity or steam purchased from external sources by emission factors that account for upstream fuel procurement and transmission/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

The calculation is derived from the CO_2 emissions reported by Taiyo Nippon Sanso and Nippon Ekitan Corporation as specified shippers under the Act on Promotion of Global Warming Countermeasures, with the CO_2 emissions of logistics subsidiaries included in Scope 1 emissions deducted. CO_2 emissions associated with the transportation and distribution of products for which Taiyo Nippon Sanso and Nippon Ekitan Corporation incurred transport 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

Industrial waste emissions are calculated by multiplying the emission factor for each waste type (including the transport stage). This refers to the GHG Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard. The emission factor used is based on information from the Emission Factor Database Ver.3 published on the Green Value Chain Platform.

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 at Taiyo Nippon Sanso and its domestic consolidated subsidiaries by the emissions intensity per employee (0.13 tonnes of

CO2 per person per year). Reference is made to the GHG Protocol's ‘Corporate Value Chain (Scope 3) Accounting and Reporting Standard’. The emission factor was calculated using information from the Emission Factor Database Ver.3 and IDEAv2 (for calculating greenhouse gas emissions in the supply chain) 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

Employees of Taiyo Nippon Sanso: For commuters using trains, emissions are calculated by multiplying the annual commuter pass allowance by the emissions intensity per unit of commuting allowance. For commuters using private cars, emissions are calculated by multiplying the round-trip commuting distance by the annual number of working days and the emissions intensity per passenger kilometer for private passenger vehicles. Employees of domestic consolidated subsidiaries: Calculated by multiplying the number of employees by the number of working days per year and the emission factor per working day. Refer to the GHG Protocol's ‘Corporate Value Chain (Scope 3) Accounting and Reporting Standard’. The emission factor was calculated using information from the Emission Factor Database Ver.3 and IDEAv2 (for calculating greenhouse gas emissions in the supply chain) published 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

Expenses for leased assets account for less than 0.1% of NSHD's net sales so emissions in Category 8 are not considered significant.

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 within Japan is conducted by group companies and reported under Category 4. Therefore, emissions under Category 9 are not considered significant.

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 WBCSD's Guidance on Accounting and Reporting of GHG Emissions for Companies in the Chemical Sector Value Chain, chemical companies face challenges in obtaining reliable data due to diverse applications and customer structures. Therefore, reporting Scope 3, Category 10 emissions is not required. Consequently, emissions under Category 10 are not considered significant.

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

CO_2 emissions from propane gas (LPG), liquefied carbon dioxide, and dry ice sold to customers outside the Taiyo Nippon Sanso Group are accounted for, as are CO_2 emissions from electricity consumption during the operation of air separation units over its depreciation period.
These calculations adhere to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol.
Emission factors were sourced from the Emission Factor Database Ver. 3, which is published on the Green Value Chain Platform, and from IDEA v2, which is used to calculate supply chain greenhouse gas emissions.

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

The main products of NSHD (oxygen, nitrogen, and argon) are returned to the atmosphere and therefore not applicable. Fuels, carbon dioxide, and dry ice are reported under Category 11. Additionally, high-pressure gas cylinders are leased items and are not disposed of by customers. Industrial gases with high global warming potential are treated and detoxified after use and are not directly released into the atmosphere. Furthermore, the air separation unit is not disposed of by customers.
Based on the above, emissions under Category 12 are considered not to be significant due to their sufficiently small impact compared to other categories.

Scope 3 category 13: Downstream leased assets

(7.5.1) Base year end

03/31/2024

(7.5.2) Base year emissions (metric tons CO2e)

46000

(7.5.3) Methodological details

CO_2 emissions from electricity consumption during the operation of air separation units leased by Taiyo Nippon Sanso to customers are accounted for. The electricity usage 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 NSHD does not have a franchise business, emissions under Category 14 are considered not to be significant.

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

Emissions from seven major related companies of Taiyo Nippon Sanso in Japan were calculated by multiplying each company's GHG emissions by Taiyo Nippon Sanso's equity ownership ratio (as of the fiscal year-end). The GHG emissions of the seven companies are based on actual values for the relevant reporting 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	*1085000*	*Date input [must be between [11/19/2015 - 11/19/2024]*	For Europe, emission factors from DEFRA (the UK Department for Environment, Food & Rural Affairs) are used. For regions outside Europe, emission factors from Japan's Act on Promotion of Global Warming Countermeasures are used.
Past year 1	*1062000*	*03/31/2024*	For Europe, emission factors from DEFRA (the UK Department for Environment, Food & Rural Affairs) are used. For regions outside Europe, emission factors from Japan's Act on Promotion of Global Warming Countermeasures are used.

[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)

3733000

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

4184000

(7.7.4) Methodological details

The location-based method uses country-specific emission factors published by the IEA.
For the market-based method, emission factors vary as follows:

・Japan, Europe, and some Asian companies use emission factors for each electricity provider,

・The United States, China, Taiwan, and Singapore use grid emission factors,

・Other regions use country-specific emission factors published by the IEA.

Past year 1

(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)

4605000

(7.7.3) End date

03/31/2024

(7.7.4) Methodological details

The location-based method uses country-specific emission factors published by the IEA.
For the market-based method, emission factors vary as follows:

・Japan, Europe, and some Asian companies use emission factors for each electricity provider,

・The United States, China, Taiwan, and Singapore use grid emission factors,

・Other regions use country-specific emission factors published by the IEA.

(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)

904391

(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

Emissions are calculated by multiplying the purchase volume (physical or monetary data) of products or services purchased by Taiyo Nippon Sanso by the emission factors for each product or service. However, oxygen, nitrogen, and argon purchased from Taiyo Nippon Sanso's consolidated subsidiaries or affiliated companies, as well as transportation services, are excluded from the purchase volume used for calculation because they are included within the Scope 1, Scope 2, or Scope 3 (Categories 4 and 15) emission boundaries.
This calculation refers to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol.
Emission factors were sourced from the Emission Factor Database Ver.3 published on the Green Value Chain Platform and IDEAv3.5 (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)

84745

(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

Emissions were calculated by multiplying the capital investment amount for the reporting year by the emission factors per unit price of capital goods.
This calculation refers to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol.
Emission factors were sourced from the Emission Factor Database Ver.3 published on the Green Value Chain Platform and IDEAv3.5 (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)

219000

(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

This calculation refers to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol.
Emission factors were sourced from the Emission Factor Database Ver.3 published on the Green Value Chain Platform and IDEAv3.5 (for calculating supply chain greenhouse gas emissions).

GHG emissions associated with the extraction, production, and transportation of fuels used for purchased fuels as well as for the generation of purchased electricity and steam are included.

・Fuels: Emissions are calculated by multiplying the annual purchase volume by fuel-specific emission factors.

・Electricity and Steam: Emissions are calculated by multiplying the amount purchased externally by emission factors that account for upstream 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)

38000

(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

CO_2 emissions reported by Taiyo Nippon Sanso and Japan Liquid Carbon, which are specified consignors under the Act on Promotion of Global Warming Countermeasures, are adjusted by deducting the CO_2 emissions of their logistics subsidiaries included in Scope 1. This category includes CO_2 emissions related to the transportation and distribution of products for which Taiyo Nippon Sanso and NIPPON EKITAN Corporation incurred transportation costs.

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 from industrial waste are calculated by multiplying the waste volume by emission factors for each waste type, including transportation stages. This calculation refers to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol. Emission factors were sourced from the Emission Factor Database Ver.3 published on 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)

782.6

(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 are calculated by multiplying the number of employees at Taiyo Nippon Sanso and its domestic consolidated subsidiaries by the emission factor per employee (0.13 tons CO_2 per person per year). This calculation refers to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol. Emission factors were sourced from the Emission Factor Database Ver.3 published on the Green Value Chain Platform and IDEAv3.5 (for calculating supply chain greenhouse gas emissions).

Employee commuting

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

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

2753.7

(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:

・For those commuting by train, emissions are calculated by multiplying the annual amount paid for commuter passes by the emission factor per transportation expense.

・For those commuting by car, emissions are calculated by multiplying the round-trip commuting distance by the number of annual working days and the emission factor per person/kilometer for private passenger vehicles.
For employees of domestic consolidated subsidiaries:
Emissions are calculated by multiplying the number of employees by the number of annual working days and the emission factor per working day.
This calculation refers to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol. Emission factors were sourced from the Emission Factor Database Ver.3 published on the Green Value Chain Platform and IDEAv3.5 (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 expenses related to leased assets account for less than 0.1% of NSHD's sales, emissions under Category 8 are considered not to be significant.

Downstream transportation and distribution

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Most downstream transportation within Japan is conducted by group companies and reported under Category 4. Therefore, emissions under Category 9 are considered not to be significant.

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 (World Business Council for Sustainable Development) on accounting and reporting of corporate GHG emissions in the chemical sector value chain, it is difficult for chemical companies to obtain reliable data due to the diversity of applications and customer structures. Therefore, there is no requirement to report Scope 3 Category 10 emissions. Accordingly, emissions in Category 10 are considered not to be significant.

Use of sold products

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

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

1199308

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Methodology for direct use phase emissions, please specify: NSHD accounts for CO_2 emissions from the following sources:

・The use of propane gas (LPG), liquefied carbon dioxide (CO_2), and dry ice sold to customers outside the Taiyo Nippon Sanso Group.

・Electricity consumption associated with the operation of air separation units, calculated over the depreciation period as recorded in accounting.

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

0

(7.8.5) Please explain

CO_2 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 CO_2 emissions from electricity consumption during the operation of air separation units (calculated over the accounting depreciation period), are accounted for. This calculation refers to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard of the GHG Protocol. Emission factors were sourced from the Emission Factor Database Ver.3 published on the Green Value Chain Platform and IDEAv3.5 (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, argon) return to the atmosphere and are therefore not applicable. Fuels, carbon dioxide, and dry ice are accounted for under Category 11. Additionally, high-pressure gas cylinders are leased and are not disposed of by customers. Industrial gases with high global warming potential are treated after use and are not directly released into the atmosphere. Furthermore, the air separation unit itself is not disposed of by customers. Given that emissions in other categories are sufficiently small, emissions in Category 12 are considered not to be significant.

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: NSHD accounts for CO_2 emissions resulting from the operation of air separation units leased to customers by Taiyo Nippon Sanso.
The electricity consumption is calculated by multiplying the rated power consumption of each unit by the average operating time.

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

0

(7.8.5) Please explain

CO_2 emissions from electricity consumption during the operation of air separation units leased by Taiyo Nippon Sanso to customers are accounted for. Electricity usage is calculated by multiplying the rated power consumption by the average operating hours.

Franchises

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Since NSHD does not have a franchise business, emissions under Category 14 are considered not to be significant. There are also no plans to develop a franchise business in future business plans.

Investments

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

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

1026000

(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

GHG emissions for nine major affiliated companies of Taiyo Nippon Sanso in Japan are calculated by multiplying their respective emissions by our equity ownership percentage as of the fiscal year-end. The GHG emissions of these nine companies are based on actual values for the relevant reporting period.

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

Past year 1

(7.8.1.1) End date

03/31/2024

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

916795

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

53397

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

236000

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

37000

(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)

776

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

2751

(7.8.1.9) Scope 3: Upstream leased assets (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)

1390977

(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)

46000

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

0

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

814000
[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
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:

☑ Underway but not complete for reporting year – previous statement of process attached

(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

(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:
☑ Underway but not complete for reporting year – previous statement of process attached

(7.9.2.4) Type of verification or assurance

Select from:
☑ Limited assurance

(7.9.2.5) Attach the statement

Third party verification_20230401 –20240331.pdf

(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

(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: Business travel
☑ Scope 3: Employee commuting
☑ Scope 3: Use of sold products
☑ Scope 3: Downstream leased assets
☑ Scope 3: Purchased goods and services
☑ 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:

☑ Underway but not complete for reporting year – previous statement of process attached

(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

(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)

17000

(7.10.1.2) Direction of change in emissions

Select from:
☑ Decreased

(7.10.1.3) Emissions value (percentage)

0.3

(7.10.1.4) Please explain calculation

Renewable energy was newly introduced at one of our production sites. The reduction rate was calculated as 17,000 ÷ 5,667,000 = 0.3%.

Other emissions reduction activities

(7.10.1.1) Change in emissions (metric tons CO2e)

10732

(7.10.1.2) Direction of change in emissions

Select from:

☑ Decreased

(7.10.1.3) Emissions value (percentage)

0.189

(7.10.1.4) Please explain calculation

As a result of reduction activities, emissions were reduced. The reduction rate was calculated as 10,732 ÷ 5,667,000 = 0.189%.

Change in output

(7.10.1.1) Change in emissions (metric tons CO2e)

90000

(7.10.1.2) Direction of change in emissions

Select from:

☑ Decreased

(7.10.1.3) Emissions value (percentage)

1.6

(7.10.1.4) Please explain calculation

There was a business site that was closed. The reduction rate was calculated as 90,000 ÷ 5,667,000 = 1.6%.

Change in boundary

(7.10.1.1) Change in emissions (metric tons CO2e)

2100

(7.10.1.2) Direction of change in emissions

Select from:

☑ Decreased

(7.10.1.3) Emissions value (percentage)

0.4

(7.10.1.4) Please explain calculation

From FYE 2025, Taiyo Nissan Energy Corporation, Kyushu Ekisou, and Suzhou Taiyo Nippon Sanso are no longer consolidated subsidiaries and have been excluded from the boundary. The reduction rate was calculated as 2,100 ÷ 5,667,000 = 0.4%.

(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:
☑ CO_2

(7.15.1.2) Scope 1 emissions (metric tons of CO_2e)

1068000

(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:
☑ CH_4

(7.15.1.2) Scope 1 emissions (metric tons of CO_2e)

14

(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)

6171

(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)

4042

(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)

1886

(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)

3010

(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)

1641

(7.15.1.3) GWP Reference

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

(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)

10950

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

18970

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

18970

Belgium

(7.16.1) Scope 1 emissions (metric tons CO2e)

11060

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

59050

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

63300

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)

1500

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

115910

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

112280

Denmark

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

360

(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)

90

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

60

Germany

(7.16.1) Scope 1 emissions (metric tons CO2e)

6600

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

361980

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

423610

India

(7.16.1) Scope 1 emissions (metric tons CO2e)

1460

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

30420

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

30420

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)

26850

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

80890

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

35400

Japan

(7.16.1) Scope 1 emissions (metric tons CO2e)

39750

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

1286180

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

1671880

Malaysia

(7.16.1) Scope 1 emissions (metric tons CO2e)

200

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

10070

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

9360

Myanmar

(7.16.1) Scope 1 emissions (metric tons CO2e)

50

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

1630

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

1630

Netherlands

(7.16.1) Scope 1 emissions (metric tons CO2e)

10

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

18410

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

21810

Norway

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

840

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

69220

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)

3930

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

159530

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

159530

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)

70

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

60

Republic of Korea

(7.16.1) Scope 1 emissions (metric tons CO2e)

390

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

4470

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

4470

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)

38580

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

41590

Spain

(7.16.1) Scope 1 emissions (metric tons CO2e)

11900

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

115990

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

122380

Sweden

(7.16.1) Scope 1 emissions (metric tons CO2e)

0

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

490

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

2830

Taiwan, China

(7.16.1) Scope 1 emissions (metric tons CO2e)

190

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

13500

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

11580

Thailand

(7.16.1) Scope 1 emissions (metric tons CO2e)

3850

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

120020

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

120020

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)

4230

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

2220

United States of America

(7.16.1) Scope 1 emissions (metric tons CO2e)

965420

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

1156180

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

1126170

Viet Nam

(7.16.1) Scope 1 emissions (metric tons CO2e)

80

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

134610

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

134610

(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）	*922900*
Row 2	Transport	*110000*
Row 3	Liquefied Carbon Dioxide and Dry Ice Production Unit	*18500*
Row 4	ASU（Air separation unit）	*15400*
Row 5	Other	*18200*

[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	*1085000*

[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)	*3477000*	*3910300*
Row 2	Liquefied Carbon Dioxide and Dry Ice Production Unit	*145500*	*157400*
Row 3	HyCO (Hydrogen and Carbon Monoxide Production Unit)	*53800*	*60800*
Row 4	High-Pressure Gas Filling Station	*9400*	*11100*
Row 5	Other	*46900*	*44000*

[Add row]

(7.21) Break down your organization’s total gross global Scope 2 emissions by sector production activity in metric tons CO_2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e
Chemicals production activities	*3733000*	*4184000*

[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)

1083000

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

3112000

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

3223000

(7.22.4) Please explain

These are the emissions of consolidated subsidiaries.

All other entities

(7.22.1) Scope 1 emissions (metric tons CO2e)

2000

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

620000

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

961000

(7.22.4) Please explain

The following emissions are attributed to certain joint operation companies.

(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 and butane gas

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

22

(7.25.3) Explain calculation methodology

Emission factors were selected appropriately from the emission factor database IDEAv3.5.

Row 2

(7.25.1) Purchased feedstock

Select from:
☑ Other (please specify): Semiconductor material gases
33

(7.25.3) Explain calculation methodology

Emission factors were selected appropriately from the emission factor database IDEAv3.5.

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

Carbon dioxide (CO_2)

(7.25.1.1) Sales, metric tons

7.12

Methane (CH_4)

(7.25.1.1) Sales, metric tons

4.79

Nitrous oxide (N_2O)

(7.25.1.1) Sales, metric tons

905.11

(7.25.1.2) Comment

Excluding medical nitrous oxide.

Hydrofluorocarbons (HFC)

(7.25.1.1) Sales, metric tons

64.86

Perfluorocarbons (PFC)

(7.25.1.1) Sales, metric tons

420.82

Sulphur hexafluoride (SF6)

(7.25.1.1) Sales, metric tons

93.11

Nitrogen trifluoride (NF3)

(7.25.1.1) Sales, metric tons

725.16
[Fixed row]
[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

3260300

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

3260300.00

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

457600

(7.30.1.3) MWh from non-renewable sources

9501800

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

9959400.00

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

800

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

800.00

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

179600

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

179600.00

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

1700

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

1700.00

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

2700

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

2700.00

Total energy consumption

(7.30.1.1) Heating value

Select from:
☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

460300

(7.30.1.3) MWh from non-renewable sources

12944200

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

13404500.00

(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)

3260300

(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

3260300.00

Consumption of purchased or acquired electricity

(7.30.3.1) Heating value

Select from:

☑ Unable to confirm heating value

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

457600

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

9501800

(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

9959400.00

Consumption of purchased or acquired heat

(7.30.3.1) Heating value

Select from:

☑ Unable to confirm 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)

800

(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

800.00

Consumption of purchased or acquired steam

(7.30.3.1) Heating value

Select from:

☑ Unable to confirm 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)

179600

(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

179600.00

Consumption of purchased or acquired cooling

(7.30.3.1) Heating value

Select from:
☑ Unable to confirm 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)

1700

(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

1700.00

Consumption of self-generated non-fuel renewable energy

(7.30.3.1) Heating value

Select from:

☑ Unable to confirm heating value

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

2700

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

2700.00

Total energy consumption

(7.30.3.1) Heating value

Select from:

☑ Unable to confirm heating value

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

460300

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

heat/gases)

12944200

(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

13404500.00

(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
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:*

	Indicate whether your organization undertakes this fuel application
	☑ 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

449300

(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

In the future, fuel consumed for the self-generation of heat, steam, and cooling will be considered for aggregation.

Gas

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

1099100

(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

In the future, fuel consumed for the self-generation of heat, steam, and cooling will be considered for aggregation.

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

1711900

(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

In the future, fuel consumed for the self-generation of heat, steam, and cooling will be considered for aggregation.

Total fuel

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

3260300

(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

In the future, fuel consumed for the self-generation of heat, steam, and cooling will be considered for aggregation.

(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)

2731

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

2731

(7.30.9.3) Gross generation from renewable sources (MWh)

2731

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

2731

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

(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)

2731

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

2731

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

2731

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

0

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

(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)

125153

(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)

79562

(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)

14241

(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)

3660

(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)

158502

(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 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)

22000

(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)

7826

(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)

256

(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)

40439

(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

Row 11

(7.30.14.1) Country/area

Select from:
☑ Norway

(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)

4000

(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:

☑ Norway

(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)

2024

Row 12

(7.30.14.1) Country/area

Select from:

☑ Sweden

(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)

2000

(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:
☑ Sweden

(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)

2024
[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)

31210

(7.30.16.2) Consumption of self-generated electricity (MWh)

1070

(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)

32280.00

Belgium

(7.30.16.1) Consumption of purchased electricity (MWh)

399260

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

650

(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)

399910.00

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)

196880

(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)

196887.00

Denmark

(7.30.16.1) Consumption of purchased electricity (MWh)

3660

(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)

3660.00

France

(7.30.16.1) Consumption of purchased electricity (MWh)

1370

(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)

1370.00

Germany

(7.30.16.1) Consumption of purchased electricity (MWh)

986470

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

10650

(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)

986470.00

India

(7.30.16.1) Consumption of purchased electricity (MWh)

41580

(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)

41580.00

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)

380

(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)

380.00

Italy

(7.30.16.1) Consumption of purchased electricity (MWh)

257260

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

4070

(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)

261330.00

Japan

(7.30.16.1) Consumption of purchased electricity (MWh)

2976380

(7.30.16.2) Consumption of self-generated electricity (MWh)

90

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

119210

(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)

3095680.00

Malaysia

(7.30.16.1) Consumption of purchased electricity (MWh)

16020

(7.30.16.2) Consumption of self-generated electricity (MWh)

590

(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)

16610.00

Myanmar

(7.30.16.1) Consumption of purchased electricity (MWh)

4910

(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)

4910.00

Netherlands

(7.30.16.1) Consumption of purchased electricity (MWh)

35500

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

46330

(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)

81830.00

Norway

(7.30.16.1) Consumption of purchased electricity (MWh)

119630

(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)

119630.00

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)

229540

(7.30.16.2) Consumption of self-generated electricity (MWh)

880

(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)

230420.00

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)

440

(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)

440.00

Republic of Korea

(7.30.16.1) Consumption of purchased electricity (MWh)

10380

(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)

10380.00

Saudi Arabia

(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)

101830

(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)

101830.00

Spain

(7.30.16.1) Consumption of purchased electricity (MWh)

679390

(7.30.16.2) Consumption of self-generated electricity (MWh)

0

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

1210

(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)

680600.00

Sweden

(7.30.16.1) Consumption of purchased electricity (MWh)

43530

(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)

43530.00

Taiwan, China

(7.30.16.1) Consumption of purchased electricity (MWh)

24440

(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)

24440.00

Thailand

(7.30.16.1) Consumption of purchased electricity (MWh)

249430

(7.30.16.2) Consumption of self-generated electricity (MWh)

90

(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)

249520.00

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)

21740

(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)

21740.00

United States of America

(7.30.16.1) Consumption of purchased electricity (MWh)

3263290

(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)

3263290.00

Viet Nam

(7.30.16.1) Consumption of purchased electricity (MWh)

264920

(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)

264920.00

(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

371200

(7.31.1.3) Total consumption unit

Select from:
☑ thousand cubic meters

(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

(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)

8126000

(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

The air separation unit (ASU) produces nitrogen gas with very minimal direct emissions (Scope 1) and steam usage, so these are reported as 0.

Row 2

(7.39.1) Output product

Select from:

☑ Other, please specify: Liquid nitrogen

(7.39.2) Production (metric tons)

3831000

(7.39.3) Capacity (metric tons)

3831000

(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

The air separation unit (ASU) produces nitrogen gas with very minimal direct emissions (Scope 1) and steam usage, so these are reported as 0.

Row 3

(7.39.1) Output product

Select from:
☑ Other, please specify: Oxygen gas

(7.39.2) Production (metric tons)

6820000

(7.39.3) Capacity (metric tons)

6820000

(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

The air separation unit (ASU) produces nitrogen gas with very minimal direct emissions (Scope 1) and steam usage, so these are reported as 0.

Row 4

(7.39.1) Output product

Select from:
☑ Other, please specify: Liquid oxygen

(7.39.2) Production (metric tons)

1685000

(7.39.3) Capacity (metric tons)

1685000

(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

The air separation unit (ASU) produces nitrogen gas with very minimal direct emissions (Scope 1) and steam usage, so these are reported as 0.

Row 5

(7.39.1) Output product

Select from:

☑ Other, please specify: Gaseous argon and liquid argon

388000

(7.39.3) Capacity (metric tons)

388000

(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

The air separation unit (ASU) produces nitrogen gas with very minimal direct emissions (Scope 1) and steam usage, so these are reported 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

0.000004

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

5269000

(7.45.3) Metric denominator

Select from:
☑ unit total revenue

(7.45.4) Metric denominator: Unit total

1308024000000

(7.45.5) Scope 2 figure used

Select from:
☑ Market-based

(7.45.6) % change from previous year

10.79

(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

Sales for FYE 2025 were 1,308,024 million yen, compared to 1,255,081 million yen for FYE 2024. The increase in sales was due to rising selling prices, which were driven by global energy cost hikes, inflation, and the depreciation of the yen. Since sales, the denominator of the intensity, increased, the intensity decreased.

Row 2

(7.45.1) Intensity figure

0.253

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

5269000

(7.45.3) Metric denominator

Select from:

☑ metric ton of product

(7.45.4) Metric denominator: Unit total

20807000

(7.45.5) Scope 2 figure used

Select from:

☑ Market-based

(7.45.6) % change from previous year

5.7

(7.45.7) Direction of change

Select from:

☑ Decreased

(7.45.8) Reasons for change

Select all that apply

☑ Change in renewable energy consumption

☑ Other emissions reduction activities

(7.45.9) Please explain

Production volume was 21,108 thousand tons in FYE 2024 and 20,807 thousand tons in FYE 2025. Although both the production volume and total Scope 1 and 2 emissions decreased, the intensity decreased because the total emissions decreased at a higher rate.

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

	Description
Row 1	*Select from:*

	Description
	☑ 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)

5628000

(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)

6673000.000

(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)

4537640.000

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

1085000

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

4173000

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

5258000.000

(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

66.27

(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 nearly 100% of Scope 1 and 2 emissions. However, there are slight exclusions due to difficulties in obtaining data from some small overseas sales offices and other minor locations.

(7.53.1.83) Target objective

NSHD is committed to strengthening sustainability management and contributing globally as The Gas Professionals to both the development of a sustainable society and the resolution of global challenges. Under the leadership of top management, we strive to harmonize our business activities with the environment and reduce environmental impact, thereby contributing through technology to a resource-circulating society and the advancement of a sustainable society. To realize our environmental policy, we have established reduction targets for our own Scope 1 and Scope 2 emissions.

(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 result from electricity use, with approximately 75% of total GHG emissions falling under Scope 2. Going forward, it is expected that CO_2 emission factors will decline as electricity becomes greener. For example, the IEA's projections include scenarios where the global CO_2 emission factor in FYE2030 is roughly half that of FYE2019. Correspondingly, a significant portion of NSHD's Scope 2 emissions is assumed to be reduced.

In terms of efforts to reduce electricity consumption, NSHD is working on replacing air separation units with the latest high-efficiency models and optimizing operations through computer controls to improve energy efficiency. Additionally, we promote initiatives that lead to GHG emission reductions, such as switching to power suppliers with lower emission factors and purchasing green power certificates.

On the other hand, to reduce Scope 1 GHG emissions from the HyCO business, we are considering combining CCUS (Carbon dioxide Capture, Utilization and Storage) technology with a transition to blue hydrogen. Furthermore, while natural gas is currently the primary feedstock for hydrogen production, we will also promote the use of biofuels and other measures to reduce Scope 1 GHG emissions in the future.

(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)

5628000

(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)

6673000.000

(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

(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)

1085000

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

4173000

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

5258000.000

(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

21.20

(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 nearly 100% of Scope 1 and 2 emissions. However, there are slight exclusions due to difficulties in obtaining data from some small overseas sales offices and other minor locations.

(7.53.1.83) Target objective

NSHD is committed to strengthening sustainability management and contributing globally as The Gas Professionals to both the development of a sustainable society and the resolution of global challenges. Under the leadership of top management, we strive to harmonize our business activities with the environment and reduce environmental impact, thereby contributing through technology to a resource-circulating society and the advancement of a sustainable society. To realize our environmental policy, we have established reduction targets for our own Scope 1 and Scope 2 emissions.

(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 result from electricity use, with approximately 75% of total GHG emissions falling under Scope 2. Going forward, it is expected that CO_2 emission factors will decline as electricity becomes greener. For example, the IEA's projections include scenarios where the global CO_2 emission factor in FYE2030 is roughly half that of FYE2019. Correspondingly, a significant portion of NSHD's Scope 2 emissions is assumed to be reduced.

In terms of efforts to reduce electricity consumption, NSHD is working on replacing air separation units with the latest high-efficiency models and optimizing operations through computer controls to improve energy efficiency. Additionally, we promote initiatives that lead to GHG emission reductions, such as switching to power suppliers with lower emission factors and purchasing green power certificates.

On the other hand, to reduce Scope 1 GHG emissions from the HyCO business, we are considering combining CCUS (Carbon dioxide Capture, Utilization and Storage) technology with a transition to blue hydrogen. Furthermore, while natural gas is currently the primary feedstock for hydrogen production, we will also promote the use of biofuels and other measures to reduce Scope 1 GHG emissions in the future.

(7.53.1.85) Target derived using a sectoral decarbonization approach

Select from:

☑ No

Row 3

(7.53.1.1) Target reference number

Select from:

☑ Abs 3

(7.53.1.2) Is this a science-based target?

Select from:

☑ Yes, and this target has been approved by the Science Based Targets initiative

(7.53.1.3) Science Based Targets initiative official validation letter

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(7.53.1.4) Target ambition

Select from:

☑ 1.5°C aligned

(7.53.1.5) Date target was set

03/31/2024

(7.53.1.6) Target coverage

Select from:

☑ Business division

(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

03/31/2019

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

65210

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

1360380

(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)

1425590.000

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

6.24

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

24.172

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

21.364

(7.53.1.54) End date of target

03/31/2032

(7.53.1.55) Targeted reduction from base year (%)

54.6

(7.53.1.56) Total emissions at end date of target covered by target in all selected Scopes (metric tons CO2e)

647217.860

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

56422

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

741064

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

797486.000

(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

80.69

(7.53.1.80) Target status in reporting year

Select from:

☑ Underway

(7.53.1.82) Explain target coverage and identify any exclusions

The target applies only to Nippon Gases Europe, NSHD’s operating company in Europe. It covers 100% of Nippon Gases Europe’s emissions.

(7.53.1.83) Target objective

NSHD is committed to strengthening sustainability management and contributing to the development of a sustainable society and the resolution of global challenges such as The Gas Professionals. Under the leadership of our executive team, we strive to align our business activities with environmental considerations, reducing our environmental impact and contributing to a circular economy and a sustainable society through technology. Our European operating company, Nippon Gases Europe, has been certified for its science-based targets to reduce Scope 1 and 2 emissions.

(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 are due to electricity consumption, with approximately 75% of total GHG emissions categorized as Scope 2. Going forward, CO2 emission factors are expected to decline as electricity becomes greener. For example, the IEA has published scenarios in which the global CO2 emission factor in FYE2030 is approximately half that of FYE2019. Accordingly, a significant portion of NSHD’s Scope 2 emissions is anticipated to be reduced.

As part of Nippon Gases Europe’s (NGE) efforts to reduce Scope 2 emissions, the company has been expanding its purchase of green power certificates, acquiring 410 GWh worth in FYE2025.

(7.53.1.85) Target derived using a sectoral decarbonization approach

Select from:

☑ No

Row 4

(7.53.1.1) Target reference number

Select from:

☑ Abs 4

(7.53.1.2) Is this a science-based target?

Select from:

☑ Yes, and this target has been approved by the Science Based Targets initiative

(7.53.1.3) Science Based Targets initiative official validation letter

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(7.53.1.4) Target ambition

Select from:
☑ 1.5°C aligned

(7.53.1.5) Date target was set

03/31/2024

(7.53.1.6) Target coverage

Select from:
☑ Business division

(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 3

(7.53.1.10) Scope 3 categories

Select all that apply
☑ Scope 3, Category 15 – Investments
☑ Scope 3, Category 2 – Capital goods
☑ Scope 3, Category 6 – Business travel
☑ Scope 3, Category 7 – Employee commuting
☑ Scope 3, Category 11 – Use of sold products
☑ Scope 3, Category 13 – Downstream leased assets
☑ Scope 3, Category 1 – Purchased goods and services
☑ Scope 3, Category 5 – Waste generated in operations
☑ Scope 3, Category 4 – Upstream transportation and distribution
☑ Scope 3, Category 3 – Fuel- and energy- related activities (not included in

Scope 1 or 2)

(7.53.1.11) End date of base year

03/31/2019

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

265416

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

81236

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

45796

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

57645

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

49.71

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

0

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

0

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

1162348

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

39120

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

0

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

1651610.710

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

1651610.710

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

30

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

100

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

18

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

100

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

2

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

0

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

0

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

48

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

85

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

0

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

38

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

38

(7.53.1.54) End date of target

03/31/2032

(7.53.1.55) Targeted reduction from base year (%)

50.4

(7.53.1.56) Total emissions at end date of target covered by target in all selected Scopes (metric tons CO2e)

819198.912

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

152360

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

88020

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

103230

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

60490

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

20

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

450

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

550

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

983428

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

23000

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

46440

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

1457988.000

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

1457988.000

(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

23.26

(7.53.1.80) Target status in reporting year

Select from:

☑ Underway

(7.53.1.82) Explain target coverage and identify any exclusions

The target is limited to Nippon Gases Europe, NSHD’s European operating company.

(7.53.1.83) Target objective

NSHD is committed to strengthening sustainability management and contributing globally as The Gas Professionals to both the development of a sustainable society and the resolution of global challenges. Under the leadership of top management, we strive to harmonize our business activities with the environment and reduce environmental impact, thereby contributing through technology to a resource-circulating society and the advancement of a sustainable society. Nippon Gases Europe, our European operating company, has been certified for its science-based target to reduce Scope 3 emissions.

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

At NSHD, we contribute to reducing GHG emissions at our customers’ sites through our products and services. Our target for avoided emissions is to achieve a level of avoided emissions that exceed the GHG emissions generated by our Group. In FYE2025, as part of our environmental product offerings and applications, we developed technologies such as blast furnace oxygen enrichment combustion, hydrogen and ammonia combustion in industrial furnaces, and CO2 capture and reuse, which contributed to a reduction of 8,104 thousand tons of CO2.

(7.53.1.85) Target derived using a sectoral decarbonization approach

Select from:
☑ No

(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

As part of the sustainability programs in its medium-term management plan, NSHD has established the Carbon Neutral Program I. The baseline year is set as FYE2019, which includes the European gas business and the U.S. HyCO business integrated into the NSHD Group. We aim to achieve carbon neutrality by FYE2051.

(7.54.3.11) Target objective

NSHD is committed to strengthening sustainability management and contributing globally both to the development of a sustainable society and to addressing global challenges as The Gas Professionals. Under the leadership of top management, the company strives to harmonize its business activities with the environment and reduce environmental impact, thereby contributing to a resource-circulating society through technology and fostering sustainable social development. To realize this environmental policy, we have established reduction targets for our Scope 1 and Scope 2 greenhouse gas emissions.

(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

NSHD aims to achieve net-zero Scope 1 and Scope 2 greenhouse gas emissions by 2050, with an interim target of reducing emissions by 32% by 2030.

(7.54.3.17) Target status in reporting year

Select from:

☑ Underway

(7.54.3.19) Process for reviewing target

Progress on reducing Scope 1 and Scope 2 emissions is reviewed annually with targets being revised 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
Under investigation	*0*	*`Numeric input*
To be implemented	*0*	*0*
Implementation commenced	*0*	*0*
Implemented	*9*	*11382*
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)

377

(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 1.2)

12500000

(7.55.2.6) Investment required (unit currency – as specified in 1.2)

3000000

(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)

10355

(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 1.2)

330000000

(7.55.2.6) Investment required (unit currency – as specified in 1.2)

6500000000

(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

Row 3

(7.55.2.1) Initiative category & Initiative type

Low-carbon energy consumption
☑ Solar PV

(7.55.2.2) Estimated annual CO2e savings (metric tonnes CO2e)

650

(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 1.2)

3325000

(7.55.2.6) Investment required (unit currency – as specified in 1.2)

24000000

(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

[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

We review various energy-saving projects at our gas production plants and select those to invest in based on the business environment and cost-effectiveness.

(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, a substitute gas for SF_6 (sulfur hexafluoride), which has a high Global Warming Potential (GWP) of 23,500

(7.74.1.4) Description of product(s) or service(s)

Molten magnesium oxidizes and ignites when exposed to air. Therefore, protective gases are necessary during the melting process to shield the molten surface from air exposure. NSHD offers MG Shield as a substitute for sulfur hexafluoride (SF6), which has a high global warming potential (GWP) of 23,500. MG Shield can be used as a cover gas for molten magnesium alloys. Using MG Shield reduces SF6 emissions 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: GHG Reduction Contribution Quantification Guidelines (METI, Japan)

(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 cylinder of MG Shield gas

(7.74.1.9) Reference product/service or baseline scenario used

The baseline scenario was defined as the use of SF_6 as a cover gas in molten magnesium processing.

(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

Three MG Shield gas cylinders contribute to avoided emissions equivalent to that of one SF6 cylinder. Since one SF6 cylinder contains 50 kg of SF6 with a GWP of 23,500 and 10.25 kg of residual gas, preventing the release of one cylinder's contents corresponds to a reduction of approximately 311 t-CO2 per MG Shield gas cylinder.

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

1

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 : The oxygen burner SCOPE-JET

(7.74.1.4) Description of product(s) or service(s)

Electric arc furnaces use electrical energy as a heat source to melt iron scrap and produce crude steel. NSHD reduces electricity consumption in this industry by replacing some of the electric heating with the SCOPE-JET oxygen burner. Additionally, using oxygen combustion helps reduce fuel consumption.

(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 Contributions to Greenhouse Gas Emission Reductions (Ministry of Economy, Trade and Industry, Japan)

(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 equipped with SCOPE-JET

(7.74.1.9) Reference product/service or baseline scenario used

The baseline scenario assumes a conventional electric furnace without SCOPE-JET installation.

(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 power-saving effect per unit of jet oxygen (kWh/Nm³) is calculated based on actual measurements from two electric furnace manufacturers that have introduced SCOPE-JET. The reduction effect is estimated by multiplying the crude steel production volume, the amount of oxygen consumed by SCOPE-JET, the power reduction per unit of oxygen, and the CO2 emission factor of electricity.

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

4.5

(7.79) Has your organization retired 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 generally measured using flow meters.

(9.2.4) Please explain

Considering the importance of water (cooling) in NSHD's product manufacturing processes, water intake is measured at all production sites using automatic measurement devices such as flow meters. Monthly aggregated results are reported to the managers of each production site and are used to evaluate key performance indicators (KPIs) such as the effective utilization of water resources.

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

The amount of water withdrawn by source is typically measured using flow meters.

(9.2.4) Please explain

Considering the importance of water (cooling) in NSHD's product manufacturing processes, the water intake by source is measured at all production sites using automatic measurement devices such as flow meters. Monthly aggregated results are reported to the managers of each production site and are used to evaluate key performance indicators (KPIs) such as the effective utilization of water resources. Additionally, at production sites where groundwater and surface water are heavily used, monitoring is conducted to assess water intake efficiency.

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 at the time of intake (e.g., turbidity, pH) is measured at all production facilities that utilize surface or groundwater, using automatic monitoring equipment and periodic sampling.

(9.2.4) Please explain

We confirm that no abnormal values are detected in the water quality at the time of intake, which is aggregated once a month at all production sites.

We do not directly measure the quality of water supplied by third parties because it is generally stable. Instead, we regularly monitor its quality using data provided by the suppliers, typically monthly. These suppliers continuously and automatically measure the quality of the water they supply.

If any abnormalities are detected, the supplier must notify NSHD immediately.

With this indirect monitoring included, we effectively conduct continuous monitoring of water quality at the time of intake.

Water discharges – total volumes

(9.2.1) % of sites/facilities/operations

Select from:

☑ 76-99

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

At NSHD facilities, as wastewater discharge is not continuous, it is difficult to measure discharge volume using flow meters or similar measuring instruments. Therefore, trial measurements of both water withdrawal and wastewater discharge have been conducted at representative gas production plants. Based on the results of these measurements, the following formula is used to estimate the volume of wastewater:

Formula:
Wastewater volume = Water withdrawal (continuously measured) ÷ 3

(9.2.4) Please explain

At NSHD, approximately 87% of the total wastewater volume is directly measured. The sites where measurement is not conducted typically have discharge routes via pits (ditches) rather than pipelines. In consultation with external organizations, calculation formulas are applied to estimate the wastewater volume at these sites. These estimated values are calculated about once a month. On the other hand, in regions such as Europe and the HyCO business, wastewater volume is measured automatically. Although discharge is not continuous, the use of flow meters allows for easy measurement and continuous monitoring. Data from sites without direct measurement are combined and aggregated approximately once a month.

Water discharges – volumes by destination

(9.2.1) % of sites/facilities/operations

Select from:

☑ 76-99

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

At NSHD facilities, since wastewater discharge is not continuous, it is difficult to measure the volume of discharge using flow meters or similar measuring instruments. Therefore, trial measurements of both water withdrawal and wastewater discharge have been conducted at representative gas production plants. Based on the results of these measurements, the following formula is used to estimate wastewater volume. The volume is also tracked by discharge destination.

Calculation Formula:
Wastewater volume = Water withdrawal (continuously measured) × 1/3

(9.2.4) Please explain

At NSHD, approximately 87% of total wastewater volume is measured. The sites where measurements are not conducted typically have discharge routes via pits (ditches) rather than pipelines. In consultation with external organizations, calculation formulas are applied to estimate wastewater volumes for these sites. These estimated values are calculated about once a month. On the other hand, in Europe, HyCO, and other regions, wastewater volume measurement is performed automatically. Although the discharge is not continuous, flow meters enable easy measurement and continuous monitoring. Data from sites without direct measurement are combined and aggregated approximately once a month. Furthermore, wastewater volumes are tracked by discharge destinations such as sewage systems, rivers and lakes, groundwater, and the ocean.

Water discharges – volumes by treatment method

(9.2.1) % of sites/facilities/operations

Select from:

☑ Not relevant

(9.2.4) Please explain

Since NSHD's operations do not lead to freshwater contamination, wastewater treatment facilities are not required. Consequently, we conclude that there is no direct relationship between wastewater and treatment methods. All the freshwater that NSHD withdraws is supplied to cooling towers, where it is circulated by water pumps as a coolant in heat exchangers. These heat exchangers are components of rotating machinery. After heat exchange occurs, the warmed freshwater returns to the cooling tower, where it cools to the ambient air temperature. Water pumps supply the cooled freshwater to the heat exchangers, and it returns to the cooling tower following the same cycle. Thus, the freshwater used by NSHD circulates repeatedly, and few factors degrade its quality. However, because the returning freshwater is at a high temperature, some of the water evaporates. Due to the large ventilation fans installed in the cooling towers, the evaporated droplets are dispersed into the atmosphere. Consequently, the volume of cooling water gradually decreases with each circulation cycle centered around the cooling tower. Since no significant changes in business operations are expected, we anticipate no changes to the current status of water withdrawal and wastewater discharge.

Water discharge quality – 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

Even when discharged into the public sewer system, freshwater inside the cooling tower is sampled and analyzed by a third-party organization. This is conducted at least once per month, following the same frequency as other monitoring procedures.

(9.2.4) Please explain

At NSHD, instead of measuring water quality at discharge outlets, we monitor the composition of freshwater within the reservoirs inside the cooling towers where water is used. Measuring and managing the freshwater quality inside the cooling tower reservoirs is more practical for operations than measuring the composition of wastewater at the point of discharge. Since NSHD operates a circulating freshwater system, discharge from the cooling towers occurs intermittently and is not continuous. Additionally, because the freshwater returning from the heat exchangers to the cooling towers is at a high temperature, part of it evaporates and is dispersed as droplets into the atmosphere due to the large ventilation fans installed in the cooling towers. Therefore, we consider that managing water quality inside the reservoirs is appropriate for controlling discharge water quality. We sample the freshwater inside the cooling towers at least once a month and monitor parameters such as COD, nitrogen, and other regulated substances subject to public water area discharge regulations by requesting analyses from third-party laboratories. There are very few NSHD sites that discharge directly into public water bodies; over 75% of our sites discharge into public sewage systems or similar infrastructure.

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

Harmful substances such as nitrates and phosphates are monitored during wastewater discharge by sampling the water and having its quality analyzed by a third-party organization.

(9.2.4) Please explain

At NSHD, we measure the composition of freshwater inside the reservoirs within the cooling towers where water is used, rather than at the wastewater discharge outlets. This approach is more practical for operations than measuring and managing the composition of discharged wastewater. Since NSHD employs a circulating freshwater system, discharge from the cooling towers is intermittent and does not occur continuously. Additionally, because the freshwater returning from the heat exchangers to the cooling towers is at a high temperature, part of it evaporates and is dispersed as droplets into the atmosphere due to the large ventilation fans installed in the cooling towers. Therefore, we consider managing water quality inside the reservoirs as appropriate for controlling the quality of discharged water. At least once a month, we sample the freshwater inside the cooling towers and monitor parameters such as COD, nitrogen, and other regulated substances subject to discharge regulations for public water bodies, by outsourcing the analyses to third-party laboratories. Very few NSHD sites discharge directly into public water bodies; more than 75% of sites discharge into public sewage systems or equivalent infrastructure.

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 continuously monitored using an automatic measuring device installed in the cooling tower basin.

(9.2.4) Please explain

At NSHD, instead of measuring wastewater discharge outlets, we analyze the composition of freshwater inside the reservoirs of the cooling towers where water is used. This method is more practical for operational purposes than measuring and managing the composition of the discharged wastewater. Because NSHD operates a circulating freshwater system, discharge from the cooling towers is intermittent and does not occur continuously. Additionally, since the freshwater returning from the heat exchangers to the cooling towers is at a high temperature, some of it evaporates and is dispersed into the atmosphere as droplets due to the large ventilation fans installed in the cooling towers. For these reasons, we consider managing the water quality inside the reservoirs appropriate for controlling the quality of discharged water. At least once a month, we sample the freshwater inside the cooling towers and monitor parameters such as COD, nitrogen, and other regulated substances subject to discharge regulations for public water bodies by outsourcing the analyses to third-party laboratories. Few NSHD sites discharge directly into public water bodies; more than 75% of sites discharge into public sewage systems or equivalent infrastructure.

Water consumption – total volume

(9.2.1) % of sites/facilities/operations

Select from:

☑ 76-99

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

At NSHD's facilities, since wastewater is not discharged continuously, it is difficult to measure the volume using flow meters or similar measuring instruments. Therefore, representative gas production plants have conducted test measurements of water intake and wastewater discharge, and based on the results, the following formula is used to calculate wastewater volume:

Formula:
Wastewater volume = Water intake (measured continuously) ÷ 3

Total water consumption is understood by subtracting the total wastewater volume from the total water intake.

(9.2.4) Please explain

At NSHD, in consultation with external organizations, a calculation formula is applied to sites where wastewater volume is not directly measured, and the wastewater volume is thus estimated. This calculation is performed approximately once a month. On the other hand, in regions such as Europe and at HyCO sites, wastewater volume is measured automatically. Although wastewater discharge is intermittent, it is continuously monitored using flow meters because measurement is relatively straightforward. Data from sites without direct wastewater measurement are combined and aggregated approximately once a month. Usage data is compiled monthly to identify any anomalies. For locations with low wastewater volume where continuous measurement is not performed (such as offices), intake and discharge volumes are assumed to be equal, and water consumption is considered zero. The total water consumption is determined from the difference between total intake and total discharge volumes.

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

For practical purposes, we apply monitoring from two perspectives.
Monitoring Perspectives:
・Comparison between historical water intake and actual water intake
・Monitoring of the concentration level of recycled water
Based on these two perspectives, we determine whether the amount of recycled water is being maintained within an appropriate range.

(9.2.4) Please explain

Since the use of freshwater at NSHD is limited to the cooling water circulation system centered around cooling towers, all sites that make up this cooling water circulation system are considered sites where freshwater recycling is practiced. While efforts are underway to improve water intake efficiency, accurately quantifying the volume of recycled water is extremely difficult. This is primarily because it is very challenging to quantitatively grasp the amounts of evaporation and drift, which vary depending on the ambient temperature. Intake volume and concentration levels are aggregated approximately once a month. In the future, it is considered important to optimize the types and frequency of chemicals injected to moderate the increase in concentration levels, which will consequently contribute to reducing the water intake volume.

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

All business sites are consistently equipped with safe water and sanitary facilities. The safety of water and sanitation conditions is reported annually through monitoring of employee health management.

(9.2.4) Please explain

Safe water is supplied by a third party. The supplier continuously monitors the safety of the water. If any issues are found in the data monitored by the third party, the supplier will immediately stop 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)

39976

(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 efficiency

(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 evaluates changes in water volume using the following criteria:
Evaluation Criteria (compared to the previous fiscal year)

・Within ±5%: About the same

・5–10%: Lower/Higher

・Over 10%: Much lower/Much higher

The total water intake was 40,879 ML for FYE2024 and 39,976 ML for FYE2025. Since this represents a decrease of about 2% compared to the previous year, it is evaluated as "about the same." The main reason for this change is that business activities were conducted at similar levels to the previous year. As water-saving activities continue, total water intake is expected to decrease in the future.

Total discharges

(9.2.2.1) Volume (megaliters/year)

26690

(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 efficiency

(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 evaluates changes in water volume based on the following criteria:
Evaluation Criteria (compared to the previous fiscal year)

・Within ±5%: About the same

・5–10%: Lower/Higher

・Over 10%: Much lower/Much higher

The total wastewater volume was 27,674 ML for FYE2024 and 26,690 ML for FYE2025. Since this represents a decrease of approximately 4% compared to the previous year, it is evaluated as "about the same." The main reason for this change is that business activities were conducted at similar levels to the previous year. As no significant changes in water usage are anticipated in NSHD's operations, the total wastewater volume is expected to remain approximately the same in the future.

Total consumption

(9.2.2.1) Volume (megaliters/year)

13286

(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 efficiency

(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 evaluates changes in water volume based on the following criteria:
Evaluation Criteria (compared to the previous fiscal year)
・Within ±5%: About the same
・5–10%: Lower/Higher
・Over 10%: Much lower/Much higher

The total water consumption for FYE2024 was 13,205 ML, and for FYE2025 it was 13,286 ML. Since this represents approximately a 1% increase compared to the previous year, it is evaluated as "About the same." The main reason for this change is that business activities were conducted at levels similar to the previous year. Given that no significant changes in water usage are expected in NSHD's operations, the total water consumption is anticipated to remain at approximately the same level going forward.

(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)

5663

(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 efficiency

(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

14.17

(9.2.4.8) Identification tool

Select all that apply

☑ WRI Aqueduct

(9.2.4.9) Please explain

At NSHD, we conduct water stress assessments at all our production sites to understand the risks associated with water resource usage and enhance our response to water-related risks. We have evaluated water stress at 129 sites using the water risk assessment tool “Aqueduct,” developed by the World Resources Institute (WRI).

Aqueduct categorizes risk levels into five tiers: low, low-medium, medium-high, high and extremely high. Although no sites in Japan were identified as having high or extremely high water stress levels, 21 of our overseas sites fall into these categories. These sites account for approximately 14% of NSHD’s total water intake.

Based on the scale of this water intake, our independent Physical Risk Quantity evaluation, and results from local interviews, we have concluded that NSHD is not at significant risk of water stress.

(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)

24000

(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 volume using the following criteria:
Evaluation Criteria (compared to the previous fiscal year)

・Within ±5%: Almost the same

・5–10%: Slightly more or less

・Over 10%: Significantly more or less

The volume of surface water withdrawn in FYE 2024 was 25,047 ML, while in FYE 2025 it was 24,000 ML. Since this represents approximately a 4% decrease compared to the previous year, the change is evaluated as “almost the same.” The primary reason for this change is that business activities were conducted at similar levels to the previous year.

Brackish surface water/Seawater

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

Since FYE 2020, NSHD has not used seawater or brackish water in its operations, and there are no plans 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)

2480

(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 volume:
Evaluation criteria (compared to the previous fiscal year)

・Within ±5%: About the same

・5–10%: Slight increase/decrease

・Over 10%: Significant increase/decrease

The volume of renewable groundwater withdrawal for FYE 2024 (previous fiscal year) was 2,377 ML, and for FYE 2025, it was 2,480 ML. This represents an approximate 4% increase compared to the previous year and thus is evaluated as "About the same." The main reason for this change is that business activities were conducted at a similar level to the previous year.

Groundwater – non-renewable

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

At NSHD, from the perspective of effective use of limited water resources, we do not rely on non-renewable water resources. Although a separate survey specifically on non-renewable groundwater has not been conducted, we currently do not use non-renewable groundwater and believe that it should not be used 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 freshwater with stable water quality is essential for maintaining stable operations; therefore, produced water or mixed water is not used. Furthermore, we believe that such water should not be used in the future. However, in the event of drought, there is a possibility that sites located in water-stressed regions may temporarily use produced or mixed water. This is because, considering the potential depletion of freshwater resources in the future, it is necessary to use such water effectively.

Third party sources

(9.2.7.1) Relevance

Select from:

☑ Relevant

(9.2.7.2) Volume (megaliters/year)

13496

(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 volume based on the following criteria comparing to the previous fiscal year:

・Within ±5%: Almost the same

・5-10%: Lower/Higher

・Over 10%: Much lower/Much higher

The volume of water withdrawn from third-party water sources was 13,455 ML in FYE2024 and 13,496 ML in FYE2025. As this represents an approximate 0% change compared to the previous year, the change is evaluated as "almost the same." The main reason for this is that business activities were conducted at a similar level to the previous year.

(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)

21650

(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 the Previous Fiscal Year):

・Within ±5%: Almost the same

・5-10%: Lower/Higher

・Over 10%: Much lower/Much higher

The volume of freshwater discharged into surface water was 22,544 ML in FYE2024 and 21,650 ML in FYE2025. This represents an approximate 4% decrease compared to the previous year and is therefore evaluated as "almost the same." The main reason for this change is that business activities were conducted at a similar level to the previous fiscal year.

Brackish surface water/seawater

(9.2.8.1) Relevance

Select from:

☑ Relevant

(9.2.8.2) Volume (megaliters/year)

75

(9.2.8.3) Comparison with previous reporting year

Select from:

☑ Much higher

(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 the Previous Fiscal Year):
・Within ±5%: Almost the same
・5-10%: Lower/Higher
・Over 10%: Much lower/Much higher
The volume of brackish and seawater discharged into surface water was 62 ML in FYE2024 and 75 ML in FYE2025. This represents an approximate 21% increase compared to the previous year and is therefore evaluated as "significantly more."
The main reason for this change is that some sites revised their discharge destinations from groundwater to surface water.

Groundwater

(9.2.8.1) Relevance

Select from:
☑ Relevant

(9.2.8.2) Volume (megaliters/year)

132

(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 the Previous Fiscal Year):
・Within ±5%: Almost the same
・5-10%: Lower/Higher

・Over 10%: Much lower/Much higher

The volume of wastewater discharged into groundwater was 138 ML in FYE2024 and 132 ML in FYE2025. This represents an approximate 4% decrease compared to the previous year and is therefore evaluated as "almost the same."
The main reason for this change is that business activities were conducted at a similar level to the previous year.

(9.2.8.1) Relevance

Select from:

☑ Relevant

(9.2.8.2) Volume (megaliters/year)

4833

(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 the Previous Fiscal Year):

・Within ±5%: Almost the same

・5-10%: Lower/Higher

・Over 10%: Much lower/Much higher

The volume of wastewater discharged into groundwater was 4,930 ML in FYE2024 and 4,833 ML in FYE2025. This represents an approximate 2% decrease compared to the previous year and is therefore evaluated as "almost the same."
The main reason for this change is that business activities were conducted at a similar level to the previous year.

(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

NSHD primarily withdraws water for indirect cooling purposes, so the impact on the water quality at discharge points is considered minimal. Among our subsidiaries and Taiyo Nippon Sanso Corporation, there are five sites subject to concentration regulations for harmful substances in their wastewater, such as phosphates and nitrates. The total emissions of these harmful substances across these five sites are each less than one ton. Nitrate nitrogen is decomposed by anaerobic microorganisms into nitrogen and oxygen, and after pH adjustment to between 5.8 and 8.6, the treated water is discharged into seawater.

(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

In NSHD's water risk assessment, we utilize the WRI Aqueduct tool to evaluate flood risks and water stress, analyzing water-related risks across NSHD's value chain. Each risk is assessed based on factors such as probability of occurrence, financial impact, and influence on business strategy. Risks with a financial impact exceeding 2 billion yen are considered significant risks that could materially affect NSHD's management. Based on these criteria and the results of our value chain assessment, we have determined that there are currently no significant water risks. Furthermore, since the raw material for industrial gases is air, we do not anticipate encountering water risks related to raw material procurement.

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

In NSHD's water risk assessment, we use the WRI Aqueduct tool to evaluate flood risk and water stress, analyzing water-related risks throughout NSHD's value chain. Each risk is assessed from the perspectives of likelihood, financial impact, and impact on business strategy. Risks with a financial impact exceeding 2 billion yen are considered significant risks that could materially affect NSHD's management. Based on these criteria and the assessment of NSHD's value chain, we have concluded that there are currently no significant water risks. Additionally, since the raw material for industrial gases is air, we do not anticipate water-related risks in raw material procurement.

(9.4) Could any of your facilities reported in 9.3.1 have an impact on a requesting CDP supply chain member?

Select from:

☑ No facilities were reported in 9.3.1

(9.5) Provide a figure for your organization's total water withdrawal efficiency.

	Revenue (currency)	Total water withdrawal efficiency	Anticipated forward trend
	1308024000000	*32720232.14*	At NSHD, each operating company sets KPIs and works on reducing water intake, so further improvements in overall water intake efficiency are expected going forward.

[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

酸素

(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

The water intensity for oxygen in FYE2024 was 1.3, while in FYE2025 it was 1.4. Water intensity is defined as the amount of water intake (m^3) required to produce one unit of oxygen (kNm^3). Therefore, in FYE2025, 1.0 kNm^3 of oxygen production required 1.4 m^3 of freshwater. Water intake generally correlates with product volume, and the fact that the water intensity remained almost the same as the previous year indicates that there was no increase in water intake per unit of product, demonstrating stable production activities. This water intensity can be used as a strategic indicator for reducing water intake. Therefore, it is desirable for manufacturing sites to monitor this water intensity as a KPI and utilize it to drive reductions in water intake. For FYE2025, a baseline water stress survey was conducted using the water risk assessment tool “Aqueduct,” developed by the World Resources Institute (WRI), to identify gas production plants located in high-risk water stress areas. These high-risk gas production plants are working to reduce water intake and consumption by increasing water recycling.

Row 2

(9.6.1.1) Product type

Bulk inorganic chemicals

☑ Other industrial gases

(9.6.1.2) Product name

窒素

(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

The water intensity for nitrogen in FYE2024 was 2.5, while in FYE2025 it was 2.4. The water intensity is defined as the volume of water intake (m^3) required to produce one unit of nitrogen (kNm^3). Therefore, in FYE2025, 1.0 kNm^3 of nitrogen production required 2.4 m^3 of freshwater. Water usage generally correlates with product volume, and the fact that the water intensity remained the same as the previous year indicates that there was no increase in water usage per unit of product, reflecting stable production activities. This water intensity can be utilized as a strategic indicator to reduce water intake. Accordingly, it is desirable for manufacturing sites to monitor this water intensity as a KPI and use it to support water intake reduction initiatives. For FYE2025, a baseline water stress survey was conducted using the water risk assessment tool "Aqueduct," developed by the World Resources Institute (WRI), to identify gas production plants located in high-risk water stress areas. At these high-risk gas production plants, efforts are underway to reduce water intake and consumption, including increasing water recycling.

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

The water intensity for argon was 1.4 in FYE2024 and remained at 1.4 in FYE2025. Water intensity is defined as the volume of water intake (m^3) required per unit of argon produced (kNm^3). Therefore, in FYE2025, 1.0 kNm^3 of argon production required 1.4 m^3 of freshwater. Water usage generally correlates with product volume, and the fact that the water intensity value remained unchanged from the previous year indicates that there was no increase in water use per unit of product, reflecting stable production activities. This water intensity serves as a strategic indicator for reducing water intake. Accordingly, it is desirable for manufacturing sites to monitor this water intensity as a KPI and leverage it to support water reduction initiatives. For FYE2025, a baseline water stress survey was conducted using the water risk assessment tool “Aqueduct,” developed by the World Resources Institute (WRI), to identify gas production plants located in high-risk water stress areas. At these high-risk gas production plants, efforts such as increasing water recycling are underway to reduce water intake and consumption.

Row 4

(9.6.1.1) Product type

Bulk inorganic chemicals

☑ Hydrogen

(9.6.1.2) Product name

水素

(9.6.1.3) Water intensity value (m3/denominator)

2.3

(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 for hydrogen was 2.4 in FYE2024 and decreased to 2.3 in FYE2025. Water intensity is defined as the volume of water intake (m^3) required per unit of hydrogen produced (kNm^3). Therefore, in FYE2025, producing 1.0 kNm^3 of hydrogen required 2.3 m^3 of freshwater. Water usage generally correlates with product volume, and the slight decrease in water intensity compared to the previous year indicates that there was no increase in water use per unit of product, reflecting stable production activities. This water intensity serves as a strategic indicator for reducing water intake. Accordingly, it is desirable for manufacturing sites to monitor this water intensity as a KPI and leverage it to support water reduction initiatives. In FYE2025, a baseline water stress survey was conducted using the water risk assessment tool “Aqueduct,” developed by the World Resources Institute (WRI), to identify gas production plants located in high-risk water stress areas. At these high-risk gas production plants, efforts such as increasing water recycling are underway to reduce water intake and consumption.

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)

7

(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 for carbon monoxide was 6.9 in FYE2024 and increased slightly to 7.0 in FYE2025. Water intensity is defined as the volume of water intake (m^3) required per unit of carbon monoxide produced (kNm^3). Therefore, in FYE2025, producing 1.0 kNm^3 of carbon monoxide required 7.0 m^3 of freshwater. Water usage generally correlates with product volume. The slight increase in water intensity compared to the previous year indicates a minor rise in water use per unit of product. This water intensity serves as a strategic indicator for reducing water intake. Accordingly, it is desirable for manufacturing sites to monitor this water intensity as a KPI and utilize it to support water reduction initiatives.
In FYE2025, a baseline water stress survey was conducted using the water risk assessment tool “Aqueduct,” developed by the World Resources Institute (WRI), to identify gas production plants located in high-risk water stress areas. At these high-risk gas production plants, efforts such as increasing water recycling are underway to reduce water intake and consumption.

(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 are defined as having low water impact if they either have no adverse effect on water quality or consume less water than conventional alternatives.	NSHD sells air separation units that enhance the efficiency of gas-liquid contact. By introducing these energy-efficient air separation units, the amount of water used for cooling is reduced, which in turn decreases the total 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

Clean and accessible WASH services are widespread in Japan, so we have not set specific targets related to them. However, since some of our overseas factories may not have 100% WASH service coverage, we plan to investigate their status and consider setting targets in the future.

Other

(9.15.1.1) Target set in this category

Select from:
☑ No, but we plan to within the next two years
[Fixed row]

(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

35

(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 scope includes 37 European operating companies of NSHD, including Nippon Gases Euro-Holding S.L.U.

(9.15.2.15) Actions which contributed most to achieving or maintaining this target

At NSHD, water intensity reduction targets—defined as the amount of water intake per unit of product—are established by each operating company as necessary. Achievement of these targets is determined based on whether actual reductions by FYE2025 exceed the respective targets set by each operating company.

(9.15.2.16) Further details of target

This target was set in FYE2021 and has been in effect since FYE2022. Under NSHD's Sustainable Water Program, our European operating companies have established a goal to reduce water use intensity by 10%. Additionally, reducing water intensity is also related to lowering wastewater volume per unit of 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

35

(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 scope includes 37 European operating companies of NSHD, such as Nippon Gases Euro-Holding S.L.U.

(9.15.2.15) Actions which contributed most to achieving or maintaining this target

At NSHD, each operating company sets reduction targets for water intensity (water withdrawal per unit of product) as needed. If the actual water intensity is reduced below the target value set by each operating company by FYE2025, it is considered that the target has been achieved.

(9.15.2.16) Further details of target

This target was set in FYE2021 and has been implemented since FYE2022. Under NSHD's Sustainable Water Program, our European operating companies have set a goal to reduce water use intensity by 10%.

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 : Nippon Sanso Holdings endorsed the mission of the "OIST Coral Project," led by the Okinawa Institute of Science and Technology Graduate University (OIST). The project is dedicated to conserving coral reefs in Okinawa and around the world. We joined the project as a special partner in August 2024.

(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

☑ Climate change

(13.1.1.2) Disclosure module and data verified and/or assured

Environmental performance – Climate change

☑ Base year emissions

(13.1.1.3) Verification/assurance standard

General standards

☑ ISAE 3000

(13.1.1.4) Further details of the third-party verification/assurance process

We have conducted third-party verification of our baseline emissions for FYE2024.

(13.1.1.5) Attach verification/assurance evidence/report (optional)

Third party verification_20230401 – 20240331.pdf

Row 2

(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

☑ Water discharges– total volumes

☑ Other data point in module 9, please specify: Total Freshwater Withdrawal

(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 been receiving third-party assurance on its performance data since FYE2020, including for FYE2025. The independent assurance statement can be found on page 95.

(13.1.1.5) Attach verification/assurance evidence/report (optional)

Third party verification_20230401 ‒20240331.pdf

(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