



Web IR Conference on Sustainability initiatives

December 6, 2024
Tokyo, Japan



NIPPON SANSO HOLDINGS

The Gas Professionals

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● Financial information

NSHD’s financial statements are prepared in accordance with international Financial Reporting Standards (“IFRS”).

Contents

1. **Sustainability Management Strategy**
2. **Measures to achieve Non-financial KPI**
3. **Business Opportunities in Carbon Neutrality**

Appendix

(Information)

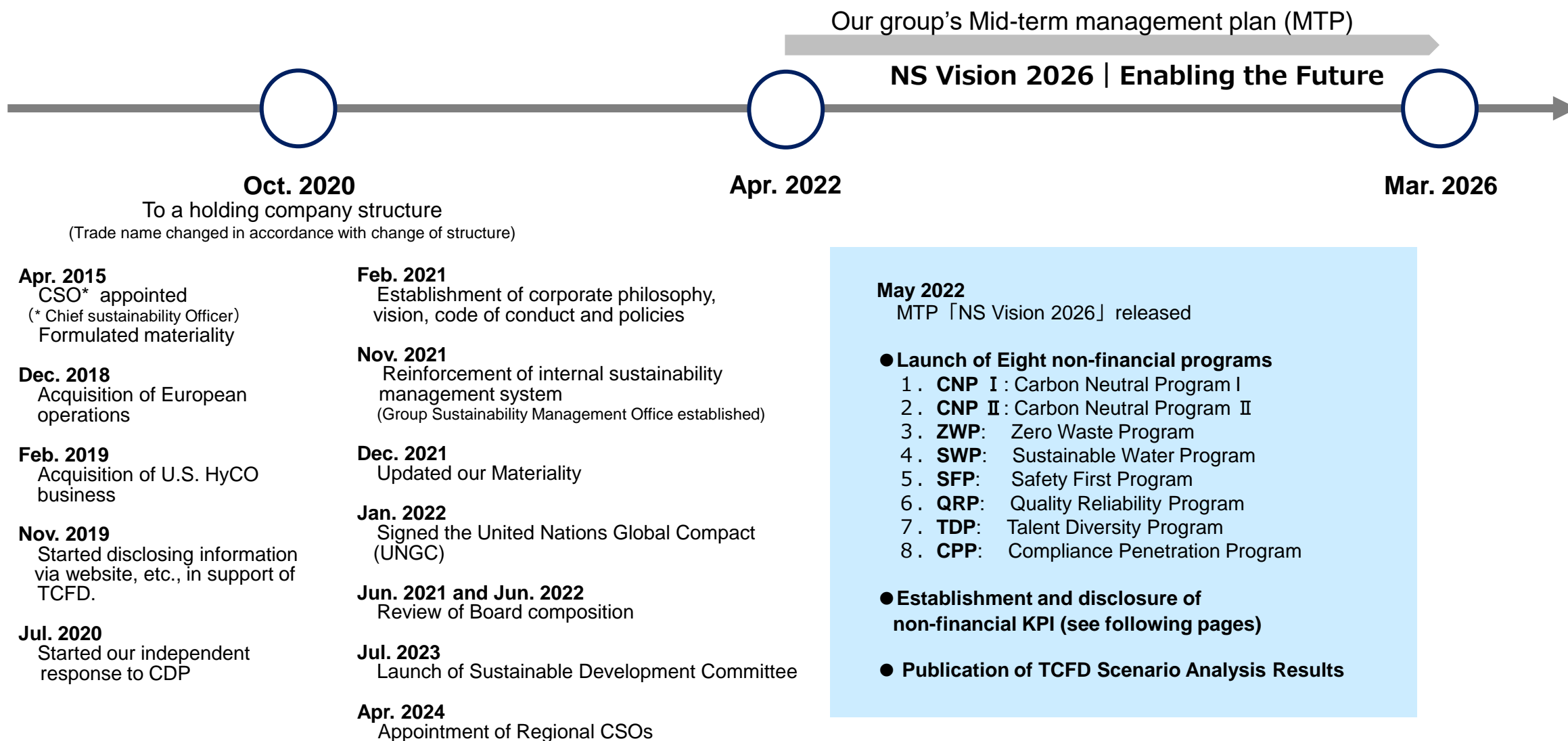
In this slide deck, the term "Carbon Neutrality (Neutral)" appears frequently, so the abbreviation "CN" is used for the sake of readability and visibility. Please be aware of this in advance.



Opening remarks

1. Sustainability Management Strategy

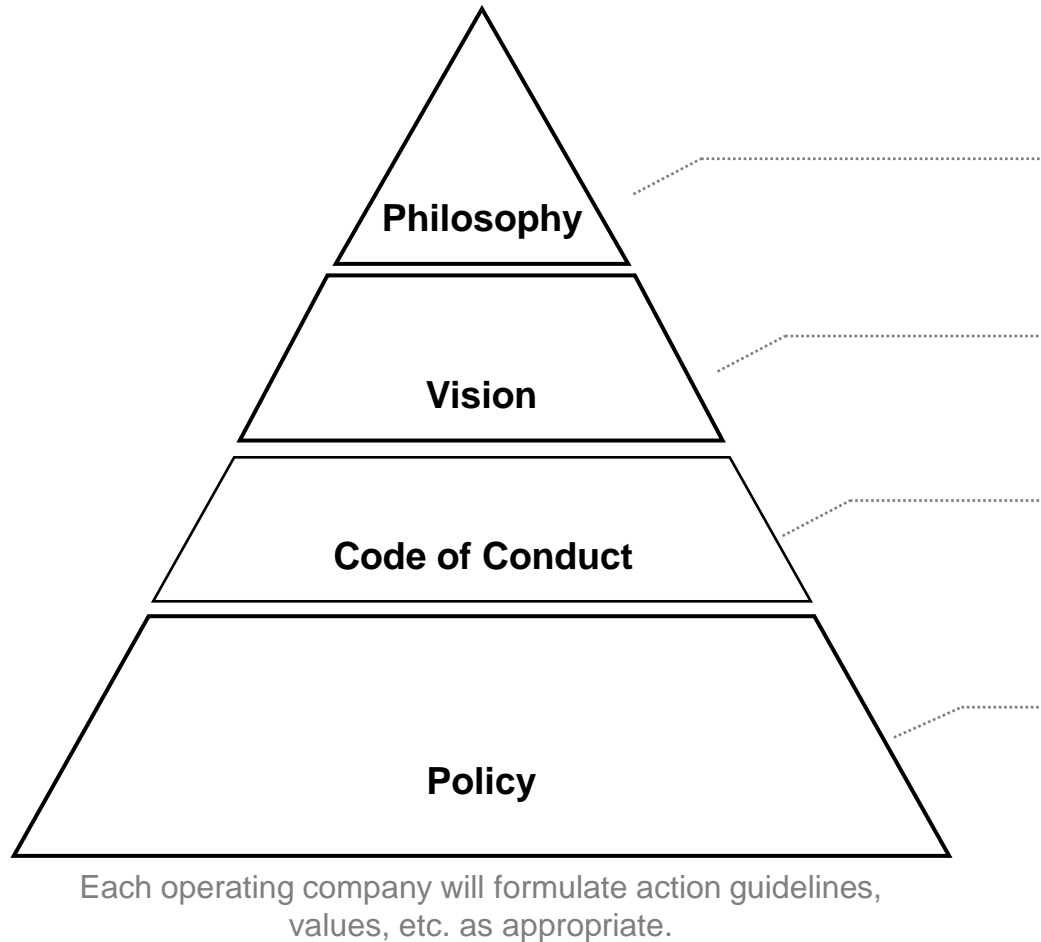
Enhancing Corporate value through Sustainability orientation



Laying the foundation for Sustainability Management

Our Group's Philosophy System

(established in Feb. 2021)



Proactive. Innovative. Collaborative.
Making life better through gas technology.
The Gas Professionals

We aim to create social value through innovative gas solutions that increase industrial productivity, enhance human well-being and contribute to a more sustainable future.

The contents of the Charter of Corporate Behavior (Keidanren) are largely covered in our Code of Conduct. Therefore, rather than establishing a new "Charter of Corporate Behavior," we have reviewed the current Code of Conduct, taking into account recent social trends.

12 policies developed for disclosure

- Anti Corruption Policy
- Environmental Policy
- Occupational Safety and Health/Industrial Safety and Disaster Prevention Policy
- Product Safety and Quality Policy
- Intellectual Property Policy
- Procurement Policy
- Global Policy on Respecting Human Rights, Contributing to Communities, Employment, Labor and Health
- Global Competition Law Compliance Policy
- Global Tax Policy
- Investor Relations (IR) Policy
- Information Security Policy
- Internal Audit Policy

To operate as a unified group

Sustainability Management and Operating Structure

Board of Directors (Nine Directors, five are outside directors)



Supervision

Representative Director, President CEO



* Once a year in principle

Management Committee

(Once a month in principle)

The committee deliberates and makes decisions on important matters related to the execution of duties by the Representative Director, President CEO.

Global Strategy Review Committee*

Global Risk Management Committee*

Global Compliance Committee*

CSO

Group Sustainability Management Office (GSMO)



Sustainable Development Committee

Technological Risk Liaison Committee

Meeting between NSHD and each operating company to determine specific measures to be taken

Japan / US / Europe / Asia & Oceania / Thermos

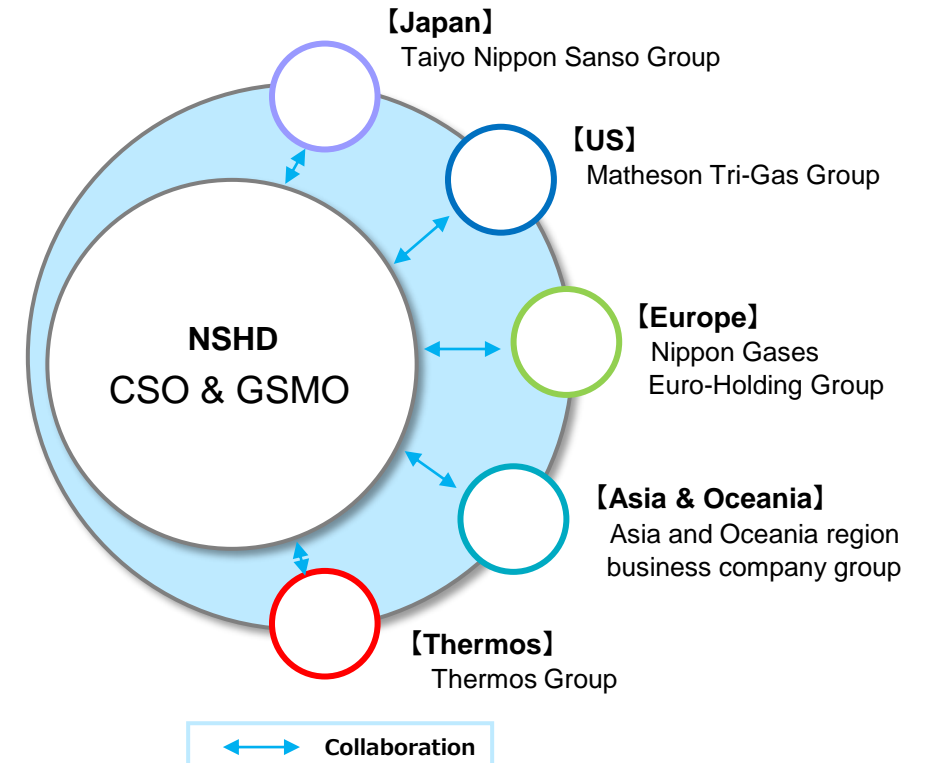
Reporting

Reporting

Major Non-financial matters & agendas for reporting and consideration in the Board of Directors (FYE2024)

- Development of Non-financial KPI
- CDP response policy
- Non-financial KPI-linked bonuses for Officers
- Internal carbon pricing
- Non-financial program progress of each operating company
- Risk management for global environment issues

Group companies Close collaborative relationship

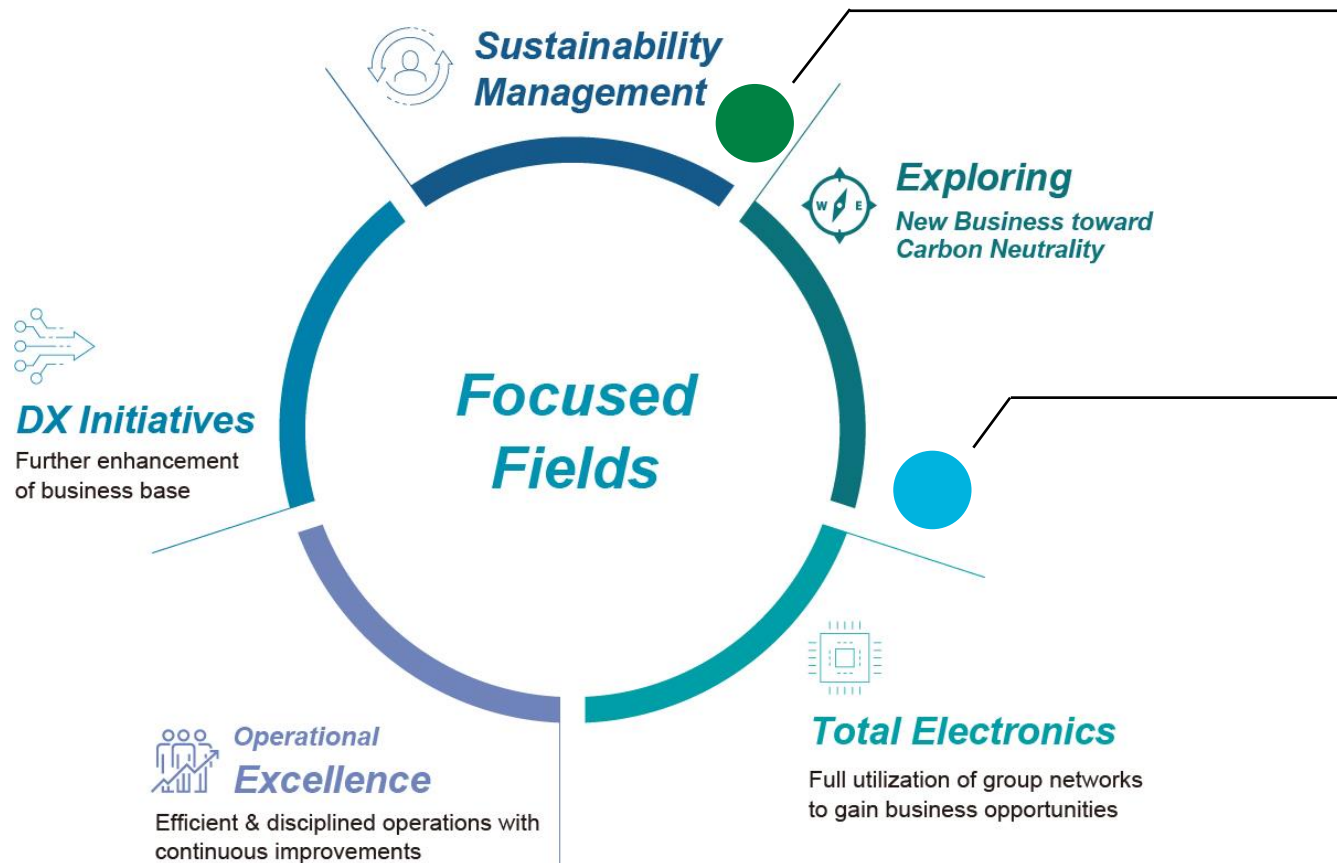


Implement the five focused fields

Our Medium-Term Management Plan

NS Vision 2026

Slogan
: **Enabling the Future**



2. Measures to achieve Non-financial KPI

Explainer: Toshifumi Abe, General Manager



Sustainability Management,
Group Sustainability Management Office,
NIPPON SANZO Holdings Corporation

3. Business Opportunities in Carbon Neutrality

Explainer: Masayoshi Omichi, Executive Officer,
Senior General Manager



Corporate & Business Planning,
Group Corporate Planning Office
NIPPON SANZO Holdings Corporation

Eight Non-financial programs & NS Vision 2026 Non-financial KPI

	Non-Financial Programs	Non-Financial KPIs	NS Vision 2026 Final-Year Targets (FYE2026)	FYE2024 Results
E	Carbon Neutral Program I Reduce the Group's GHG emissions	Reduction rate of GHG emissions *1	18%	15.3%
	Carbon Neutral Program II Reduce customer GHG emissions through environmental product offerings and applications	Lower customer GHG emissions	Lower customer GHG emissions through environmental product offerings and applications > NSHD Group GHG emissions	7,454,000 t > 5,667,000 t-CO ₂ e
	Sustainable Water Program Effective use of water resources	Reduction rate of water withdrawals intensity, etc.	-	-
	Zero Waste Program Reduction in waste emissions	Reduction rate of waste disposal intensity, etc.	-	-
S	Safety First Program Reduction in lost time injury rate	Lost time injury rate *2	≤ 1.6	2.09
	Quality Reliability Program Reduction in number of claims about products, offerings and applications	Number of product complaints, etc.	-	-
	Talent Diversity Program Utilization of diverse talent	Rate of female employees Rate of female management posts	≥ 22% ≥ 18%	20.2% 15.4%
G	Compliance Penetration Program Compliance education and enforcement	Rate of receiving compliance training	100%	99.4%*3

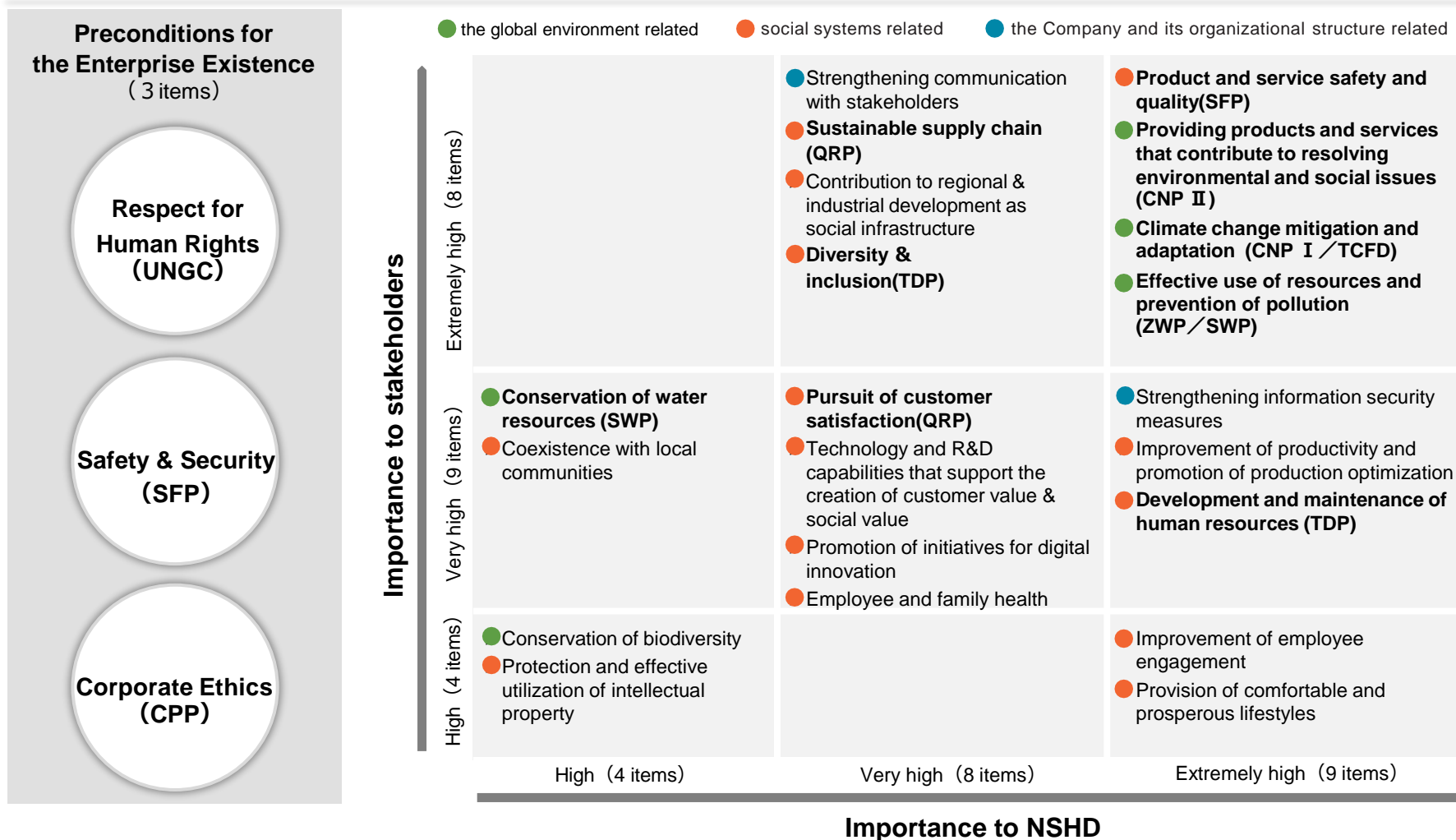
*1 Reduction targets for a fiscal year are set with reference to the base year of FYE2019, with figures adjusted to reflect the acquisition of the European industrial gases business.

*2 This is an indicator that represents the frequency of occupational accidents. It is calculated as the number of employees injured in accidents that resulted in lost work time, divided by the total number of work hours, multiplied by one million hours.

*3 100% completed as of the end of June 2024.

Materiality & Eight Non-financial programs

Materiality (24 items)



● Eight Non-financial programs

1. **CNP I** : Carbon Neutral Program I
2. **CNP II** : Carbon Neutral Program II
3. **ZWP**: Zero Waste Program
4. **SWP**: Sustainable Water Program
5. **SFP**: Safety First Program
6. **QRP**: Quality Reliability Program
7. **TDP**: Talent Diversity Program
8. **CPP**: Compliance Penetration Program

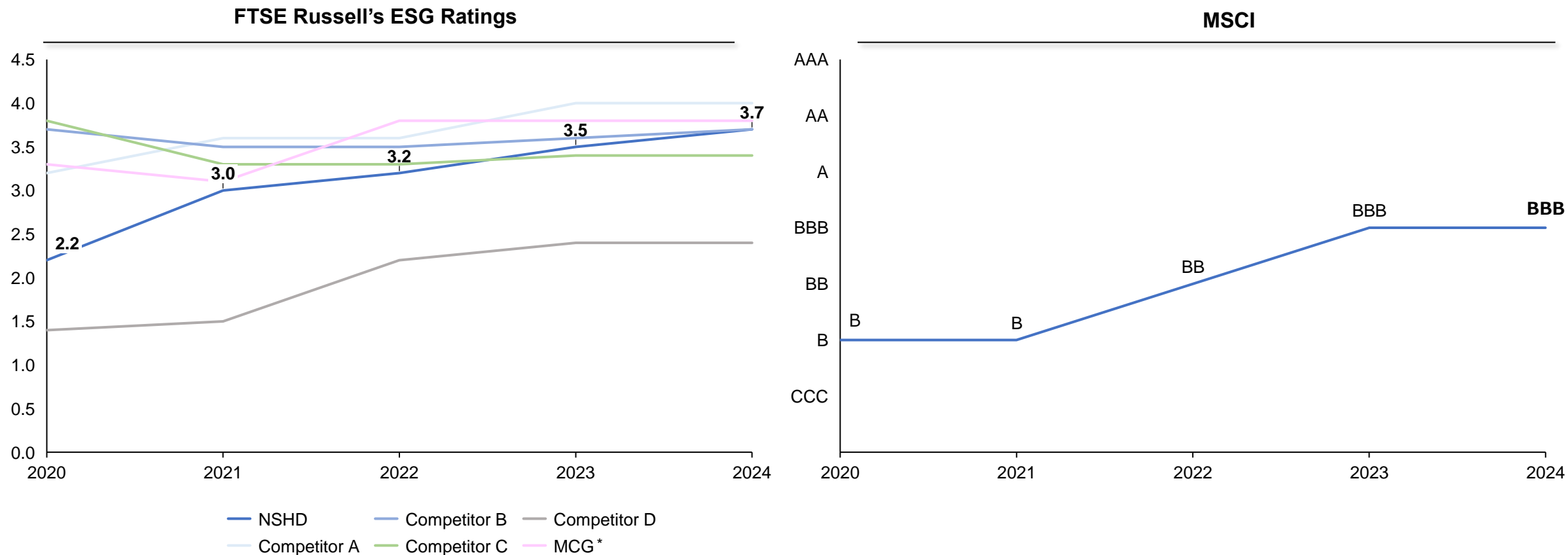
(Supplementary information)

UNGC : United Nations Global Compact

TCFD : Task Force on Climate-Related Financial Disclosures

* This materiality is an updated version of the 2015 version, which was reviewed internally and approved by the Company's Board of Directors in Dec. 2021.

Non-financial related external evaluations (FTSE / MSCI)



- Selected as constituent for “FTSE4Good Index Series”, “FTSE Blossom Japan Index” and “MSCI Japan Empowering Women (WIN) Select Index”
- Selected in the list of the companies in “FT Asia-Pacific Climate Leaders 2024”
- Acquired “Star 4” in Nikkei SDGs Management Survey of FYE2024”

Expanding sustainability information disclosure in Integrated Reports

Examples of new disclosure items:

- ✓ Expanded disclosure of reports based on TCFD recommendations (quantification of opportunities and risks)
- ✓ Human Rights Initiatives (policy formulation, supply chain management, safety initiatives, etc.)
- ✓ Special Feature on Total Electronics (History and Progress, Rapidus Project, Roundtable Discussion)
- ✓ Three-Way Conversation: Technological capabilities supporting Sustainable Business Development
- ✓ Response to Biodiversity

Valuing People (Human Rights Initiatives)



Safety Initiatives
Hazard Awareness Training Using Virtual Reality

Three-Way Conversation on technological capabilities as the source for sustainable business development, featuring the CSO, Head of Technology Development Unit, and Head of Innovation Unit



Roundtable Meeting

A New Phase for Total Electronics

A Perfect Global Scenario



Response to Biodiversity : Participation in the TNFD Forum



In August 2024, NSHD participated in the TNFD Forum*¹ and registered as a TNFD Adopter*². NSHD supports the TNFD's aim of shifting to "Nature positive" and will collate and disclose information on each of the recommended disclosure items in accordance with the TNFD framework.

Towards the conservation of biodiversity

2021.2
Formulated "Nippon Sanso Group Environmental Policy"
2024.1
Participated in "Keidanren Initiative for Biodiversity Conservation"*³

Initiatives

Participation in the OIST Coral Project by the Okinawa Institute of Science and Technology Graduate University

Through coral reef monitoring using environmental DNA technology established by OIST and R&D driven by genome analysis technology, we support coral reef conservation activities in Okinawa and around the world.



Thermos bottle launched to support the project*⁴

Support for Protection of Raptors

Thermos sells original bottles to support activities for the protection of raptors. Part of the sales from these products is used by the Institute for Raptor Biomedicine Japan to protect endangered wildlife such as Steller's sea eagles, white-tailed eagles, and Blakiston's fish owls.



Original bottles by Thermos in collaboration with the Institute for Raptor Biomedicine Japan

*¹ A network in which companies and organizations with expertise in a wide range of fields participate and support the construction of an information disclosure framework based on TNFD.

*² A company or organization that has registered its intention, on the TNFD Website, to make public disclosure aligned with the TNFD Recommendations issued in September 2023. Registered companies and organizations need to make disclosures in line with the TNFD Recommendations in respect of their fiscal year of 2024 or 2025.

*³ The initiative includes companies and organizations that have endorsed the "Keidanren Declaration for Biodiversity and Guideline" (guideline shows vision and the role of companies to achieve the target of a nature positive world in 2030), which was established by Keidanren (Japan Business Federation) and the Keidanren Committee on Nature Conservation.

*⁴ On sale from September 30, 2024, limited in 2 Thermos shops in Okinawa.

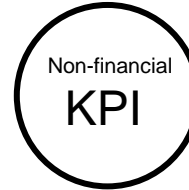
2. Measures to achieve Non-financial KPI

CNP I : To reduce the Group's GHG emissions through our own efforts (1/2)

(Carbon Neutral Program I)

Aiming for CN by 2050

Achieving CN through Technological breakthrough



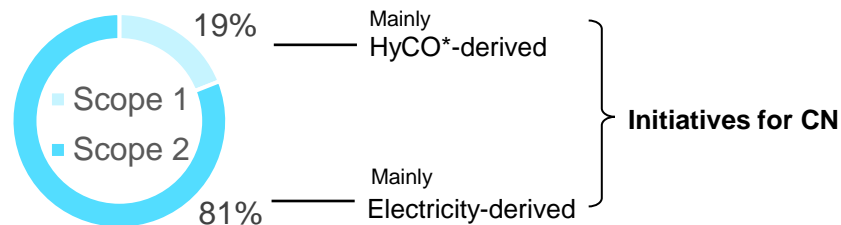
GHG emissions reduction target (Base year: FYE2019*)
(Greenhouse gas)

FYE2026 : 18% down, FYE2031 : 32% down

*Reduction targets for a fiscal year are set with reference to the base year of FYE2019, with figures adjusted to reflect the acquisition of the European industrial gases business.

Scenarios for achieving goals

● Composition of GHG emissions of our group (FYE2024)



Changes in power supply configuration are very relevant to GHG emissions

Estimates based on IEA emission factor projections

Source : IEA Carbon intensity of electricity generation in selected regions in the Sustainable Development Scenario, 2000-2040

*HyCO stands for hydrogen (H₂), carbon monoxide (CO), and syngas products.

Our measures

Further promotion of energy conservation & efficiency of energy use - Reduced energy consumption

- ① Replacement of Air Separation Units (ASUs)
- ② Reduction of electricity usage through digital solution technologies
- ③ Streamlining of logistics and review of transport

Promotion of the use of renewable energy and green power

- Green Electricity Procurement

- ① Switch to electricity companies with low emissions coefficients
- ② Purchase green power certificates
- ③ Introduce renewable energy

Carbon capture and offsets - Consideration of CCUS implementation

- ① Promote CO₂ capture
- ② Carbon offset through new technology, forest conservation, and tree-planting activities, etc.

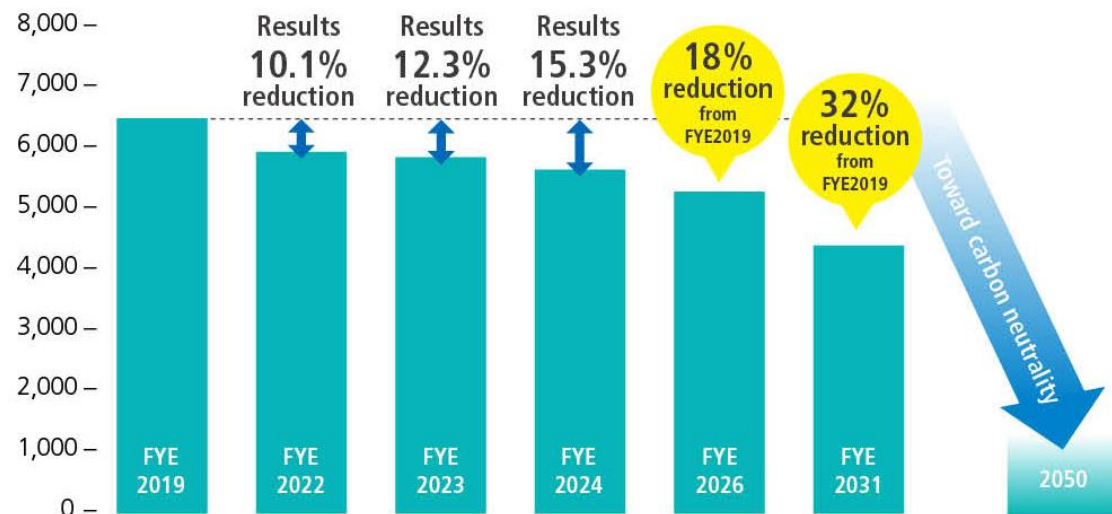
CNP I : To reduce the Group's GHG emissions through our own efforts (2/2)

(Carbon Neutral Program I)

Results

GHG Emission Reduction Targets

GHG emissions (Thousands of tonnes CO₂e)



* FYE2019 reference year: Addition of GHG emissions at U.S. HyCO business, European business, U.S. transportation, Asia and Oceania transportation, U.S. subsidiaries (CCPI: Continental Carbonic Products, Inc., Western: Western International Gas & Cylinders, Inc.) to actual emissions in FYE2019
FYE2022: Addition of GHG emissions at U.S. subsidiaries (CCPI, Western)

Main factors of GHG Emission reduction

- ✓ Purchase of green power certificates (Guarantee of Origin)
- ✓ Replacement of air separation units and reduction of electricity usage through digital solution technologies

Continuous initiatives for further reduction

- ✓ Expand above initiatives across the Group
- ✓ Switch to electricity companies with low emissions coefficients
- ✓ Introduce renewable energy

CNP II : To reduce GHG emissions of customers through the promotion of our products (1/2)

(Carbon Neutral Program II)

Contribute to the reduction of global GHG emissions through the Group's products and technologies



X: Lower customer GHG emissions
through environmental product offerings and applications
Y: NSHD Group GHG emission (Scope 1 + 2)
FYE2026 : X > Y

Scenarios for achieving goals

External environment

Social demands from the perspective of global environmental protection

Working toward Net Zero is a corporate imperative.

Technological evolution on the customer side

Drive toward carbon neutrality at customers dramatic technological development and rapid replacement of existing technologies

Our measures

Contribution by the Group's existing technologies

- ①Oxygen-enriched combustion in blast furnaces
- ②H₂ and NH₃ combustion in industrial furnaces
- ③Carbon capture and utilization (on a small scale)

Expansion of the Group's contribution area

- ①Areas of contribution other than the above existing technologies
(In addition to in-house R&D, mutual collaboration with other companies through strategic alliances, etc.)
- ②Carbon capture and utilization (on a large scale)

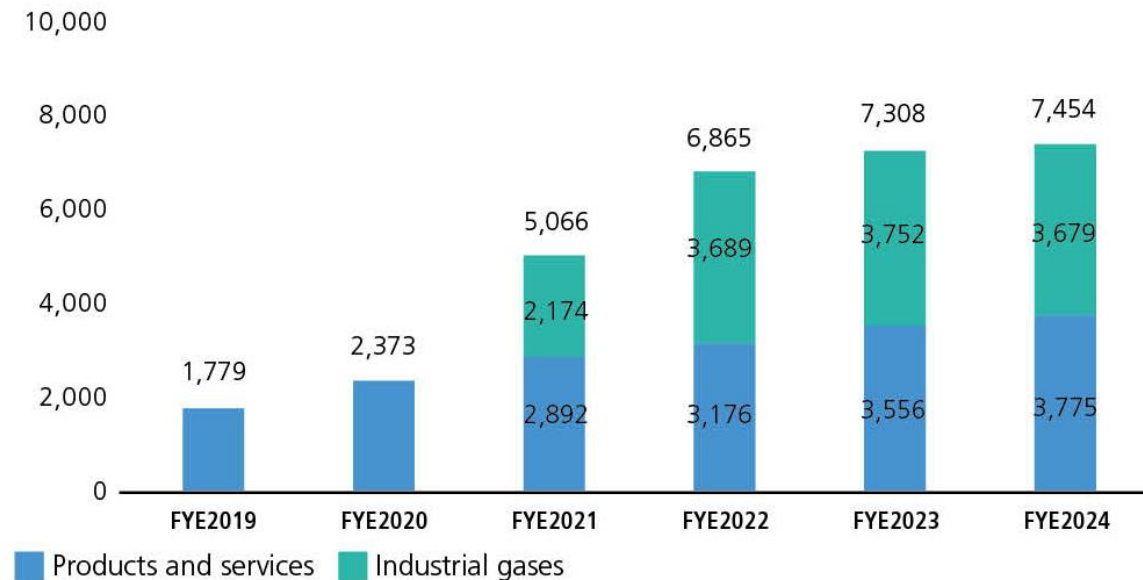
CNP II : To reduce GHG emissions of our customers through the promotion of our products (2/2)

(Carbon Neutral Program II)

Results

Reduction in GHG Emissions through Environmental Product Offerings and Applications

GHG emission reduction contribution (Thousands of tonnes CO₂e)



GHG emissions of NSHD group (Scope 1+2)
FYE2024 : 5,667,000 t-CO₂e

Enhanced contribution to GHG emission reduction through products and services using the NSHD Group's proprietary technologies

- ✓ Combustion-type exhaust gas abatement system
- ✓ SF₆ recovery service
- ✓ SCOPE-Jet®
- ✓ MG Shield®
- ✓ New refrigerants
- ✓ Nitrogen gas supply system for laser processing (PSA)
- ✓ Shuttle Chef®
- ✓ Hydrogen station
- ✓ Oxygen-enriched combustion in blast
- ✓ Oxygen-enriched electric furnaces
- ✓ Argon (Ar) welding

ZWP: To preserve the global environment

(Zero Waste Program)

Zero Waste Program

Aiming to reduce waste emissions

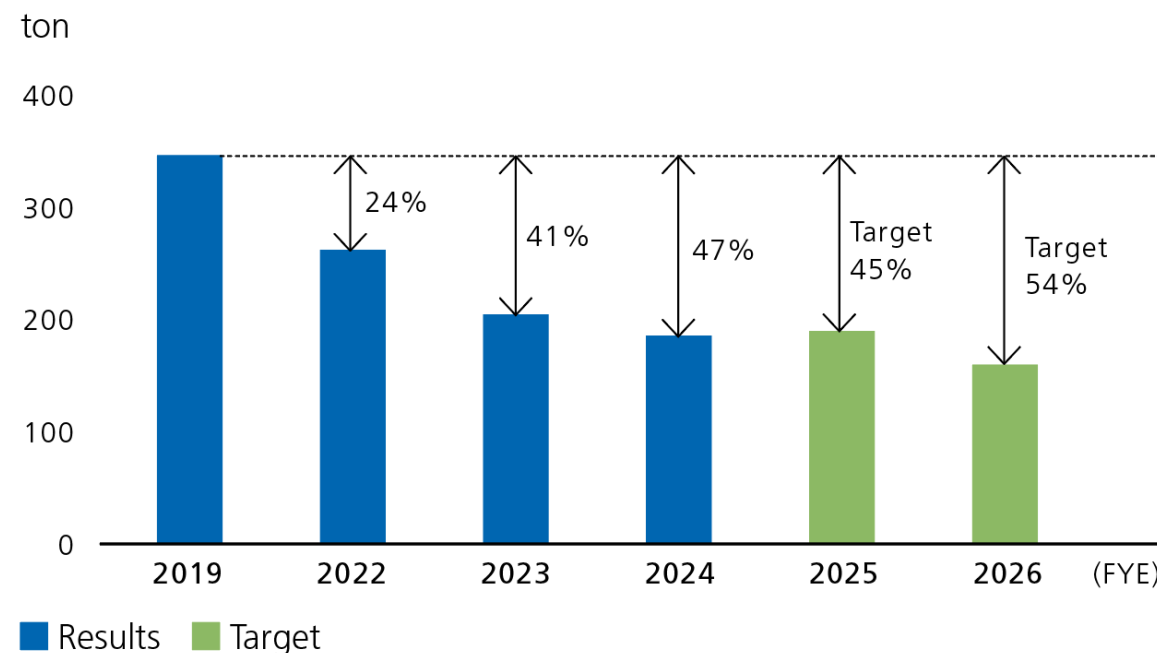
Following the 3R's (Reduce, Reuse, Recycle) of waste disposal is a necessary, and we will work on proper management and recycling of waste to reduce emissions and build a resource cycle.

Initiatives in the Japan Segment

We started HALD (Halve Amount of Landfill Disposal) to halve the amount of industrial waste generated by the Japan Segment for landfill disposal by FYE2026.

Results

Amount of Landfill Disposal (Japan segment)



SWP: To preserve the global environment

(Sustainable Water Program)

Sustainable Water Program

Aiming to minimize water risk

Effective use of water resources is a must, and we aim to conserve water resources in our corporate activities through efficient use of water.

Identify water risks and implement measures for high-risk sites

- Conduct an annual water stress survey using Aqueduct, a water risk assessment tool developed by the World Resource Institute, to identify production plants (ASU and HyCO plants) in high-risk areas.
- In production plants in high-risk areas, work to reduce water withdrawal and consumption by increasing the amount of water circulated, etc.

Results of Water Stress Level Survey for all of NSHD's production sites (121 sites)

Upper level: Water usage (thousand m³), lower level: Number of applicable / production sites

	High	High-medium	Medium	Medium-low	Low
Japan	0 (0/20)	0 (0/20)	1,474 (8/20)	1,407 (11/20)	46 (1/20)
US	997 (6/49)	2,028 (11/49)	1,979 (9/49)	820 (8/49)	2,123 (15/49)
Europe	3,816 (8/30)	0 (0/30)	6,013 (8/30)	0 (0/30)	15,859 (14/30)
Asia & Oceania	906 (7/20)	68 (1/20)	266 (2/20)	517 (6/20)	1,580 (4/20)
Thermos	0 (0/2)	0 (0/2)	48 (1/2)	0 (0/2)	120 (1/2)
Total	5,719 (21/121)	2,096 (12/121)	9,780 (28/121)	2,744 (25/121)	19,728 (35/121)

• Data as of FYE2024

• Reporting boundary: Production sites with ASU, HyCO, or liquid carbon dioxide facilities with annual water withdrawal of 20,000 m³ or more and Thermos

SFP: Ensure the safety of our workforce

(Safety First Program)

Safety First Program

Aiming to be a global leader in the industrial gas industry through safety

Non-financial
KPI

FYE2026 : Lost Time Injury Rate ≤ 1.6

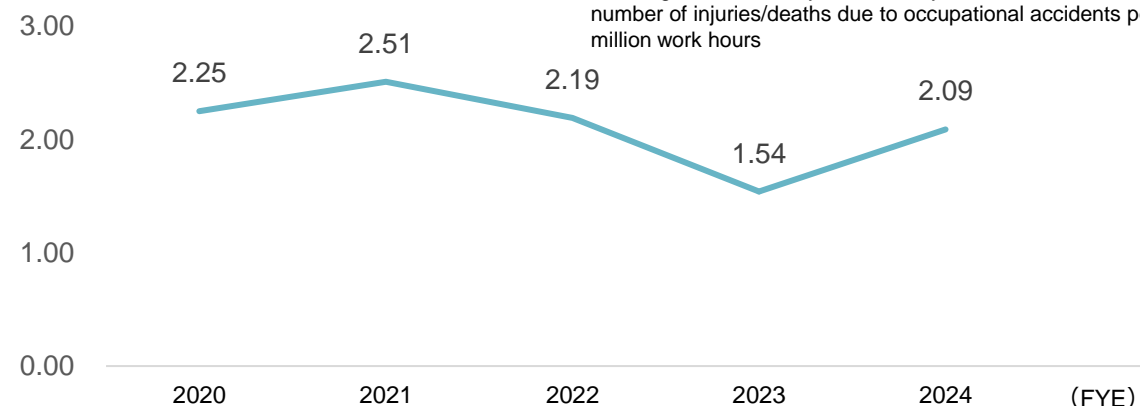
Safety is the foundation of our company's existence, and in the spirit of **"Selling gases is Selling safety."**, we will strive to maintain a safe and reliable supply by further promoting safety.

Specific measures to achieve

- ✓ Share information on accidents, occupational injuries, and best practices
- ✓ Improve security capabilities through the use of smart security (DX, AI, IoT)
- ✓ Enhancement of safety education
- ✓ Utilize TNSC's Technical Academies to foster safety culture and improve hazard sensitivity
- ✓ Promote investment in safety

Results

Lost-time injury rate*



Reporting boundary : Consolidated subsidiaries with production divisions in Japan and overseas

Although the lost-time injury rate in FYE2024 increased to 2.09 for the entire NSHD Group, it is a downward trend in medium to long term.

Lowering factors

- ✓ Strengthening safety patrol
- ✓ Thoroughgoing use of protective equipment

Continuously analyze the occurrence factor and make countermeasures to prevent and promote the education to employees for risk control.

QRP: Improve the reliability of our quality

(Quality Reliability Program)

Quality Reliability Program

Aiming to improve quality and reliability

Thoroughly promote awareness of the importance of quality, further raise the awareness of operations personnel, and promote the introduction of automated technologies.

Specific measures to achieve

- ✓ Thorough training on quality ethics and compliance
- ✓ Implementation of quality audit program
- ✓ Promote automation of testing, inspection, and analysis records, etc.
- ✓ Efforts to improve customer satisfaction through Semiconductor Specialty Gas Quality Committee (SSG-QC) activities

Efforts and Results

- ✓ We will promote a culture that emphasizes quality by keeping our important promises to customers and strive to further raise awareness among employees. We will also implement a series of initiatives with the aim of increasing quality and reliability by promoting the introduction of LIMS^{*1} and other automation technologies.
- ✓ We continue to focus on the quality audit program^{*2} being undertaken by the entire NSHD Group since FYE2022.
- ✓ Implementing the sharing of best practices and discussion of solutions to improve customer satisfaction through the activities of the Semiconductor Specialty Gas Quality Committee (SSG-QC), composed of electronic materials gas manufacturing companies in the NSHD Group.

^{*1} Laboratory Information Management System

^{*2} Each operating company conducts a quality audit of their business sites once every three years based on important audit items set by NSHD.

TDP: Toward Human Resource Development that Supports and Generates Sustainable Growth

(Talent Diversity Program)

Talent Diversity Program

Launched a strategy to develop human resources for sustainable growth.



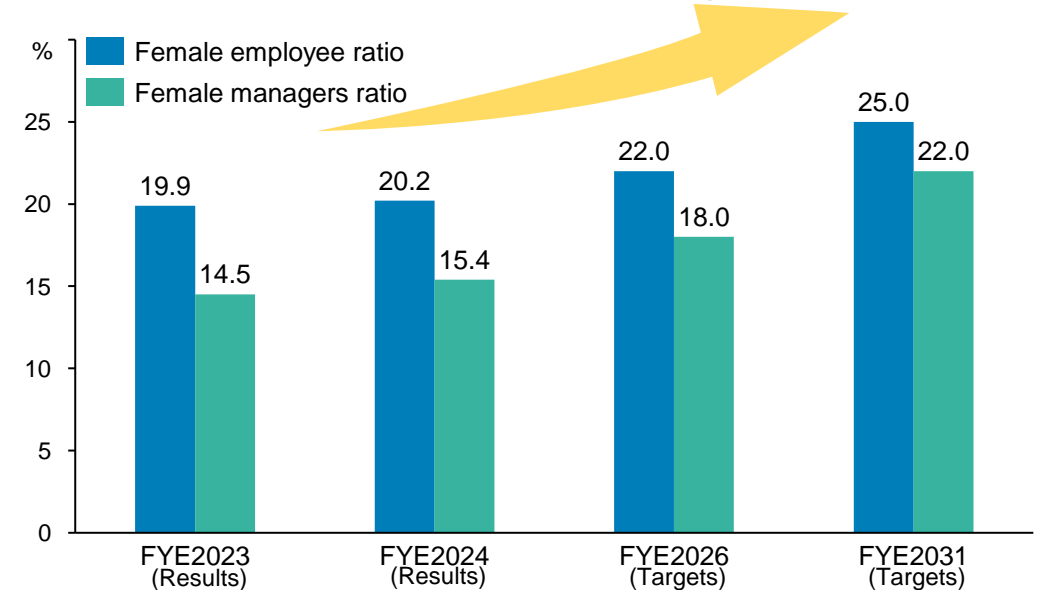
FYE2026 : **FYE2031 :**
Rate of female employees 22% 25%
Rate of female management posts 18% 22%

Promote the recruitment, development, and exchange of diverse human resources essential for sustainable growth

Specific measures to achieve

- ✓ To ensure the acceptance of a diverse workforce & ease of work.
- ✓ Promote cross-regional exchange of human resources
 - ① Established task-based global teams that span regions
 - ② Began to examine exchanging staff with operating companies

Female employee ratio, Female managers ratio



Major initiatives

Japan	<ul style="list-style-type: none">• Advance the Promotion Project Team for Women's Active Engagement to the Diversity & Inclusion Office• Formulated the Taiyo Nippon Sanso Declaration on Diversity and Inclusion to promote diversity and inclusion
US	Strengthen activities in recruitment marketing
Europe	WING (Women's Ikigai Nippon Gases) Project (A human resource network comprising female employees for conducting women-centered events and training and promoting the presence of women)
Asia & Oceania	Promote Unity in Diversity program (educational activities for understanding different cultures, empowering women)

CPP: Toward Human Resource Development that Supports and Generates Sustainable Growth

(Compliance Penetration Program)

Compliance Penetration Program

Thoroughly adhere to the prerequisites
(corporate ethics, safety and security, and respect for human rights)
for maintaining corporate existence



FYE2026 :
Rate of receiving compliance training 100%

Promote the establishment of compliance by spreading awareness and acquiring correct knowledge of compliance

Specific measures to achieve

- ✓ Continue compliance training in each region to disseminate knowledge and corrective actions for all employees
- ✓ Prevention of compliance violations
- ✓ Detection of compliance violations through dissemination and operation of the internal reporting system

Initiatives

Conducted compliance training in each region and at each operating company.

Compliance training result (FYE2024)

Region	Main training and themes
Japan	Explanation of compliance, harassment prevention, respect for human rights, observation of antimonopoly laws, and whistleblowing
North America	Code of Conduct, employee core competency (workplace ethics and compliance initiatives), and harassment prevention
Europe	Code of Conduct
Southeast Asia and India	Code of Conduct, explanation of compliance, bribery and corruption prevention, and whistleblowing
East Asia	Code of Conduct, workplace harassment, conflict of interest, corruption prevention, personal data protection, and whistleblowing
Australia	Code of Conduct, awareness of fraud, workplace bullying, harassment, and discrimination
Taiwan	Code of Conduct, ensuring a respective workplace (harassment), and personal information protection

Employee participation rate: 99.4%* (FYE2024)

* 100% completed as of the end of June 2024

To enhance Corporate value through Communication

- We engage in constructive dialogue with market participants based on the concept of fair disclosure.
- Attempt the enhancement of IR activities, learn from feedback and apply it in our business.



External communication

- Promote communication with customers and business partners through the Group as a whole, based on shared values and attitude.
- Execute appropriate initiatives and disclosures that reflect careful dialogue with external evaluation agencies (FTSE, MSCI, etc.), investors and analysts.
- Hold IR conference on sustainability initiative and have interviews on ESG related themes.
- Participate in IR event for individual investors

Internal communication

- To disseminate common values and attitudes, the Integrated report prepared with the cooperation of each operating company was redeveloped and relearned within the Group.
- **Operational Excellence Day** to share best practices at operating companies in each region
(one of five focused fields: Operational Excellence)
- Share our missions and values through internal communication (internal presentation meeting) about sustainability.
- Held Town hall meetings as an opportunity for dialogue between the CEO and employees across all Group companies.

3. Business Opportunities in Carbon Neutrality

Our thought

The value standard of “CN” and “Sustainability” will be added to the perspective of all activities.

Qualitative changes in the Value Chain adapted to the new society are essential.

1. Quick wins: Building on our track record of acquiring CN projects

2. Co-creation of value:

Developing our own technologies while building collaborative relationships with partners with advanced technological capabilities

3. Strengthening “Communications” with all stakeholders:

(e.g. Build a dedicated website as a tool for this purpose. > <https://www.carbonneutralworld.com/>)

Contributing to CN by 2050 as an industrial gas supplier

Two important perspectives on the transition period of the next 30 years

Efficient **Means of reducing environmental impact** × **Economic viability** as a business

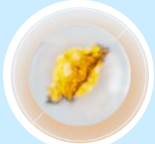


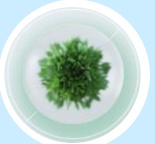
Basic Policy and Promotion Structure

Recognition of business environment and response stance

- All industries (steel, chemical, glass, cement, automotive, electronics, etc.) are moving toward CN
- Each region has different methods and priorities for addressing CN
- 30-year transition period may cause a temporary swing or loss of momentum in CN efforts due to war, epidemics, etc
- Economic and technological challenges make it difficult to build an ideal green society in a single step.

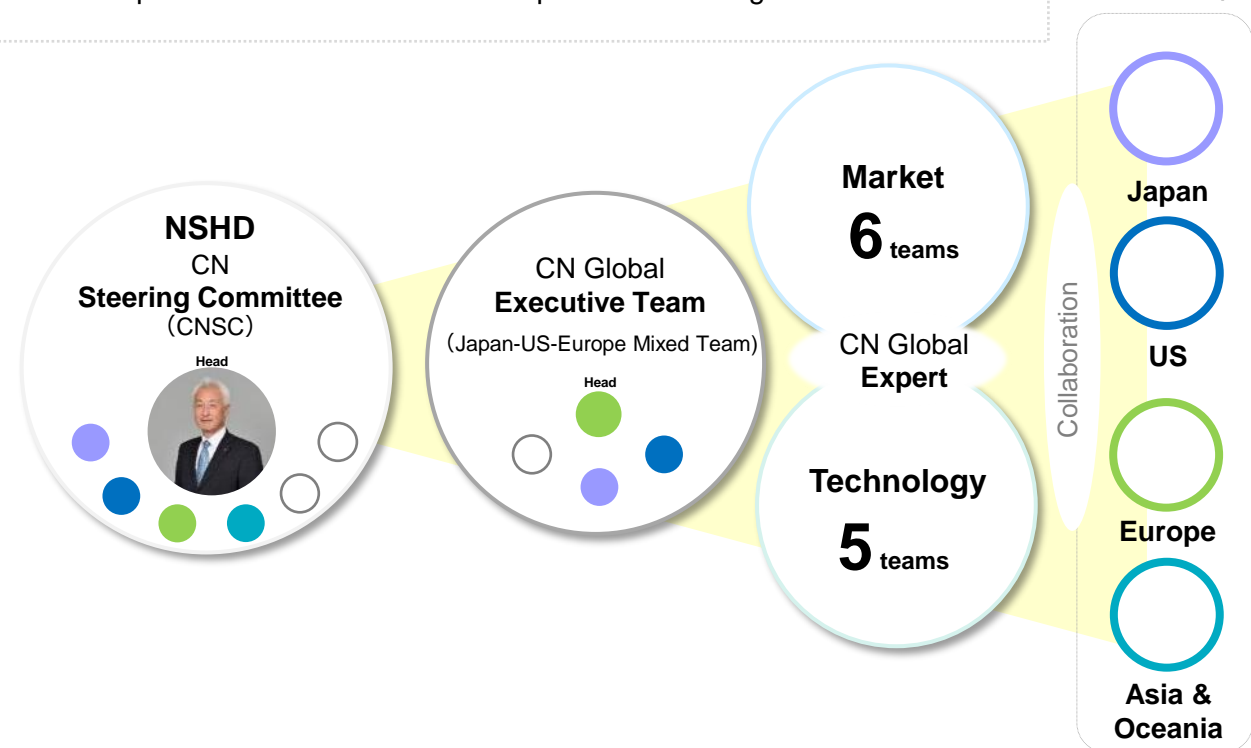
Accomplish business solution in technology field in where NSHD group would maximize our strengths

Four technologies for contribution to CN

	 Combustion (Oxy-fuel combustion)	 HyCO	 CO₂ Recovery	 O₂ Production
Technology	<ul style="list-style-type: none"> • Flame temperature rise • Suppression of exhaust gas • Improve efficiency of heat transfer 	<ul style="list-style-type: none"> • Hydrogen production and supply on a large scale • CO₂ Capture (blue hydrogen) 	<ul style="list-style-type: none"> • CO₂ capture, reuse and storage from exhaust gas 	<ul style="list-style-type: none"> • Productivity improvement through efficient use of oxygen
Market	Steel, Glass, Aluminum, Non-ferrous, Other metal processing	Refineries, Petrochemicals, Renewable fuels, Steel	Steel, Refineries, Petrochemicals, Cement	Any manufacturing Industry that uses oxidation processes

Integrated promotion system to respond promptly to customer needs

- RCNWG continues to collaborate with global experts to provide sales and technical support. Regarding market segmentation, it has been reorganized from 9 teams in the previous term to 6 teams this term, considering the current market environment and activity efficiency.
- All activities are regularly reported to CNSC, and based on the feedback, development themes and investment policies are being considered.



Quick wins



Combustion field

– A successful business case of oxygen combustion proposed to an aluminum manufacturer -

Project Overview

Nippon Gases (hereinafter “NGE”) has proposed oxygen combustion to an aluminum manufacturer in the Netherlands, dividing the proposal into the following two phases:

Phase 1: Proposal to switch from air burners to oxygen burners for preheating melting furnaces

- ✓ Schedule: Proposal implementation in 2015, contract signing in 2021, installation completion and start of operation in 2023
- ✓ Purpose: Reduce GHG/NOx by reducing burner fuel, and improve productivity by reducing dross* generation

Phase 2: Proposal to change from air burners to oxygen burners in holding furnaces

- ✓ Schedule: Proposal implementation in December 2023, contract signing in March 2024, scheduled for completion in FYE2025 Q4
- ✓ Purpose: Same as Phase 1

* A mixture of impurities and oxides that arise during metal refining and manufacturing. Specifically in aluminum manufacturing, this refers to the oxides and slag that form on the surface of molten aluminum. Dross contamination causes a decline in quality and generates additional costs and environmental burdens for processing.



Phase 1:

By switching to oxygen burners,

- ✓ Reduction in GHG/NOx emissions.
- ✓ Equipment maintenance costs are significantly reduced.
- ✓ Noise has been eliminated due to the absence of an air blower.
- ✓ Reduction in electricity consumption.
- ✓ Earning the trust of customers led to early progress to Phase 2.

Phase 2:

- ✓ As with Phase 1, it is expected to reduce GHG/NOx and electricity consumption (currently in progress).

Co-creation of value



CO₂ Recovery field

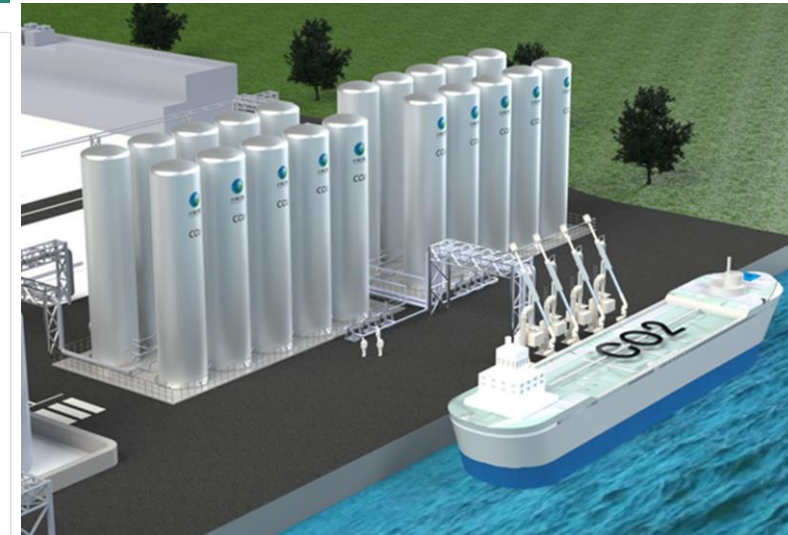
- Developing CO₂ shipping tank equipment for CCS to contribute to carbon neutrality -

Project Overview

- ✓ Taiyo Nippon Sanso Corporation (hereinafter "TNSC") has developed CCS shipping tank facilities essential for building a value chain for "CO₂ separation, capture, storage, and sequestration" (CCS), utilizing their product expertise in industrial gas storage tanks to realize a carbon-neutral (CN) society.
- ✓ TNSC plans to start sales in spring 2025. Going forward, the company will continue to contribute to the realization of a CN society through gas control technology cultivated over many years as an industrial gas manufacturer.

Characteristics

- ✓ Vertical cylindrical tanks are configured to form multiple units using a well-proven, vacuum-insulated, double-walled storage tank system.
- ✓ Compatible with low-temperature, low-pressure CO₂ specifications (−60°C, 1MPa) for CO₂ carriers
- ✓ Operational information (pressure, flow rate, etc.) is controlled and managed between the storage tank, shipping, and carrier sides at the time of CO₂ shipment, and there is a safety system that utilizes our gas control technology to prevent dry ice formation.
- ✓ Compared to a standard spherical tank, the cylindrical tank has a smaller footprint and greater layout flexibility, making it ideal for Japan's small site environment (it can be installed in spaces where a spherical tank cannot be installed).
- ✓ On-site construction is simply a matter of installing the tank product as it is on site. Eliminates the need for long-term on-site fabrication and welders required for spherical tanks, drastically reducing construction time and manpower.
- ✓ The vacuum-insulated structure allows continuous operation (no open inspection required by law)
- ✓ Compliant with the High Pressure Gas Safety Law)



CO₂ shipping tank equipment for CCS (image)

Quick wins and Co-creation of value



Biomethane

Biomethane Business

- ✓ Nippon Gases (“NGE”) officially entered the biomethane business in August 2022 through investment in Italy's Hysytech.
- ✓ Hysytech specializes in turnkey solutions for the design, development, and construction of gas-related equipment and facilities for hydrogen, biomethane, and other gases. In addition, NGE plans to contribute to the realization of carbon neutrality and a circular society by leveraging its combustion technology, hydrogen and synthetic gas production technology, and industrial gas supply chain.
- ✓ As a result of over two years of joint business efforts, NGE has secured biomethane-related Quick-Wins in multiple regions within Europe, establishing a market presence. Below, we introduce one of these success stories.

Successful joint project with Hysytech

– Effective use of biogas generated from the food processing waste treatment process –

- ✓ NGE will deliver and maintain a biogas separation facility utilizing Hysytech's technology for a biogas plant in the Netherlands owned by a major U.S. food processing company. Additionally, NGE plans to effectively utilize the carbon dioxide, a byproduct of the separation process, using their recovery and liquefaction technology, and supply it to the market as green carbon dioxide.
- ✓ This project is positioned as part of the circular economy. The delivery of the biogas separation equipment is scheduled for mid-2025, and the liquefied carbon dioxide plant is planned to start operation at the end of the next fiscal year. The operation of this liquefied carbon dioxide plant will contribute to reducing the supply from distant sources and lowering transportation costs.
- ✓ This project is one of the largest in Europe in terms of the amount of biogas to be processed, making it a highly ambitious undertaking. It is also expected to serve as a model case for the future and is planned to be expanded to other projects.



Strengthening Communications

Expansion of the content of the carbon neutral website "We enable a carbon neutral world"

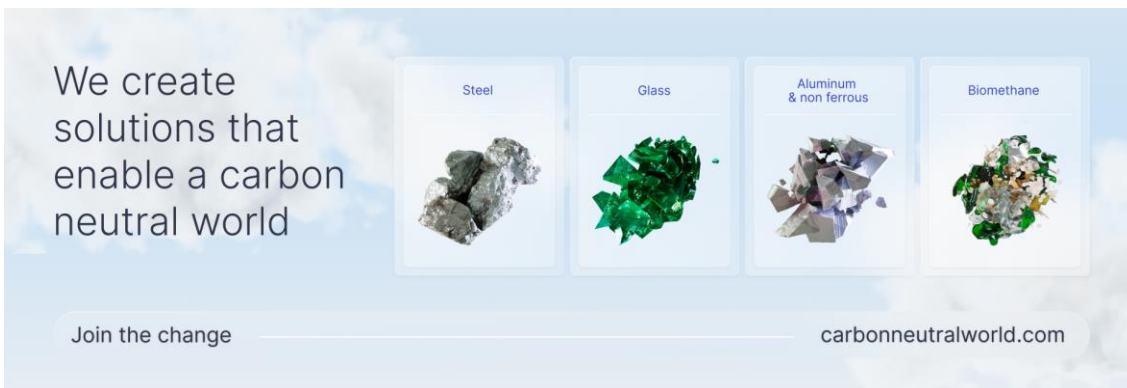
In our communication strategy, we are taking the following two approaches:

Making it realistic - Pursuit and enhancement of realism

- ✓ We will incorporate success stories and customer feedback into the stories to evolve the content we have provided so far.
- ✓ The first video will be based on the case study with an aluminum manufacturer mentioned earlier on page 30 of this material and will be released in January 2025.

Humanise the project - Introduce our user-centric approach

- ✓ Focus on the "people" involved in the project and communicate their individual efforts.
- ✓ We aim to bring warmth to the campaign by centering on our greatest asset, our "human resources."
- ✓ By introducing the people involved in the project, we express our commitment to customer-oriented activities. Related videos are currently being edited and are scheduled for release within this fiscal year.



Leading the way means moving

What we aim to be

The Gas Professionals

(Experts who are well versed in the physical properties and features of gases)

Producing industrial gases and supplying them safely and reliably to all industrial fields.

Contributing to the development of each industry and solving social issues through the supply of industrial gases.

Our Group's Goals

(Toward 2030)

Solution provider for a CN Society

NS Vision 2026 Focused Fields : Exploring New Business toward Carbon Neutrality

Slogan

“We enable a carbon neutral world”

Closing remarks

Q&A Session



Senior Executive Officer,
Group Sustainability
Management Office,
and CSO
(Chief Sustainability Officer)

Takeshi Miki



General Manager,
Sustainability Management,
Group Sustainability
Management Office

Toshifumi Abe



Executive Officer,
Senior General Manager,
Corporate & Business
Planning,
Group Corporate Planning
Office

Masayoshi Omichi



General Manager,
Corporate Planning,
Group Corporate Planning
Office

Tomoki Nakamura



General Manager,
Human Resources

Yasukazu Takada



General Manager,
Public & Investor relations,
Group Finance &
Accounting Office

Keita Kajiyama



Appendix

Respond appropriately to climate change risks

In line with the recommendations of TCFD*

The results of the Group's impact analysis of opportunities and risks related to climate change and the Group's response are as follows,

Type		Climate change risks	Financial impact	Business risks	Business opportunities	Response/Actions by the NSHD Group
Transition	Policy regulations	Introduction of carbon pricing	Large	<Medium to long term> • Decrease in profits due to increased tax burden	<Medium to long term> • Acquire business opportunities by differentiating through early response	• Increase introduction of renewable energy by power purchase agreement and green power certificates
	Technology	Replacement to low-carbon alternative products/Progress in energy saving	Medium	<Medium to long term> • Decrease in sales of existing products due to screening of low-carbon products	<Short to medium term> • Increase profit margin by energy saving • Increase in demands for existing products that contribute to low carbonization <Medium to long term> • Increase in business opportunities through environmental product offerings and applications that contribute to low carbonization	• Promote the development of environmental product offerings and applications that contribute to low carbonization • Promote energy saving by improving productivity through the introduction of DX technology, etc. (introduction of SAITEKI optimization of delivery)
	Markets	Changes in market needs/Changes in customers' business activities	Large	<Long term> • Decrease in sales due to changes in the manufacturing process of the steel and chemical sector • Decrease in sales due to new entrants utilizing by-product O2 gas as demand for water electrolysis process expands	<Medium to long term> • Increase in demand for blue and green H ₂ • Increase in demand for green fuels • Increase in demand for CO ₂ capture for CCUS	• Promote the introduction of carbon-free (H ₂ , NH ₃) combustion technology • Expand the use of oxygen combustion • Acquire demand for medium-scale CO ₂ capture in response to CCUS • Expansion of the H ₂ supply business by the HyCO business • Increase sales of environmental product offerings and applications that contribute to low carbonization
	Reputation	Industry criticism	Large	<Medium to long term> • Investor valuation decline for GHG emitting companies	<Medium to long term> • Continue stable funding by demonstrating contribution to GHG emission reduction	• Disclosure of quantitative data on GHG emission reduction contributions through integrated reports, etc. • Promote disclosure of Non-financial information
Physical	Acute	Intensification of disasters/Frequent typhoons/Heavy rain/Droughts	Medium	<Medium to long term> • Plant shutdowns due to disasters caused by abnormal weather • Increase in premiums paid	—	• Promotion of disaster countermeasures • Use of insurance
	Chronic	Sea level rise/Rise in average temperatures	Small	<Long term> • Narrowing of profit margin due to increase in running costs of air separation units caused by rising temperatures	<Medium to long term> • Increasing demand for medical products to treat diseases	• Replacement of aging air separation units to reduce running costs • Provision of medical oxygen, etc.

* TCFD: The final report was released in June 2017 and recommends that companies and others disclose items on governance, strategy, risk management, and indicators and targets related to climate change-related risks and opportunities.

Expanded disclosure of reports based on TCFD recommendations

The recommendations of the TCFD include four core elements: governance, strategy, risk management, and metrics and targets. NSHD has enhanced its disclosure in relation to strategy and metrics and targets.

Strategy Quantification Calculation Result of Main Opportunities and Risks Identified in Scenario Analysis

We have evaluated each of the opportunities and risks based on the metrics of “potential for impact” × “magnitude of impact.” As a result of the evaluation, the following four opportunities and risks were deemed to be “large” or “medium,” and we conducted a quantitative calculation of the financial impacts on the Company’s business for each of them.

Category	Risk/Opportunity	Scenario	Calculation details	Calculation result
Business risk	(1) Decrease in profits due to increased tax burden	1.5°C	Amount of financial impact on the NSHD Group in 2030 due to carbon pricing	¥59.4-92.5 billion
Business risk	(2) Decrease in sales due to changes in the manufacturing process of existing customers in the steel and chemical sectors – Outlook for changes in manufacturing process of the steel sector	Under 2°C	Net sales of oxygen for furnaces of the NSHD Group and its affiliates in 2050	¥30.0 billion (half of the current sales of ¥60.0 billion)
Business risk	(3) Plant shutdowns due to disasters caused by abnormal weather	4°C	Amount of damage to NSHD Group production sites in the event of a 100-year flood by 2050	¥36.0 billion (¥18.0 billion taking into account disaster insurance policies)
Business opportunity	(4) Expansion of blue/green hydrogen demand	1.5°C	Market scale for blue/green hydrogen in 2030 and 2050	¥13-41 trillion (2030) ¥60-218 trillion (2050)

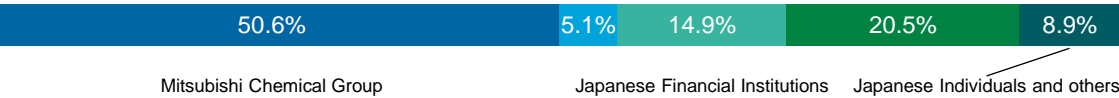
Metrics and Targets

Internal carbon pricing is one of seven cross-industry metrics. NSHD introduced it from April 2024 to be used as an indicator when making investment decisions. The pricing has been set making reference to the NZE scenario in the IEA’s World Energy Outlook 2023.

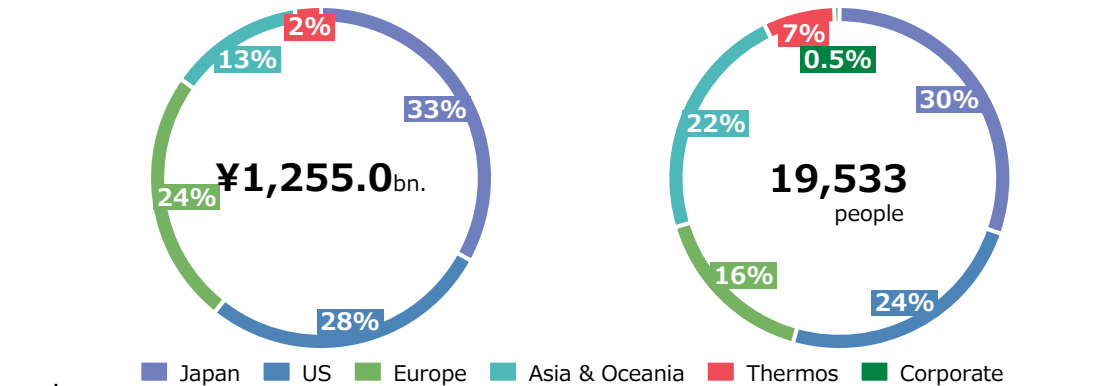
Metric	Type of internal carbon pricing	Target GHG emissions	Price
Internal carbon price	Shadow price	Scope 1 and Scope 2	85 US\$/t-CO ₂ e

Corporate Information (As of March 31, 2024)	
Company Name	Nippon Sanso Holdings Corporation
Founded	October 30, 1910
Headquarters	1-3-26 Koyama Shinagawa-ku, Tokyo 142-0062, Japan
TEL	81-3-5788-8500
	President CEO
Representative	Toshihiko Hamada
Common stock	37.3 billion yen

Stock information (As of September 30, 2024)	
Number of shares	433,092,837
Number of shareholders	13,095
Listed stock exchanges	Tokyo Stock Exchange Prime Market
Ticker	4091.T
Distribution by share holders (%)	
Other Japanese Corporations Foreign Institutions and Individuals	



Revenue / Employee personnel by Segment (As of March 31, 2024)



Corporate Philosophy

Group Philosophy

Proactive. Innovative. Collaborative.

Making life better through gas technology.

The Gas Professionals

Group Vision

We aim to create social value through innovative gas solutions that increase industrial productivity, enhance human well-being and contribute to a more sustainable future.

Main Core business

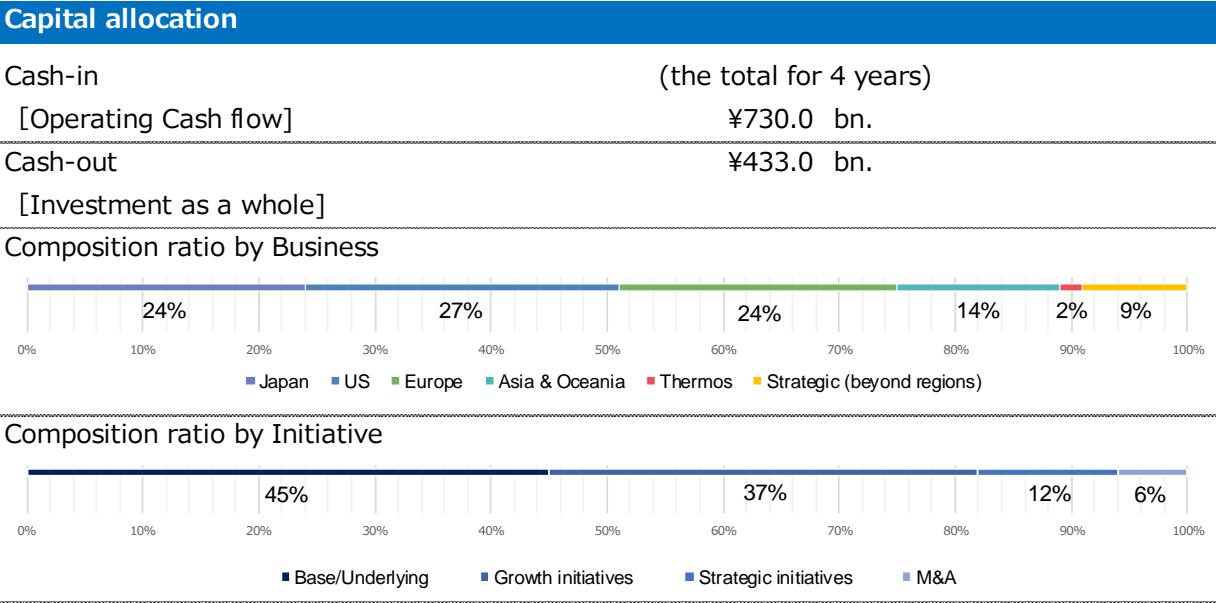


FYE2025 Financial Forecast (IFRS)

Revenue	¥1,300.0 bn.	Net income attributable to owners of the parent	¥105.0 bn.
Operating income	¥177.0 bn.	EPS	¥242.57

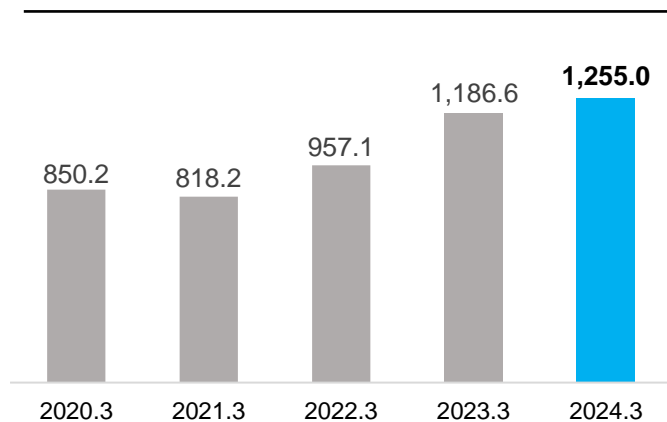
Overview		
Plan Name	NS Vision 2026	
Slogan	Enabling the Future	
Period	4 years from April 2022 to March 2026	
Released date	May 11, 2022	
Financial target		
(Final fiscal year in the plan: FYE2026)		
Revenue	¥975.0-1,000.0 bn.	
Core Operating Income	¥125.0-135.0 bn.	
EBITDA margin	Group:	≥24 %
	Japan, the U.S., EU, A&O, Thermos: ≥17-33%	
Adjusted net D/E ratio	≤0.7 times	
ROCE after Tax	≥6 %	
(Note) Forex rate (Assumption) : USD ¥115 EUR ¥125		

Non-Financial target		
<Environment>		
Reduction rate of GHG emissions	FYE2026:	18 %
(Base year: FYE2019)	FYE2031:	32 %
GHG reduced emissions through environmental product offer		
FYE2026:Lower GHG emissions through environmental product offerings and applications		
> NSHD Group GHG emission		
<Safety Management>		
Lost Time Injury Rate	FYE2026:	≤1.6
<Compliance>		
Rate of receiving compliance training	FYE2026:	100 %
<HR>		
Rate of female employees	FYE2026:	≥22 %
	FYE2031:	25 %
Rate of female management posts	FYE2026:	≥18 %
	FYE2031:	22 %

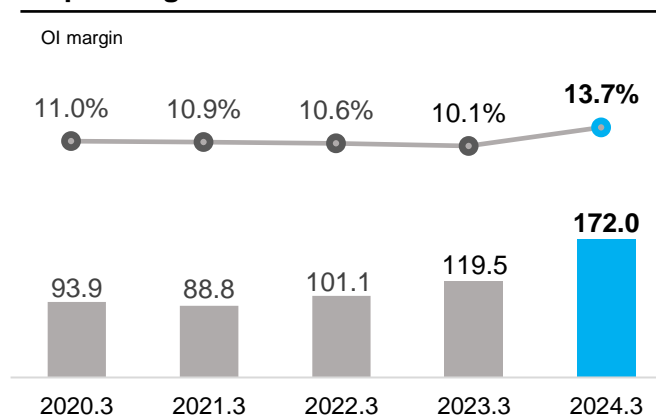


Business performance over the past five years

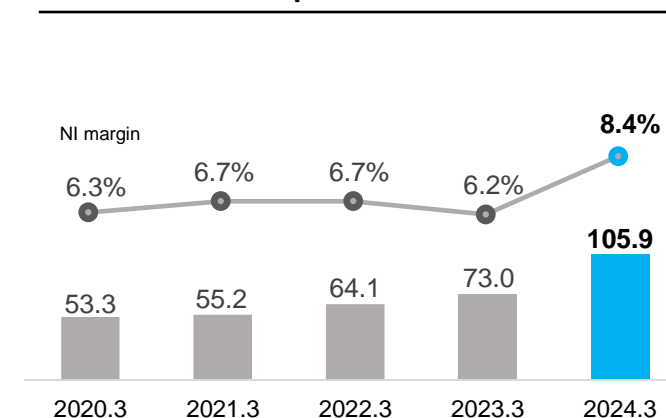
Revenue (¥ bn.)



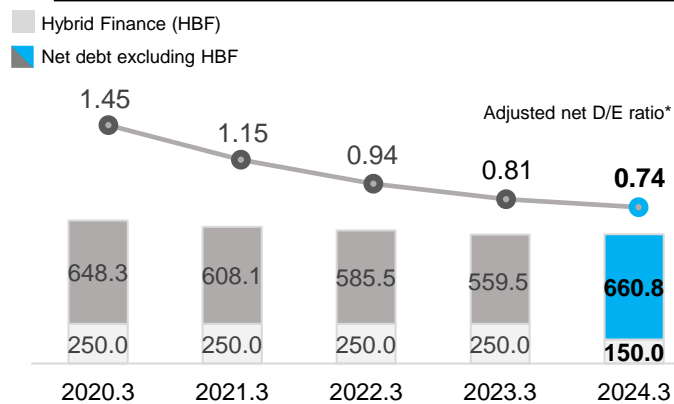
Operating income (IFRS) (¥ bn.)



Profit attributable to owners of the parent (¥ bn.)

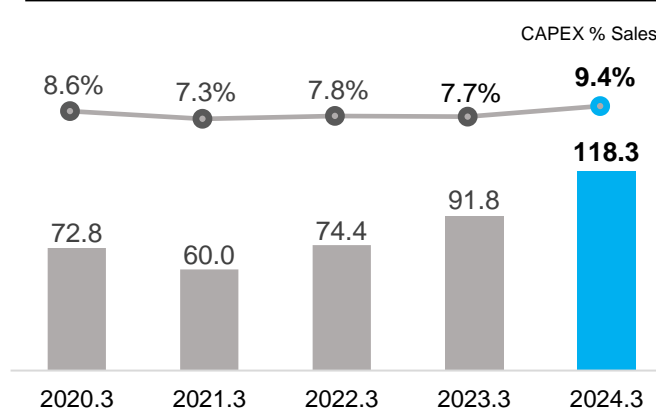


Net interest-bearing debts (¥ bn.)



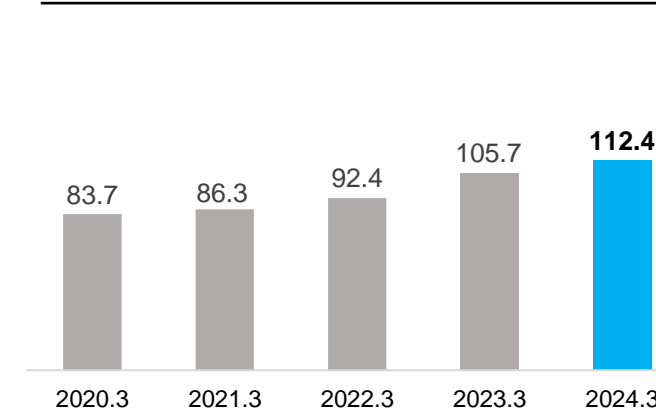
*Adjusted Net D/E Ratio: an indicator of safety (financial soundness) calculated in consideration of this part due to 50% of the amount raised by HBF is permitted as "Equity" by rating agencies.

Capital expenditures (¥ bn.)



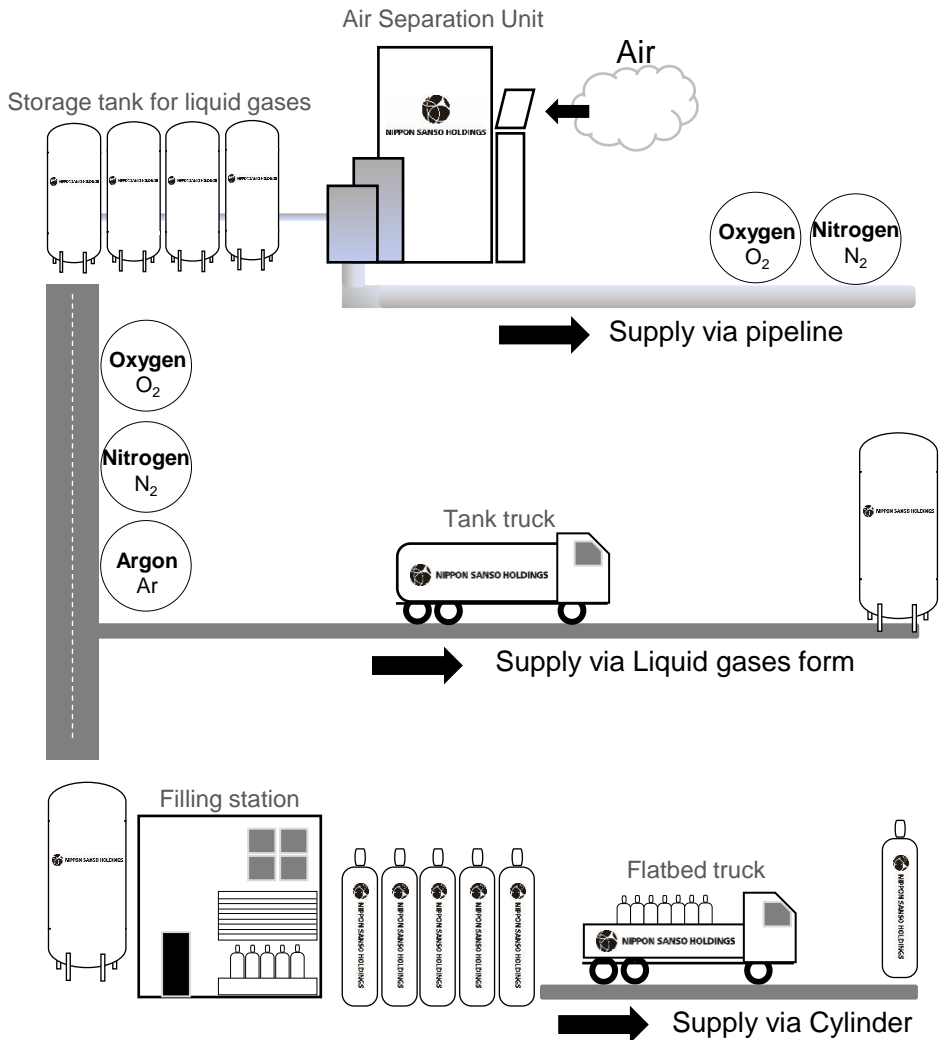
*It's recorded on a cash basis.

Depreciation and amortization (¥ bn.)



Industrial gas supply systems

Air Separation Gases



On-site

Major supply destination (Sector)

Steel Petrochemical Refinery

We've established production plants in the vicinity of the customer.
A form of direct connection and constant supply of pipes.
(Large-scale supply)

Bulk

Major supply destination (Sector)

**Automobile Shipbuilding Manufacturing
Construction machinery Pharmaceutical Glass/Paper
LCP Photovoltaics Food/beverage
Medical Semiconductor**

We've installed a storage tank for liquefied gas in the customer's premises. A form of supply according to the method of use of gas.
(Medium-scale supply)

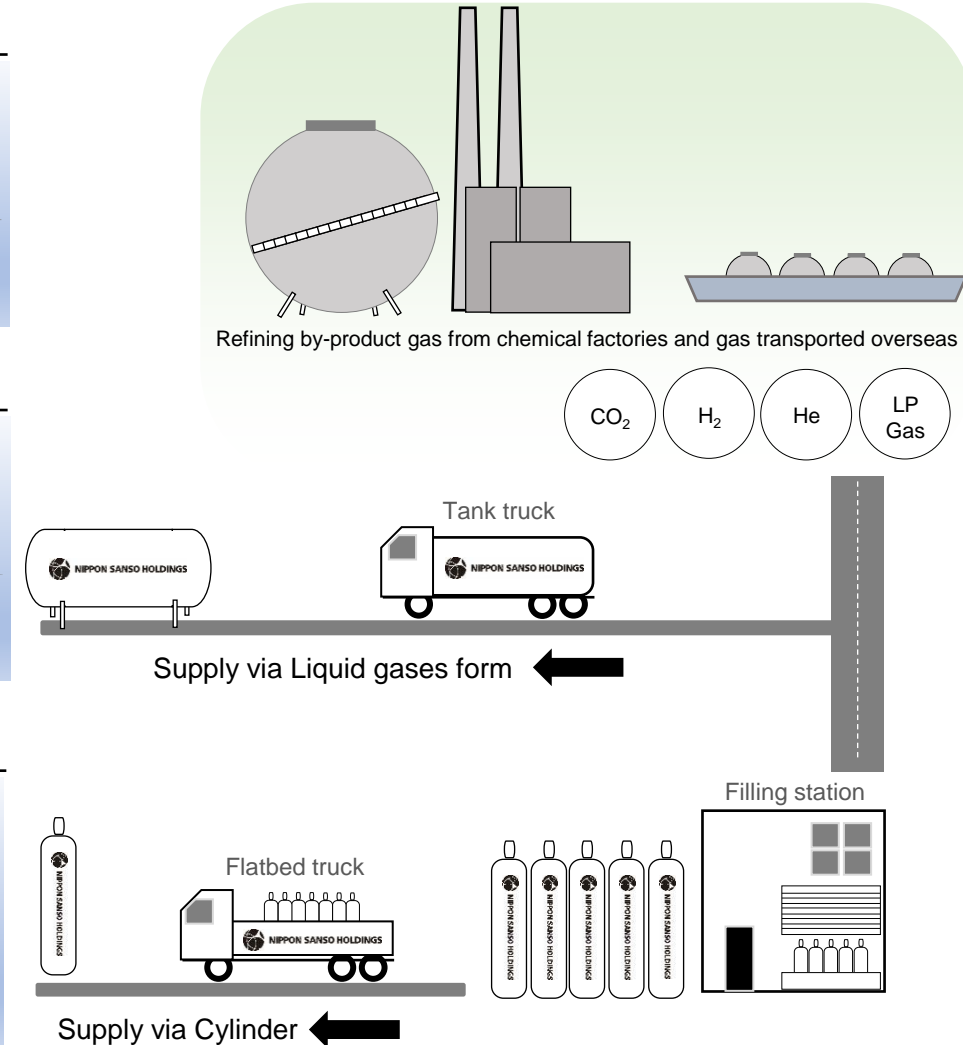
Packaged

Major supply destination (Sector)

**Homecare Advanced medicine Sanitation
Engineering development R&D Construction/Installation**

We deliver filling containers (cylinders) to customers.
A form of supply according to the method of use of gas.
(Small-scale supply)

Other Gases



Integrated Report Disclosure



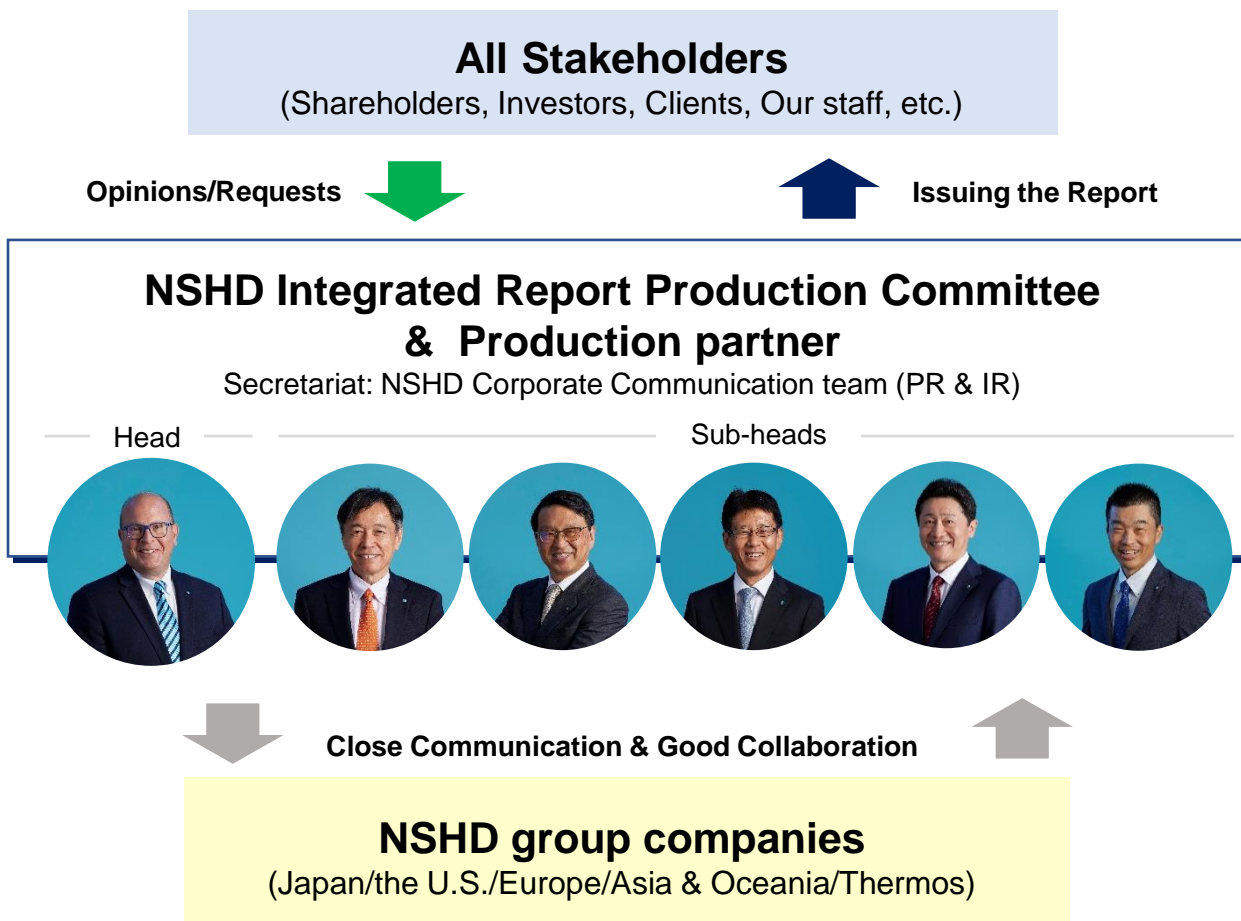
NSHD Integrated Report 2024

(Released on September 25, 2024.)

Please jump to the access webpage.> [Link.](#)



Production process for 2024 edition



THERMOS



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Tel: +81 (0)3-5788-8512

E-mail : Nshd.ir@nipponsanso-hd.co.jp

Upcoming IR events

Q3 FYE2025 Earnings Call

February 5, 2025

www.nipponsanso-hd.co.jp/en/

NIPPON SANSO Holdings Corporation (Ticker:4091.T)

Headquarters : 1-3-26 Koyama Shinagawa-ku, Tokyo 142-0062, Japan

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NIPPON SANSO HOLDINGS

The Gas Professionals

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