



**NIPPON SANSO HOLDINGS**

# INTEGRATED REPORT 2023





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## 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.**

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## CEO Message

Toshihiko Hamada  
President CEO

We will continue to pursue solutions for our customers flexibly, using the combined capabilities of our diverse, individual, free-thinking human resources.

LN-7034H

大陽日酸  
The Gas Professionals

## CEO Message

### Second Year of Our Medium-Term Management Plan, NS Vision 2026

#### Overcoming the Difficult Period of High Energy Costs to Progress Steadily toward Our Medium-Term Management Plan

The current medium-term management plan of Nippon Sanso Holdings (NSHD) covers a four-year period ending March 2026, and we are now in its second year. We decided on a four-year period because this amount of time, even if we decide not only strategies but also the lower-level tactical approaches, would not require many adjustments. By comparison, with a much longer 10-year time horizon, many adjustments would likely be required. If there were a business that did not need adjustments for 10 years, it would be a business that does not grow much.

In the plan, we established five focused fields, and as these have been progressing steadily, we don't see a real need for change. However, the crisis in Ukraine has been extremely shocking and could further destabilize the preconditions for our plan. As an example, energy costs have risen dramatically, and for the first three to four months we were concerned as to the ability to operate and pass through these unprecedented costs to our customers.

Japanese industry has been affected by years of continued deflation, and there was almost zero acceptance of the notion of passing cost increases through to customers via price. Colleagues were impressed when we managed to pass through a certain portion in electricity costs. Fortunately, the Group's transition to a holding company structure in October 2020 has been functioning well, and we have been able to spread the European and U.S. practice of passing through cost increases. At the same time, the situation has also presented us with an opportunity to increase our value by showing that we can increase efficiency and profitability. This example of increasing our value appeal has also been a model for us in Japan, where we have focused on passing through cost increases in our prices and managed to obtain understanding from our customers.

We have been actively promoting the strong points of each

operating company throughout the Group. Now, we are also sharing information with all of our operating companies as Nippon Sanso Holdings, and in this environment of rising prices, not only for industrial gases but for various items, we have thoroughly passed through the cost increases in every region. This means that in every region we have been successful in providing explanations to our customers on the unprecedented cost increases and the reliability of our service as a supplier. This has given us more confidence to be able to handle increases in energy prices and other costs in the future.

We need another year or two to see whether the medium-term management plan is really going as planned. Being able to judge if a plan is succeeding is the point of formulating a plan in the first place. If we don't set targets, then we cannot judge where things are proceeding well and where things need to be adjusted. Being in a position where we don't require any major changes for now is a significant achievement.

### What "The Gas Professionals" Means

#### "The Gas Professionals" Respond to the Needs of the Times, Broadly and Thoroughly

Basically, the NSHD Group's industrial gases business is not the kind of operation that involves conducting R&D with some objective then commercializing the results to provide a product. I believe that our business may be summed up most succinctly as "industrial infrastructure." We have a responsibility to provide gases to various industries, and we have the opportunity to supply them; that is the social significance of the Group's existence.

At the time of the Great East Japan Earthquake in March 2011, we continued to supply gases without stopping our plants. We handle huge amounts of highly flammable substances at our petrochemical complexes and chemical factories, and if they were to leak into the atmosphere then a spark may result in an explosion. Our first priority is to manage facilities so that gases do not leak. However, to ensure that combustion-risk substances would not

make contact with oxygen in the air if a fault were to happen at a facility, it is necessary to continuously supply inert nitrogen gas. This process must continue 24 hours a day, every day of the year, without fail. In other words, we are playing a significant infrastructure role.

Industrial gases also play a role in fields that are closer to daily life. Food pouches can be filled with nitrogen to prevent oxidization and extend best-before dates, while liquid CO<sub>2</sub> or nitrogen can be used to freeze food rapidly. Another example is in eel farming, where aquaculture ponds require a constant supply of oxygen to keep the eel stock alive. Needless to say, these also are a part of "industrial infrastructure."

However, there is something fateful about what we call "infrastructure." Although it is widely used in society, its provision is often taken for granted and its significance is not well recognized. Even so, it is the mission of the supplier to provide it properly to society. Naturally, to accomplish this in the case of the NSHD Group, we must be "The Gas Professionals." As a model supplier, we should remain a few steps ahead of our customers, and be able to offer proposals on how to utilize our offerings more effectively.

We express this with the phrase, "The Gas Professionals," a tagline that can be recognized intuitively by our customers, employees, and all other stakeholders around the world. These words tell everyone that we have deep knowledge and experience in all aspects related to industrial gases.

For example, gases are supplied in both liquid and compressed form, and by supplying them together with the correct containers, pipes, valves, and systems for processing them after use, we enable new customers to use gas with confidence. "The Gas Professionals" speaks of our knowledge not only of the nature of gases but also of the various structures involved with them (such as valve and piping construction and materials), and our ability to propose safer and more effective ways of using gases to customers.

Moreover, the tagline is also designed to be understood in a flexible and changing manner over a long period, rather than in a fixed way. The Company grows through the process of exploration in various directions. As the times and our business environment change,



## CEO Message



our target value proposal and priorities will also change. The flexibility to grasp these changes accurately and reflect them properly in our proposals to customers is another essential element of “The Gas Professionals.”

### What We Can Do, What We Should Do

#### Top Priority on Resolving Customer Issues Added Proposals to Reduce Gas Usage

I worked for many years in the Electronics Division. Our division was determined to do anything to meet customers’ various demands in the fields of gas, piping, and abatement devices. It became the norm to call people together internally to discuss and make proposals. The work I performed as an employee, in a nutshell, was to engage with customers to find solutions for them. I furthered my communication with customers and proposed the best equipment and the best application in using gases. As I dealt with serious customers, I experienced, first hand, the pressure from them to get more deeply involved than just a utility or infrastructure gas provider and really listen to their needs. Thanks to this experience, I developed the ability to seek what we can do to resolve the issues of our customers in general.

Usually, if a customer installs a major piece of equipment and uses nitrogen gas as part of the manufacturing process, we can fulfill our objective of selling them gas. However, we make proposals that go a step further, showing the customer where there is opportunity for additional changes that would enhance the efficiency in our customers’ processes. If we are unable to identify improvements ourselves, we may consult with the equipment manufacturer to suggest alternative changes. When we work to gain a more thorough understanding of customers’ issues and to resolve them, sometimes we may make customer proposals that reduce the amount of gas usage because it is not the most efficient process for the customer. Therefore, we provide trust and honest advice, which ultimately increases customer loyalty.

Proposing high-value solutions to customers from a sustainability perspective is also the Group’s mission as “industrial infrastructure.” If resolving a customer’s issue can help to reduce greenhouse gas (GHG) emissions, then we can help to realize a carbon neutral society even faster.

For example, the Group’s oxygen combustion technologies reduce energy consumed by furnaces used in the fields of glass, steel, aluminum, and non-ferrous metals. This is because switching from air combustion to oxygen combustion reduces the ratio of nitrogen within the furnace, increasing combustion efficiency, which reduces fossil fuel consumption. This technology also increases the concentration of CO<sub>2</sub> in the exhaust gas, making it easier to capture, which results in lower CO<sub>2</sub> emissions. Moreover, introducing an oxygen-hydrogen burner in the steel ladle preheating furnace dramatically curtails CO<sub>2</sub> emissions. Since its foundation, the NSHD Group has developed its business by supplying customers with gas solutions. The current shift to carbon neutrality is both a major challenge and a significant opportunity. The Group needs to leverage its comprehensive capabilities to meet this challenge.

### Initiatives to Realize a Hydrogen Society

#### Combining Our Technologies to Supply Greener Hydrogen

Recently, I am often asked whether we are focusing on hydrogen in the context of carbon neutrality. With regard to hydrogen, people are finally coming to recognize the difficulties implicit in the words “green hydrogen” and “blue hydrogen.” In Japan in particular, the big problem is the manufacturing cost.

The NSHD Group already provides on-site supply of hydrogen in the United States, and we have accumulated extensive experience and expertise in this area. However, as this is not green hydrogen, it will not do simply to expand this business as it is. We need to use technologies to step grey hydrogen up to blue, and step blue hydrogen up to green, and we need to supply hydrogen together with our partners.

## CEO Message

Such initiatives also require funding. As a company, our initiatives must generate earnings. The important point is how we will involve ourselves in the hydrogen business. The Group already has established operations in supplying hydrogen, and possesses supply and control technologies as well, so now we need to consider how to utilize them. It's important that we capture the opportunities and the timing to use our knowledge and technology.

### The Role of Thermos for NSHD

#### Thermos' Knowledge and Sensibilities Are Strengths for the Group

Along with questions about hydrogen, I am also asked fairly often the reason for having Thermos as a B2C business in addition to the other segments of the Group, which are involved in B2B industrial gases supply. Stainless steel vacuum-insulated bottles were created using our specialty vacuum-insulation technology and are similar to a miniature version of the liquid nitrogen tanks used on tanker trucks. So, they have this technological connection. On the other hand, in the industrial gases industry, there are fields where we will shift into spaces that are closer to users like Thermos.

One example is the medical field. During the COVID-19 pandemic, we saw heavy use of ventilators. Oxygen concentrators for home medical care are used by the general public so it is important that they be safe and secure, as well as light and easy to use. When developing such products, Thermos has capabilities in design and gathering user information through e-commerce and so forth, which can be deployed across the industrial gases field to become strengths for the entire Group.

In areas such as the front lines of semiconductor production also, emphasis is being placed on such aspects as how to make valves as small as possible or what kind of design is easy to use. These kinds of areas that require certain sensibilities are where I would like the Thermos business to play a larger role in the future.

### Our Approach to Governance

#### Delegate Decision-Making Authority While Strengthening Internal Communication

In the case of industrial gases, the volume and method of use may change even for the same gas, depending on the application. Moreover, each region has customers concentrated in different industries. Therefore, it is best that the respective operating companies interact with customers daily to promote their business. It is not necessarily good for Nippon Sanso Holdings to take the initiative and issue specific directives to do one thing or another given the local nature of our regions.

Since industrial gases is a business based on the "consumption on-site" model, where gas industry plants are built in areas of demand to provide an efficient supply, I believe that Nippon Sanso Holdings' management decision-making is more appropriate to be decentralized and fast.

The businesses that we acquired in Europe are managed by a European holding company, and there is much to be learned from its methods and its approach to markets. Europe covers a large geographic area, and is divided into many countries. Although different languages are spoken, the team basically communicates in English, and everyone moves together under a single policy. In a sense, this is the kind of business management that we strive for under a holding company structure.

I have deeply studied the European approach and learned from it. I believe that if we skillfully combine the methods of our European operating companies with the knowledge of our overseas development to date, where we have respected the autonomy of each company, and apply this approach to Asia and the Company's overall Group management, it will be unnecessary to make NSHD into a large organization.

The Group Philosophy and Vision have already been shared in every region. Our overseas personnel are aware that they are members of NSHD. This integrated report will be published simultaneously in English as well as Japanese so that it can be read by our employees worldwide. Similarly, the Group's internal magazine is distributed four times a year in each country. Our publications feature

topics from each operating company as well as stories related to work, but as "The Gas Professionals," we always emphasize and share our initiatives related to safety in particular. Naturally, safety is an extremely important aspect of our responsibility as a supplier. In our operations and transport, we strive to ensure that everyone is strongly aware of the importance of safety as the foremost consideration in everything.

Furthermore, we have held a large number of meetings of the Global Strategy Review Committee and the Global Risk Management Committee, which are attended by senior management of all Group companies, at which we interact across various time differences. The internal information and direction of the Group are also shared at these meetings.

So far, the Company has invested in regions through capital participation, acquiring local partners and companies that operate existing businesses locally, and has flexibly incorporated the business practices of those countries. The European business was an extremely large acquisition, and it has shown us an excellent example of passing energy costs through to pricing, as I described previously, as well as having beneficial impacts in other areas with regard to management structure. However, in every case when companies join the NSHD Group, we always ensure that they have a proper understanding of essential compliance and governance issues, as well as safety and other issues through the Group Philosophy and Vision.

Many of the Group companies retain their original names to emphasize the history of their business activities over many years in their respective region. However, they all have the same corporate symbol and share the tagline, "The Gas Professionals." I believe we should continue to maintain the current style of management, and further explore communication through meetings within our Group companies.

At this time, we are not planning any major changes in the governance system in the future. NSHD considers the composition of the Board of Directors to be important, as it is also a point of contact with stakeholders. Also, the structure of the Board must enable it to carefully listen to the opinions of non-majority shareholders, and to explain them properly to stakeholders. For this reason, the Board



## CEO Message

of Directors is composed of a majority of five independent outside directors, with four directors who also have in-house executive responsibilities, including myself.

In Japan, people are gaining awareness of Japan's Corporate Governance Code, and over the past eight years, two recently retired outside directors, Akio Yamada and Mitsuhiro Katsumaru, have made a tremendous effort to help realize the Code here at NSHD.

Meanwhile, we are expecting those directors who have just joined the Board to provide auditing and advice from a perspective that is closer to operations and the front lines. When forming a joint R&D organization with a partner, there are cases overseas where contracts are used as leverage in negotiations. Therefore, it is necessary to have contracts properly in place in advance. To ensure that we can handle such cases firmly, we have asked people with expertise in overseas law to join as outside directors. The roles expected of outside directors are bound to change with the changing of the times. If you look at the categories in our skills matrix for directors, you will see that we have created a structure suited for NSHD to respond to the situation in the world today.

Furthermore, the Company is a company with an Audit & Supervisory Board, which means that the establishment of a nomination committee and remuneration committee is discretionary. Nevertheless, the Company has established the Advisory Committee on Appointments and Remuneration, with the intention of incorporating outside views into its business development. The committee also conducts the selection of important management-level personnel for promoting the medium-term management plan. Our task now, in my view, is to create a rigorous process for nominating people for the executive side.

### Image of the Next Generation of Human Resources

#### Next Generation of Managers Will Have a Global Management Perspective

An even more important issue is what kind of qualifications are going to be necessary for the next generation of managers.

This topic is currently being discussed in various quarters, while we work to clarify the type and level of skills and experience needed for nomination from the executive team.

What I want is for our next generation of managers to emerge from a group of people who have accumulated valuable experiences, having actively worked and managed business internationally and learned through both hard work and adversity.

People with significant experience and motivation are well qualified for management in a global environment in my opinion. Management means managing not only business but everything, from finance and labor to risks such as disasters. Those who have management experience have had numerous learning opportunities to prepare them for taking responsibility for the Group's future.

I want to see the kind of people who will really want to be president after experiencing some kind of management roll. I think that the sooner I can prepare to hand over to the next generation, the better. I want my successor to have an awareness that they will be getting closer to the position over the next year or two. I want to see a person who can look at what I do and think how they would approach it themselves, about what works well, what could be done to ensure something succeeds, and so forth. I'd like to see that person right here and now, rather than in a year from now.

### Stance on the Future

#### Human Resource Diversity Will Move the Company in a Better Direction

I do not know what the future holds beyond the current medium-term management plan. I think that time should be completely up to the next generation of people, not my generation. Our younger generation personnel should think about all kinds of things without being bound by the ideas of the current management team. The Group has brought together various kinds of companies, and there are approximately 20,000 employees. It is not necessary for all of



## CEO Message



these people to be facing in exactly the same direction. In fact, it would be a vulnerability for a company if they were. If something negative were to happen and everyone was perfectly aligned, it would be difficult to make corrective action.

Instead, as diversity is a driving force for an organization, I believe that companies should draw together people who face slightly different directions and think about things at different levels. Among these, I would like to see many employees who think seriously that, while they recognize the direction that the Company is heading, they would like to do something a little different. I think that companies tend to move in the direction in which the majority of people are pressing. It may be extreme but, while the movement may be in a direction that lies outside the range of “The Gas Professionals,” the shape of the NSHD Group 10 years from now will only emerge after continuous change.

To continue to be a flexible company like this, in the end everything comes down to human resources. The vector of the Company is its human resources. People cannot be held together by pay alone, so the important thing is the nature of their work, or the degree to which people with a similar objective to their own, if not exactly

identical, are striving together. This type of environment motivates people to work and leads to a sense of fulfillment.

To support this, the Group has been focusing on team building. Our teams tend to precipitate unavoidably along Japanese lines in Japan and American lines in the United States, but we will work to open that up a little and let people know that they have like-minded counterparts in Japan in order to support Group creation. This is part of operational excellence, and we recognize that it is extremely important to promote it.

Although they appear to be facing in the same direction, there are also some small differences to be observed between Europe and the United States. These differences are not a bad thing, and I hope to see some chemistry between them occurring more naturally and frequently; for example, absorbing the differences between each other to help open up a little, or recognizing that some existing practices are actually inefficient. With regard to this, the way of providing motivation or raising awareness is also important for ensuring diversity of human resources and their various approaches, and for developing the Company.

In parallel with this, I want to get a clear picture of employees’

awareness through an employee engagement survey. More than just getting a picture, we must organize the issues that emerge and come up with policies and measures to help resolve them, otherwise, dissatisfaction will simply build up. Even more than conducting the survey, it is critical that we reflect the results properly.

I have covered various topics, but in closing I would like to say that my most important mission as a CEO is to see that the entire Group’s employees and their families are well. From the perspective of our customers, investors, and all other stakeholders, a company whose employees enjoy a high level of well-being is a more attractive trading partner or investment.

Therefore, I am always thinking about creating the kind of environment where everyone can live cheerfully and happily, while working freely.

September 2023





# Special Feature

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Toward Carbon Neutrality  
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## Medium-Term Management Plan

## Slogan

## NS Vision 2026

## Enabling the Future

In light of the outlook for the external environment and the progression of our strategies to date, in May 2022 we announced the four-year medium-term management plan NS Vision 2026, covering the period up to FYE2026. Under our business structure of four global regions (Japan, the United States, Europe, and Asia and Oceania) and Thermos, the plan has set out five strategies aimed at strengthening the Group's comprehensive capabilities and achieving further growth so as to contribute to the realization of a bright and comfortable future for people, society, and the earth. The plan also sets out quantitative targets (KPIs) in both financial and non-financial areas.

## Focused Fields



## Numerical Targets (KPIs)

## Financial KPIs (FYE2026)

**Revenue**  
¥975 billion–¥1,000 billion\*

**Core Operating Profit**  
¥125 billion–¥135 billion\*

## EBITDA Margin

Group:  
≥ 24%  
Japan, the United States, Europe,  
Asia and Oceania, Thermos:  
≥ 17–33%

**Adjusted Net D/E Ratio**  
≤ 0.7 times

**ROCE after Tax**  
≥ 6%

\* Due to uncertainty in the global economy, revenue and core operating profit are shown in a range.

## Non-Financial KPIs

## Environment

Reduction rate of GHG emissions (Base year: FYE2019)  
18% (FYE2026) 32% (FYE2031)

GHG reduced emissions through environmental product offer

**Lower customer GHG emissions through environmental product offerings and applications > NSHD group GHG emissions (FYE2026)**

## Safety Management

Lost time injury rate  
≤ 1.6 (FYE2026)

## Compliance

Rate of receiving compliance training  
100% (FYE2026)

## Human Resources

Rate of female employees  
≥ 22% (FYE2026)  
25% (FYE2031)

Rate of female management posts

≥ 18% (FYE2026)  
22% (FYE2031)

## Sustainability Management

- Environment: Resource-recycling society, harmonize with the environment, reduce environmental impact
- Safety & Quality: Process safety and security, community based, "selling gas is selling safety," quality management and assurance
- Human Resources: Respect people and their rights, beneficial work for all employees
- Compliance: Sincere and fair manner, international / regional rules and laws

## Eight Non-Financial Programs &gt; P.48

- (1) Carbon Neutral Program I
- (2) Carbon Neutral Program II
- (3) Zero Waste Program
- (4) Sustainable Water Program
- (5) Safety First Program
- (6) Quality Reliability Program
- (7) Talent Diversity Program
- (8) Compliance Penetration Program

## Exploring New Business toward Carbon Neutrality

- Gain some "quick-wins" carbon neutral projects  
Join or capture carbon neutral projects in the steel-making, glass, ceramics, aluminum, non-ferrous metals, and cement markets / Acquire HyCO projects for a hydrogen society with a view to becoming a large-scale hydrogen supplier
- R&D and strategic partners  
Join various carbon neutral projects and share knowledge within the Group / Find potential strategic partners / Increase resource investment into specialized

R&D themes such as combustion technology, etc.

- External/internal communication with all stakeholders  
Establish communication platform / Communicate the Company's initiatives and enhance recognition through proactive efforts such as posting carbon neutral activities on social media

## Total Electronics

- Become a global supplier in the semiconductor ecosystem  
Offer robust and updated quality assurances, new products, and technology solutions / Leverage and enhance our Group capability and solutions

## Operational Excellence

- Foster a Groupwide productivity improvement mindset through global operational excellence events
- Target early success by horizontal sharing of best practices across operating companies
- Promotion of standardization and optimization of operations throughout the Group

## DX Initiatives

- Focus on digitization and digitalization efforts
- Prioritize these three fields: Customer engagement, Operational excellence, Employee engagement
- Local and regional initiatives
- Dedicated digital transformation (DX) and centrally organized DX organization



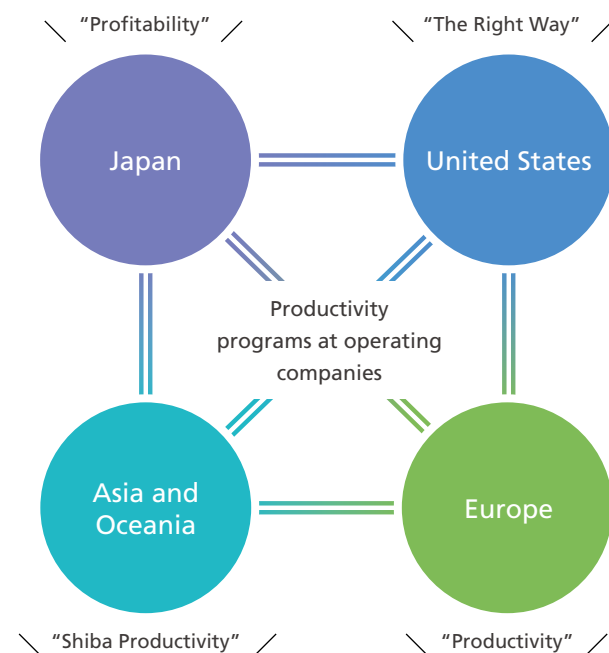
## SPECIAL FEATURE

## Operational Excellence

By pursuing operational excellence, an activity for increasing productivity of the entire NSHD Group, we will streamline and optimize our overall operations.

## Sharing Best Practices across the NSHD Group

Each of the Group's operating companies has its own productivity program. We engage in replication initiatives to share best practices that emerge from these programs with other operating companies.



## Operational Excellence Day

Operational Excellence Day is a biannual event where best practices for productivity at each operating company are presented with the goal of accelerating their replication. Due to the impact of the COVID-19 pandemic, the events have been held online since the inaugural event in 2021; however, in January 2023 the event was held with participants physically present. This created an atmosphere that enabled accelerated information sharing regarding productivity activities at each operating company, in addition to the numerous productivity presentations made throughout the day.



## Tomoki Nakamura

General Manager of Corporate  
Planning Department,  
Group Corporate Planning Office  
Nippon Sanso Holdings Corporation



## Thoughts on Increasing Productivity

Proper management and continuous productivity initiatives are essential for maintaining and increasing earnings capability. The four regional hub operating companies are in different geographical areas, but all have extremely similar business models of manufacturing, transporting, and selling industrial gases, which means that the best practices for increasing productivity of one company is easily applied and spread to other operating companies. We will promote the sharing of best practices in the field of activities for increasing productivity with a view to strengthening the comprehensive capabilities of the NSHD Group.

## SPECIAL FEATURE

### Operational Excellence

## Overview of Activities and Example of Best Practices in the United States and Europe

### United States: "The Right Way"

#### Comment from the Person in Charge

The Right Way (TRW) is a program implemented by Matheson Tri-Gas (MTG) to achieve operational excellence and cost reductions. TRW consists of four principles: (1) full employee participation, (2) setting of targets for savings, followed by progress measurement, reporting, and review, (3) training for all employees in the Lean Six Sigma methods and tools for continuous improvement, and (4) organizational and technical support for activities.

Combining full employee participation through both top-down and bottom-up approaches, target setting and management, Lean Six Sigma, and a powerful support system ensures the strength of the TRW program and enables its continuous success. Since 2009, MTG has generated over 6,500 TRW projects and more than \$950 million in savings.



**Hermann Miskelly**  
Senior Vice President of Quality  
Matheson Tri-Gas, Inc.

### Europe: "Productivity"

#### Comment from the Person in Charge

Productivity is a program that enables us to understand the manner in which we are able to more efficiently use resources as a result of introducing new or improved processes. Nippon Gases Euro-Holding's Productivity program contributes to increased customer value by improving the following five points: (1) reliability, (2) disciplined execution, (3) operation and transaction efficiency gains, (4) environmental sustainability, and (5) supply chain quality.

The program was started in 2003 with the introduction of the Six Sigma method. Several years later, new concepts were added, such as the lean method, the design sprint, and machine learning. Every year new methods are introduced to further advance the program, which continues to bring value to the Company.



**Gabriel Kiewek**  
Director of Productivity  
and Procurement  
Nippon Gases Euro-Holding S.L.U.

#### Best Practice Example

By switching the mode for long-distance transport of liquefied gas from tanker trucks to rail cars, the distance traveled by trucks was reduced by 2 million miles, eliminating 4 million pounds of CO<sub>2</sub> emissions.



Compressor for long-distance transport of  
liquefied gas by rail car

#### Best Practice Example

In the process of manufacturing argon at an air separation unit (ASU), we introduced an oxygen analyzer to enable greater capture of argon in air by stabilizing the compressor and the quality. This has resulted in a 6% improvement in the argon capture rate.



Compressor



## SPECIAL FEATURE

# Total Electronics

Aiming to become a global superior supplier in the semiconductor ecosystem, NSHD will uphold the trust of our customers in the semiconductor manufacturing industry, which is expected to grow going forward, and provide quality assurances. With new products, and technology solutions, we will promote further utilization and strengthening of the Group's current resources and use our experience to further enhance customer relations.

## NSHD Group's Electronics Business Strategy

### Supporting Customers with Total Solutions

The strengths of NSHD's electronics business is its total capability to meet a wide range of customer needs, including electronic material gases, bulk gases, and its supply infrastructure in various regions where semiconductors are produced worldwide.

Total electronics is an important strategy for using these strengths to support customers' global expansion and growth with the comprehensive capabilities of the NSHD Group capabilities. By providing customers with an extensive lineup of services, from supply of raw materials to the equipment and devices needed to handle and deliver them, understanding customers' technical requirements to help improve our products and services. Moreover, with a global supply infrastructure and internal coordination within Total Electronics, we are responding with agility to the recent trend of increasing domestic production capability of semiconductors in Japan, the United States, and Europe.

Furthermore, in high-end semiconductor manufacturing, there is a trend toward even greater consumption of energy and materials, and customers are demanding ways to curb environmental impacts. We aim to strengthen our initiatives to meet such demands.

### Facility and Piping Installation

Electronic material gases have dangerous characters such as toxicity, flammability, and corrosiveness, in addition to high pressure. We offer installation of gases supply systems including gas cabinets, and also offer piping work to supply those electronic material gases safely and keeping high quality. We also provide exhaust gases abatement systems to detoxify gases emitted from semiconductor manufacturing equipment so that we can reduce environmental impact to exhaust them environmentally safely. Furthermore, we supply safety monitoring systems to constantly monitor for gas leaks and system faults, as well as offering refining equipment for oxygen and inert gases such as nitrogen and argon which are used in large quantities. All those equipment is essential for semiconductor manufacturing plants to make high-quality semiconductors.



### Technology Development with R&D

Through close communication with customers, we understand their visible and potential needs and utilize it in the development of various technologies. For example, we focus on reducing environmental impact, we have developed exhaust gas abatement system for hydrogen fuel and a system to capture and reuse xenon, which is present in the air at a concentration of just 0.0000087%. In addition, further shrink and refinement of semiconductor manufacturing processes is driving changing needs for materials, and we are working to develop new materials and supply systems for them in response to market needs. Moreover, we developed the Intelligent Gas Supplying System (IGSS), aiming to contribute to smart factories. This next-generation gas supply system comprehensively monitors and manages systems related to gas supply, and automatically performs inventory monitoring and management, and container transport as well.



IGSS

## SPECIAL FEATURE

### Total Electronics

#### NSHD Group's Electronics Business Strategy

##### Development of New ASUs for Semiconductor Customers

The semiconductor manufacturing process uses high-purity oxygen as an oxidizing agent, while also consuming a large amount of nitrogen for various purposes such as carrier gas, equipment control, and safety applications. State-of-the-art processes require high-purity oxygen and nitrogen with the lowest impurities of less than 10 parts per billion. Newly developed air separation unit (ASUs) can meet these needs by manufacturing high-purity oxygen and nitrogen simultaneously, while the production volume can be adjusted through flexible operation for a lower environmental impact than conventional ASUs.



##### Electronic Material Gases

With manufacturing bases in Japan, the United States, South Korea, and Europe, NSHD manufactures a variety of electronic material gases. We also have recent investments in manufacturing semiconductor gases in China and Southeast Asia, providing a structure that can meet demand for electronic material gases in each region while supporting demand in other regions where Total Electronics operates. In response to our customers' recent vigorous investment plans, we will continue to make investments to expand our capacity in anticipation of growing demand in Asia including Japan, and in Europe and the United States as well.



Manufacturing electronic material gases

##### Todd Givens

Senior General Manager,  
Total Electronics Strategy,  
Group Corporate Planning Office  
Nippon Sanso Holdings Corporation



##### Comment from the Senior General Manager of Total Electronics Strategy

As we saw a slight downturn in production in the beginning of 2023, NSHD took this as an opportunity to strengthen its customer relationships and improve its overall operations as the Total Electronics Team. NSHD is completing a global quality policy that will apply to all of its electronics facilities, and we are continuing to invest in developing our employees and upgrading our operating systems. We look forward to continuing to grow our electronics business by offering high-quality products and services.

## SPECIAL FEATURE

## Carbon Neutrality

The NSHD Group will help customers to reduce their GHG emissions by providing environmentally friendly products and solutions. We will strengthen initiatives to develop the necessary technologies to achieve this goal, and promote stronger collaboration with strategic partners on technologies that we lack.

## Initiatives of the Carbon Neutral Working Group

With the aim of realizing carbon neutrality by 2050, NSHD has organized a global working group to look for ways to contribute as an industrial gases manufacturer and pursue new business opportunities. Our first initiatives are aimed at capturing “quick-wins” using core technologies based on the Company’s strengths in four fields (combustion, hydrogen manufacturing, CO<sub>2</sub> capture, and oxygen manufacturing).

Focusing on the steel, aluminum, cement, and glass industries, we are promoting in-house technology development and building relationships with strategic partners who have complementary technologies.

## Combustion Technology



Technology that uses oxygen instead of air to make fuel more combustible increases the usage efficiency of heat and reduces fuel usage. We are promoting the proposal and introduction of oxygen combustion to customers who have fuel furnaces, such as steel and aluminum manufacturers. Currently, we are working to develop combustion equipment for use with hydrogen. In addition, we are

contributing to more effective use of fuel by introducing combustion exhaust gas monitoring systems to customers’ plant operation systems.

## Hydrogen Manufacturing Technology



The Company is strengthening its capabilities to handle hydrogen on a large scale globally in order to contribute to the realization of a hydrogen energy society in the future. In FYE2022, we acquired long-term, large-scale supply contracts for hydrogen in Peru, the United States, and India.

- Unites States: In a project for Vertex Energy, Inc., we will manufacture hydrogen from renewable hydrocarbon feedstocks generated as a by-product from Vertex Energy’s renewable diesel production. This will enable an unlimited supply of low-carbon hydrogen.
- Belgium: We are participating in the first green hydrogen project in Belgium, in which we will handle production and sale of green hydrogen.
- Italy: We are focusing, in collaboration with Hysytech S.r.l., on a biomethane-related project. This type of project has increased activity and demand in Europe.

CO<sub>2</sub> Capture Technology and Oxygen Manufacturing Technology

In March 2023, Taiyo Nippon Sanso developed equipment capable of capturing 10 tonnes of CO<sub>2</sub> per day, and will now move forward with trials to be conducted in various regions, starting in Japan. We are also designing an oxygen supply plant, which will be needed for the atmospheric CO<sub>2</sub> capture project.



SPECIAL FEATURE  
Carbon Neutrality

## Carbon Neutral Roundtable Discussion

Toward  
Carbon  
Neutrality

## —Discussing NSHD in 2050

Climate change countermeasures are a pressing global concern, and there is now an increasing focus on how companies are approaching sustainability around the world. NSHD has adopted the slogan “We enable a carbon neutral world,” and the entire Group is taking steps to realize carbon neutrality by 2050. Four mid-career employees who are leading these efforts discussed examples and ideas for new businesses to reduce CO<sub>2</sub> emissions, their future potential, and their vision of the Group in the future after the challenges have been successfully met.

## Facilitator:

José Ramón Calvo (Nippon Gases Euro-Holding S.L.U.)

## Participants:

Masato Arai (Taiyo Nippon Sanso Corporation)

Ashis Kar (Matheson Tri-Gas, Inc.)

Ruben Pastor (Nippon Gases España S.L.U.)

Tan Wei Sheng Wilson

(Nippon Sanso Holdings Singapore Pte. Ltd.)

## What's Happening in Your Part of the World?

**José Ramón Calvo** ■ I'm sure the situation is different in each region where everyone is working, but it's fair to say that carbon neutrality is an urgent priority in every region. It is a universal objective for all of us in the NSHD Group, and also the central feature of the medium-term management plan. Could you start by telling us what kind of initiatives are underway in your respective region? And please comment on the kind of demand being created by these initiatives.

**Tan Wei Sheng Wilson** ■ In terms of carbon neutrality initiatives, Southeast Asia and India are still in the developing stage, whereas Singapore is extremely proactive. A carbon tax has already been introduced in Singapore, and the government announced a hydrogen strategy in 2022. Most Southeast Asian countries have set a target of net zero GHG emissions by 2050, and India is aiming to achieve this target by 2070. Overall, the region is seeing innovation driven by various initiatives and renewable energy is also emerging there.

In Vietnam, for example, approximately 16.4 GW of energy was provided by solar power generation in 2019–2020, and ASEAN is aiming to have 23% of energy consumption supplied by renewable energy by 2025. International initiatives involving Singapore and the other countries in ASEAN started in 2022, and Singapore is importing renewable energy such as hydropower from Laos through Thailand and Malaysia. The industrial gases field appears to have various possibilities, and there is a particular focus on the manufacturing industry. Countries with large economies, such as India, Vietnam, and Thailand, are promoting initiatives across a range of fields, including steel, aluminum, glass, and cement. Other initiatives include the production of green hydrogen through geothermal power in Indonesia and aviation fuel and offshore data centers using hydrogen in Singapore. Currently, Nippon Sanso Holdings Singapore (NSHS) has formulated a CO<sub>2</sub> strategy and is working hard to capture the benefits of the carbon neutrality trend.



## Ruben Pastor ■

The European Union is working proactively to achieve carbon neutrality, and has set clear targets of reducing GHG emissions by at least 55% compared to 1990 levels by 2030, and reaching net zero emissions by 2050. To realize this, the European Commission has adopted a set of proposals to work over several areas such as climate, energy, transportation, and taxation policies. In May 2022, the Commission announced the “REPowerEU” program, which is a plan to reduce dependency on Russian fossil fuels and accelerate the shift to renewable energy. Companies have already proposed a significant number of products in this direction, and are undertaking various initiatives.

Nippon Gases Euro-Holding (NGE) is working in several fields following its own strategy. I think a good example is oxygen combustion. These products deserve mention because they contribute directly to CO<sub>2</sub> reduction, and also involve collaboration between regions. There are already several installations operating successfully among our customers, and going forward there is significant potential for them in industries such as steel, glass, ceramics, and cement.

Another important area is the biomethane and biogas market, which is going to play a key role in a carbon neutral future. The market shows remarkable economic efficiency in its ability to convert waste into valuable resources. Our initial project is gradually becoming

## SPECIAL FEATURE

### Carbon Neutrality

#### Carbon Neutral Roundtable Discussion

a reality, and the prospects are extremely positive for the near future. Another important field is green hydrogen production, another market where our company has started participating based on its experience with the aim of adding value. In Europe, an impressive number of projects have started to promote hydrogen production.

**Ashis Kar** ■ We are also seeing significant movements in the hydrogen market in the United States. In fact, the U.S. government has just put forward a new hydrogen mission. Interest in green hydrogen is also stirring in Asia, particularly India, where the movement is of an unprecedented scale. As you may already know, the new hydrogen business that we have captured are in the United States, India, and Peru. Our company is looking at building a number of new hydrogen plants across the United States and in the Asia-Pacific region.

The Indian government has been extremely proactive in the hydrogen market, and has formulated a new policy of producing approximately 1.2 million tonnes of green ammonia for export annually. This is the newest technology to reduce dependency on fossil fuel-based ammonia, which is a key raw material in fertilizer and other products. Apart from these particular programs, we are in negotiations with several private-sector companies in fields such as steel, petroleum refining, and glass, who are in the process of establishing pilot projects.\*<sup>1</sup>

These particular projects are extremely important to us, and we are looking at partnering with several companies to meet the massive requirement for green and renewable electricity for making green hydrogen. Apart from green hydrogen out of electrolysis using renewable power, there is also technology that we are researching in Asia for biofuel-based green hydrogen.

In Indonesia, geothermal power generation runs 24 hours a day, and there is substantial interest in participating in this particular region not only among governments and certain private-sector companies but by some geothermal power players as well. A large amount of CO<sub>2</sub> can be captured from the geothermal power generation process itself, making it easy to produce green hydrogen and methanol. These could be the main product categories for export.

**Masato Arai** ■ In October 2020, the Japanese government declared a national goal of achieving net zero GHG emissions by 2050. This resulted in a huge expansion in government subsidies. Currently, a large number of demonstration projects are underway, including CO<sub>2</sub> capture, bioethanol production, and green hydrogen production and use. Taiyo Nippon Sanso (TNSC) supplies industrial gases and related equipment for these projects. Not only that, but we are also engaged in technical development of hydrogen and oxygen combustion technology, and a CO<sub>2</sub> recovery system was recently announced on our website. I feel that the movement toward realizing a carbon neutral society is accelerating in Japan as well.

\*1 Advanced and experimental projects conducted with limited functionality scope, application scope, and user numbers, etc.

➡ Please see here for the full discussion.



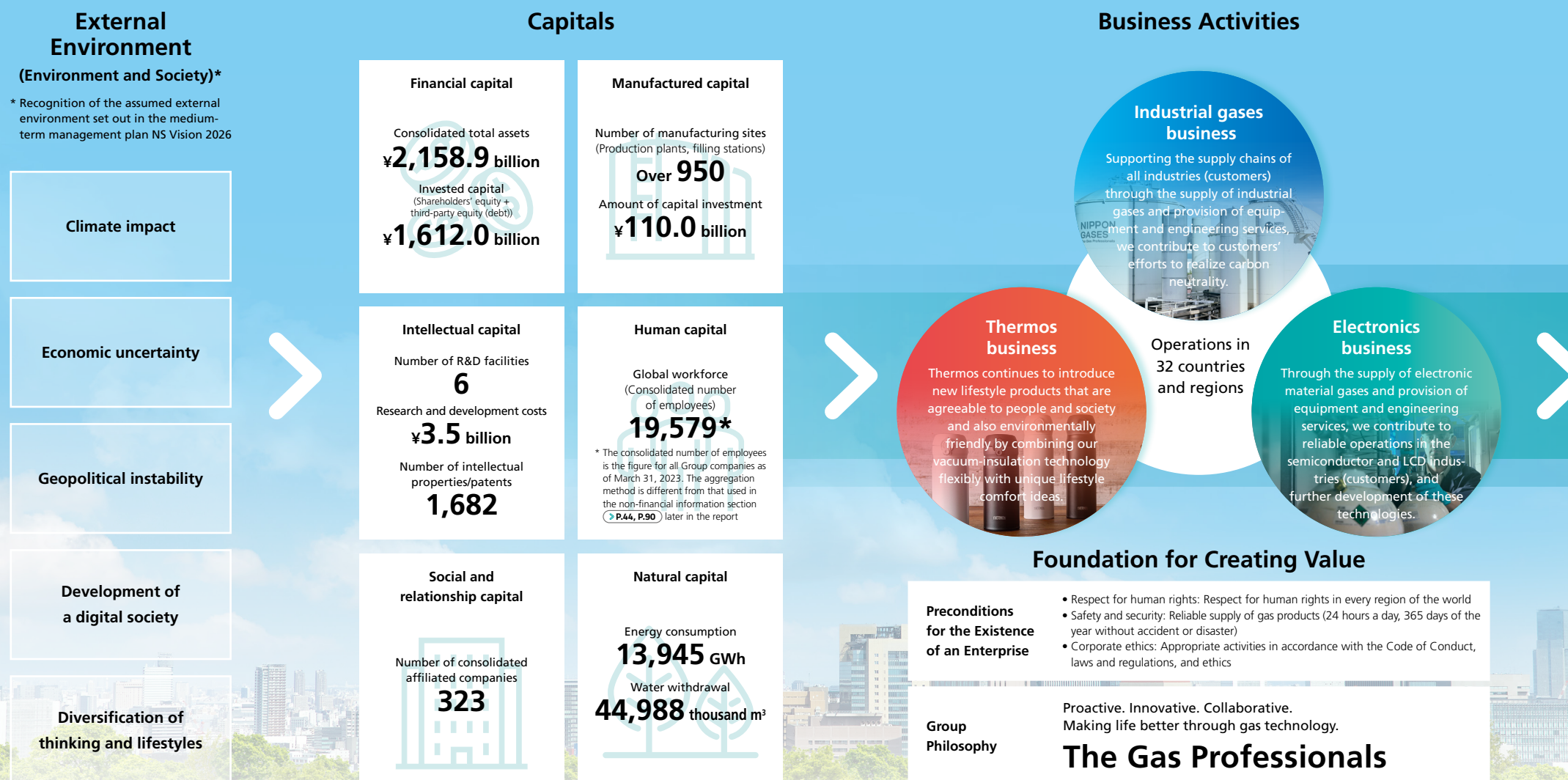
# Value Creation Story

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# Value Creation Model

The Nippon Sanso Holdings Group has helped to address social issues through innovative gas solutions based on the concept of “The Gas Professionals.” We will continue to enhance human well-being, and contribute to a more sustainable future through our business activities.



## Value Creation Model

## Using Our Competitive Advantages

By enhancing the combined capabilities of the Group and using our competitive advantages, we will compete successfully in the market and grow sustainably in our five segments.

## The Group's Strengths

- Rapid decision-making through delegation of authority from the holding company to operating companies
  - Proactive horizontal deployment of best practices among operating companies
- P.10

## Strengthening of Non-Financial Capitals

- Strengthening of human capital
  - Strengthening of manufactured capital
- P.29
- P.23

## Increasing Efficiency and Productivity

- Groupwide operational excellence
  - Development of products that help to reduce customers' GHG emissions
- P.10
- P.14

## OUTPUT

Japan

➤ P.55

United States

➤ P.58

Europe

➤ P.61

Asia and Oceania

➤ P.64

Thermos

➤ P.67

## OUTCOME

Shareholders/  
Investors

Increase corporate value through timely and appropriate disclosures and constructive dialogue. Ultimately, sustainably increasing investment returns for shareholders.

## Customers

Help customers to resolve issues and grow their businesses by supplying them with appropriate products and services.

Vision  
Realization of  
the 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.

## Future Generations

Pass on a sustainable global environment to the next generation, who will be responsible for the future.

## Employees

Provide healthy work environments and engage in regular dialogue to help each individual build their career and realize the true extent of their capabilities.

## Society

Help to realize a society where everyone lives with a sense of security and comfort.

# Value Created

Under its management direction comprising the Group Philosophy—“Proactive. Innovative. Collaborative. Making life better through gas technology.”—and the tagline “The Gas Professionals,” which is the Group’s brand message, NSHD aims to achieve global expansion of the industrial gases business, total electronics business, and Thermos business, and to create value in a sustainable manner.

This section introduces the Group’s value creation through these businesses from the perspectives of Proactive, Innovative, and Collaborative.

## 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.**

## 01 | Proactive

Sensing changes in the external environment, including society’s requirements and evolving needs, the Company provides optimal solutions to potential challenges facing customers. In industrial gases, air separation gases (oxygen, nitrogen, and argon) have been main products for some time, but their applications, or value, change with the needs of each era. Under the four global regions and Thermos business operation structure, NSHD engages in efficient Groupwide communication to share information on changes in the business environment and customer needs, as it strives to proactively create new value.



### FYE2023 Examples

**Japan** **CO<sub>2</sub> capture:** Develop and launch CO<sub>2</sub> capture equipment for small to medium-sized emissions sources to help customers reduce their GHG emissions

**United States** **HyCO:** Promotion of the HyCO project, which enables large-volume production of hydrogen with lower environmental impact, together with Vertex Energy, Inc. [▶ P.14](#)

**Europe** **Oxygen combustion:** Engagement on the challenge of GHG emission reduction, such as exploring collaboration in the biomethane field with Hysytech S.r.l. [▶ P.14](#)

**Asia and Oceania** **Strengthening electronic material gases production:** Support for the development of the electronics industry by strengthening our capacity to supply electronic material gases, particularly diborane [▶ P.12](#) [▶ P.25](#)

**Thermos** **New products designed for ease of use:** Sales launch of an easy-to-use portable mug based on feedback from customers who are looking to reduce inconvenience and save time



## Value Created

## 02 Innovative

When customers use our products, we strive not only to meet their demands but also to provide them with optimal solutions based on our knowledge of the characteristics of the gases, as well as the containers, pipes, and valves for using them, and the disposal of gases after use, offering proposals that are suited to the conditions under which the gases will be used. To provide the most suitable value for each case, such as various technological innovations including digital technology, evolution of customers' production processes, and changes in the consumption behavior of ordinary households, we take an innovative approach in our efforts to develop gas applications and products.



## FYE2023 Examples

**Japan** **Saving labor in cylinder transportation:** Sales launch of CLifter® high-pressure gas cylinder transport system to save labor

**United States** **Efficient cell cryopreservation system:** Lowered liquid nitrogen consumption by 30% through increased efficiency of cell cryopreservation system using liquid nitrogen

**Europe** **Participation in green hydrogen project:** Participation in Belgium's first green hydrogen production project in Zelzate, Belgium [▶ P.14](#)

**Asia and Oceania** **Introduction of green electricity:** Installed solar power generation systems at 23 Supagas offices and plants to assist with reduction of CO<sub>2</sub> emissions

**Thermos** **Lightweight tumbler:** Launched a new tumbler approximately 35% lighter than products with the same capacity (class-leading lightness)

## 03 Collaborative

The gases and equipment that we handle demonstrate their true value when used by our customers. Customers' production processes present a wide range of challenges, such as reducing costs (including efficiency gains through energy and labor saving), ensuring stable quality, and reducing environmental impact (reducing GHG emissions). Our technologies include product gases and related equipment, such as supply facilities, as well as gas application technologies and expertise including knowledge and experience. It is important that we use these in a collaborative effort with customers to resolve their issues.



## FYE2023 Examples

**Japan** **Algae biotech:** Investment in Algal Bio Co., Ltd., a microalgae start-up, and start of business alliance [▶ P.25](#)

**United States** **Reduction of in-house GHG emissions:** Supply of electricity generated using renewable energy from Central Line Solar in Arizona

**Europe** **Participation in hydrogen combustion project:** Participation in the HyInHeat project, which aims to resolve heating process issues in energy-intensive industries

**Asia and Oceania** **Contribution to regional industrial development:** Establishment of Long Son Plant in Ba Ria-Vung Tau Province of Vietnam, contributing to industrial development of neighboring regions [▶ P.26](#)

**Thermos** **Promotion of personal bottles:** Ongoing initiatives to reduce environmental impact with Alvark Tokyo, a Japanese professional basketball team

# Value Creation Drivers

With our business operation structure of four global regions (Japan, the United States, Europe, and Asia and Oceania) and Thermos, we will mutually share excellent operational practices in each region and business within the Group to strengthen our global comprehensive capabilities and demonstrate our competitive advantage.

## Value Creation Core

Under our philosophy of “Proactive. Innovative. Collaborative. Making life better through gas technology. The Gas Professionals,” the Nippon Sanso Holdings Group has stated its 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.”

As our customers’ supplier of choice, we strive to correctly understand the objectives of our immediate customers, and demonstrate professionalism by making maximum use of our technologies, knowledge, and experience; offer reliability in products, services, and engineering so that they can be used safely and with confidence; and supplemented by our continuously evolving technologies. In addition, it is vital that our diverse human resources, who share our Philosophy and Vision, link organically in their respective regions and businesses, and cooperate to create new value.

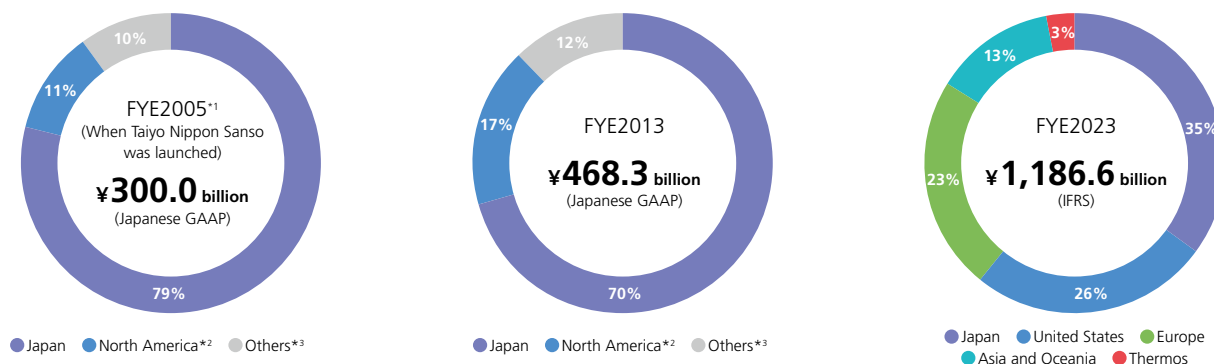
## Toward Further Value Creation

### Accelerating Globalization

The Company’s main story began in 1910 with the founding of Nippon Sanso Ltd. In 2004, the former Nippon Sanso Ltd. merged with the former Taiyo Toyo Sanso Co., Ltd. to become Taiyo Nippon Sanso Corporation (now Nippon Sanso Holdings Corporation). This merger was the beginning of an aggressive globalization effort. As of March 31, 2023, the Group has operations in more than 30 countries and regions worldwide, the result of many years of initiatives powered by our human resources, the drivers of our value creation.

In December 2018, following the merger of the former Linde Gas North America with the former Praxair, Inc., the Company acquired Praxair’s European industrial gases business and in February 2019 acquired Linde’s U.S. HyCO business, which has led to the current structure of NSHD’s four global regions.

Consolidated Net Sales and Revenue/Sales Composition



\*1 On October 1, 2004, the then Taiyo Nippon Sanso Corporation was launched through the merger of the former Nippon Sanso Ltd. and the former Taiyo Toyo Sanso Co., Ltd.

Consolidated financial results for FYE2005 do not include the first-half financial results of the former Taiyo Toyo Sanso Co., Ltd. (April 1 to September 30, 2004).

\*2 United States

\*3 Singapore, Malaysia, China, Taiwan, etc.

In October 2020, the Company adopted the current holding company structure (changing its name from the former Taiyo Nippon Sanso Corporation to Nippon Sanso Holdings Corporation), and built a competitive Group operation structure as a global gas major from its previous Japan business-oriented structure. Moreover, the Japan business was transferred to a newly established corporate split preparation company, which was then renamed to the current Taiyo Nippon Sanso Corporation, and the Group operates as the Taiyo Nippon Sanso Group.

## Main Initiatives

### Five Focused Fields

Our transition to the holding company structure had several objectives; namely, to increase decision-making speed and appropriately allocate management resources by delegating authority, to clarify

responsibility for business execution and performance, and to strengthen the Group’s comprehensive capabilities by sharing the characteristics and strengths of each area. With these in mind, in May 2022 we announced the medium-term management plan NS Vision 2026, a four-year plan covering the period until FYE2026, under which we are currently executing five focused fields [▶ P.9](#)

As part of “operational excellence,” the Group holds periodic operational excellence events aimed at raising the entire Group’s awareness to increase cooperation between businesses. In addition, the Group is actively promoting operation standardization and optimization through horizontal sharing of best practices. In January 2023, the Group held a global, cross-regional conference on the theme of pricing action, in which we shared the cost situation, trading practices, and thoughts on pricing, and policy on price-setting in each region. We are also continuing global human resource exchanges.

## Value Creation Example: Total Gas Centers / Site Services

At customers' sites or adjacent to them, the NSHD Group offers various services to support customers and gases supply security by 24-hours by Total Gas Centers equipped with ultra-high-purity nitrogen manufacturing units, supply equipment for bulk gas such as oxygen and argon, and warehouse for semiconductor specialty gases.

### Providing Total Solutions

Semiconductor manufacturing requires massive capital investment and fine processing technologies. Therefore, it is of utmost importance that equipment operations be stable and efficient. Furthermore, there are risks that tiny defects may damage an entire silicon wafer, which was developed through multiple processes by several hundred to thousand steps. Therefore, all production processes are conducted under strict quality management.

Stationed at or adjacent to our customers' sites, we can offer high-quality, reliable gas supply by providing a wide range of gas-related services. These include inventory management, transportation, or cylinder replacement for our electronic material gases products, as well as maintenance and management of gas-related equipment and on-site production and quality management of bulk gases.

Through offering these services, we build close relationships with our customers. We offer them total solutions that goes beyond manufacturing and selling electronic material gases and providing equipment and facility construction by ascertaining customers' potential technical challenges and proposing strategies to resolve them.



Total Gas Centers established adjacent to customers' sites

### The Spread of Site Services

The NSHD Group has more than 20 site service locations in Japan, the United States, Taiwan, and Singapore, and is also expanding its services in China.

Demand for semiconductors keeps expanding which is used in a wide range of applications, including household appliances, smartphones, PCs, and other electronic equipment, as well as in data centers, which support digital societies, autonomous driving, and industrial automation.

Meanwhile, semiconductor manufacturers are continuously expanding their production capacity to keep pace with those social needs.

As "The Gas Professionals," we have accumulated technologies for plant engineering, gas handling, and quality and safety management, which we will use to provide safe and reliable supply of high-quality gases. In this way, we aim to help our customers to conduct stable, highly efficient operations to produce high-quality semiconductors, and to expand our site service business further.



Site in Japan

### Lander Zhu

Site Manager  
TNSCI Wuxi Co., Ltd.



### Comment from the Manager of TNSCI Wuxi's Site for Shanghai Huahong Grace Semiconductor Manufacturing Corporation

Our responsibility is to continuously supply chemicals and industrial gases, continuously improve and optimize equipment operation capabilities, and unify and standardize daily equipment maintenance. We complete paperwork on consumption and record of Periodic Maintenance, etc., and change container of gas & chemical, order containers, and spare parts routinely.

We have not had an interruption in supply or a safety incident since 2016.

We are proud that we conscientiously complete every task to ensure a stable and safe production environment at the customer's site as a member of "The Gas Professionals." We insist on monthly safety and operation training and assessment for employees to meet the various needs of customers. There are few professionals engaged in this field, and new employees are trained from scratch, with a relatively long training cycle.



(Left) Commemorative award for 1,000 consecutive days without accidents  
(Right) Commemorative award for 2,000 consecutive days without accidents



# Value Creation Example: Group R&D

The NSHD Group's continuing rigorous pursuit of gas and R&D applications and technologies will help to create new demand for gases. We will continue striving to propose total solutions for our customers' needs, cooperating as a Group supported by a wealth of expertise and experience.

## Development Strategy for Basic Technologies

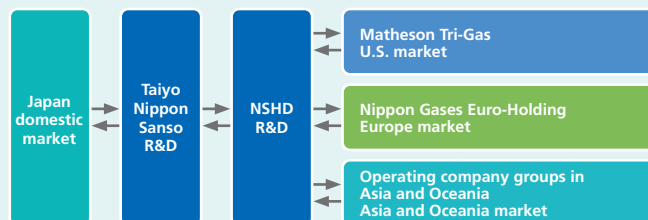
### Overall Policy

We will cultivate and expand basic technologies and pursue sustainability while deploying innovations at all Group companies to help increase operational efficiency and profits.

### Strategies

- Expand existing technologies to strengthen our fundamental business
- Establish a portfolio strategy of concentrating resource investment in growth fields where the Group can leverage its core competencies to explore and expand new business domains
- Use open innovation to complement technologies, accelerate development, and expand channels
- Contribute to operational efficiency through effective use of digital technology

### Group R&D Execution



To promote efficient and optimal R&D for the Group, in collaboration with partners, activities are carried out mainly by the R&D facilities within the Group's Japanese operating company, Taiyo Nippon Sanso Corporation.

### Masahiro Takeuchi

Executive Officer, Head of the R&D Unit  
Taiyo Nippon Sanso Corporation



### Comment from the Head of the R&D Unit of Taiyo Nippon Sanso

R&D is the engine of innovation, and the wellspring of corporate growth. Under the development strategies on the left, we are making a dedicated effort to promote the NSHD Group's R&D to help the Company make further forward progress.

Our contributions to realizing a carbon neutral society, to the development of an electronics industry to support a carbon neutral society, and to labor savings and the achievement of the United Nations (UN) Sustainable Development Goals (SDGs), show that we are focused on global issues. By integrating and further cultivating technologies that we have developed in Japan, the United States, Europe, and Asia and Oceania, deploying them appropriately for the characteristics of each market, and so forth, we will promote more effective development and operational efficiency gains for the Group overall, and contribute to increasing profits.

## Cultivating and Expanding Basic Technologies and Pursuing Sustainability

We are promoting R&D to support the industrial gases business, electronics business, plant business, medical business, and fundamental businesses that support business development. We are working to cultivate and expand basic technologies such as oxygen combustion technology, gas separation, capture, and purification technology, air separation-related technology, and stable isotope separation technology, given their prominent contribution to carbon neutrality and sustainability.

In relation to ASUs, in addition to cultivating basic technologies, we are also working on the application of DX to plant manufacturing, plant operation, and logistics. Specifically, we have set a goal to create a plant operation system with advanced remote monitoring systems and plant operating condition control systems, that will enable increased productivity (high performance, high quality, low cost) and effective utilization of human resources for large-scale ASUs that produce industrial gases. From FYE2024 onward, we will begin opening Remote Operation Centers (tentative name) featuring these functions to contribute to sustainable manufacturing of industrial gases, which is the Company's core business.



Oxygen combustion technology



Water-<sup>18</sup>O (Water-<sup>18</sup>O stable isotope)

## Value Creation Example: Group R&D

### Innovations

By realizing innovations based on gas usage to provide customers with high-value-added solutions, we will continue to explore and expand new business fields.

Recently, we have been promoting initiatives in the additive manufacturing (AM) business, a new business based on the atmospheric gas control technologies cultivated in the welding business, the gas purification technologies cultivated in the semiconductor business, and high-purity gas supply technologies. We are promoting collaboration with metal 3D printer manufacturers and metallic powder manufacturers to develop technologies related to AM printing technologies in general, and we have also launched our 3DPro® solutions for contributing to the practical application of metal AM.

One of the new business domains that we are focusing on is microalgae cultivation, which has the potential to be a next-generation industry that aligns with the SDGs. Rich in protein, vitamins, and amino acids, microalgae is familiar as a nutritional supplement; and it also has promising applications for environmental improvement, energy, and carbon sequestration, with the additional property of being cultivated using CO<sub>2</sub> as a raw material. In December 2022, the Company invested in microalgae start-up Algal Bio Co., Ltd., and the two companies have started a business alliance promoting R&D and establishing large-scale microalgae cultivation technologies.



An AM Advanced Room established inside the Yamanashi Laboratory to serve as the global center for AM technology development



Conducting R&D on algae with Algal Bio

### Contribution through Electronics

We are contributing to the accelerating spread of digitalization throughout society and to the advancement of electronics industries that will support a carbon neutral society through our sales of electronic materials gases and related equipment and our global provision of services, while also strengthening our technology development. In particular, we have commercialized BRUTE®-Hydrazine and Peroxidizer, using the proprietary technologies of U.S. company RASIRC, Inc. These products are completely new gas sources that can safely supply anhydrous hydrazine gas and peroxide gas, respectively, in high concentrations. The development of Atomic Layer Deposition (ALD) technologies has been shown to enable a better process than that of the existing nitride and oxide materials. In addition, diborane manufacturing technology developed by Taiyo Nippon Sanso has been expanded to Group companies in South Korea and China, contributing to a worldwide increase in diborane production capacity.



(Left) BRUTE®-Hydrazine and (Right) Peroxidizer, which were commercialized through proprietary technologies of U.S. company RASIRC, Inc.

### Contribution through Gas Applications

Gas application technologies are also being expanded across a wide area including Japan, Asia, Europe, and the United States.

- (1) Oxygen combustion technologies  
(product names: SCOPE-JET® and Innova-Jet®)
  - For the steel, glass, and aluminum industries, etc.: Contribution to CO<sub>2</sub> emission reduction through fuel reduction
- (2) Gas atmosphere control technology  
(product names: Sanarc®, MG Shield®, and Bistranza®)
  - For the automobile and construction machinery industries: Contribution to yield improvement, productivity increases and GHG emission reduction through heat treatment of components
  - For the food industry: Contribution to extension of shelf lives and reducing food loss through food packaging
- (3) Cooling and freezing technology  
(product names: Bistranza® and sub-zero treatment equipment)
  - For the food industry: Contribution to productivity increase through high-quality freezing and rapid freezing
  - For metal component manufacturers: Contribution to quality improvement through rapid cooling



Liquid nitrogen tunnel freezer Bistranza-FZT

# Value Creation Example: Group Engineering

The NSHD Group collaborates internally to offer a full line of services, from basic to detailed design of plants, to manufacture, procurement, construction, trial operation, and maintenance. In this example, we present the Long Son project undertaken by Nippon Sanso Vietnam Joint Stock Company (NSVN) and Taiyo Nippon Sanso Corporation (TNSC).

## Overview of the Long Son Project

NSVN started supplying nitrogen gas from an ASU made by TNSC to Long Son Petrochemicals Co., Ltd. (LSP) in 2022. Work started on the project in 2019, after over 10 years of talks with LSP, including a period of approximately two years when all activity was severely restricted due to the COVID-19 pandemic. However, the engineering teams of NSVN and TNSC worked closely to overcome this difficult phase and contributed to the customer's production operations.



Nippon Sanso Vietnam

## 01 Planning Stage

The Long Son project differed from projects in developed industrial areas in that the plant was constructed in an area that was devoid of such infrastructure as access roads, electricity, water supply, and drainage facilities. This made the project extremely challenging for NSVN. Moreover, since the plant facility location was subject to limitations due to the shape of the land, repeated consultation was undertaken with TNSC to determine a suitable plant layout.



Undeveloped land prior to plant construction

## 02 New Ideas: Introduction of First Remote IO System

In this project, NSVN deployed remote technology for input/output signals between equipment (IO) for the first time. Conventionally, plants have required installation of multiple analog wiring systems; however, the introduction of IO technology enables an IO panel at a remote location to be connected to the main control system via a single fiber-optic cable for communication. To align with the customer's production operation schedule, the plant construction period needed to be shortened, and the introduction of this technology enabled a significant reduction in the amount of work required for wiring.



Plant using remote IO technology



## Value Creation Example: Group Engineering

### 03

#### Construction Stage



NSVN staff present a project status update to the customer

The project had started and the fabrication of the main equipment of the plant was underway when the global COVID-19 pandemic occurred. Fortunately, the situation in Vietnam was not as extreme as in other countries, so construction delays at the site were managed to a minimum. However, production was halted at major equipment suppliers in Japan, China, and Europe, and the situation made it difficult to dispatch engineers to the site. With no sign of the pandemic abating, and the customer's production start date drawing closer, TNSC managed to ship the rectification tower, which is the primary piece of equipment, with a delay of only about two months, but delivery of the other main units was heavily delayed. To address this situation, the engineering teams of NSVN and TNSC searched for the best way to proceed with site work so as to get the plant up and running within the remaining construction time while also ensuring product quality. For example, previously an engineer had been dispatched to provide support and verification when installing major equipment; however, this time we provided remote support for Japan by using wearable cameras. Moreover, to ensure the overall quality of the plant, we proceeded with on-site construction by arranging the schedule so that final trial operation would take place after pandemic travel restrictions were lifted and it was again possible to dispatch an engineer.

#### Trial Operation Stage

For a project of this size, we would usually dispatch two supervisors from Japan. However, due to the impact of COVID-19, we were obliged to conduct the trial operation with a single director. The trial operation of a plant is broadly divided into (1) trial operation preparation, involving standalone checks of each gauge, and standalone testing of various rotating machinery, and (2) comprehensive ASU trial operations and associated rectifications.

The trial operation preparation was completed smoothly, even with only a supervisor dispatched from Japan, due to careful sharing of information and cooperation with the members of NSVN's engineering team, which is composed of specialists with experience in rotating machinery, electricity and control, piping installation, and operation.

Comprehensive trial operations also required a supervisor to work overnight for a 24-hour operation period. Therefore, this time, we tried a new approach, conducting the supervisor's work remotely from Japan. Faults that arose during trial operations were discussed by the engineering teams in both countries through a teleconference, and with both teams working together, solutions were quickly identified.

Initially, we were apprehensive about communication issues due to performing the operations remotely, but with the high skill level of NSVN operators the comprehensive trial operations were carried out without a hitch.

### 04

#### Key Points in the Project's Success

This project was the eighth in a series of plants for NSVN, and was built in response to the new construction of one of Vietnam's largest petrochemical complexes. Since this plant is located on a site with no existing infrastructure, many difficulties arose in its design and construction. From the initial stages of the project, the NSVN's engineering team shared information with TNSC's engineering team, and after discussing many technological options, they formulated the optimal plan. While COVID-19 was spreading, the teams held online discussions and coordination meetings, and made use of the latest technologies to enable them to carry out the project on schedule in line with the customer's wishes. Although the teams were separated by a great distance, they worked together and cooperated to overcome seemingly impossible hurdles to get the plant operating, helping to build the energy infrastructure in Vietnam.



Opening ceremony of the plant

## The Power of Human Resources:

# Message from Head of the HR Division

**We will create an environment that enables the Group's diverse human resources to grow and take pride in their work as "The Gas Professionals" or Thermos professionals.**

## Basic Approach

The industrial gases business is part of the infrastructure of industry, while the Thermos business handles lifestyle products that people use daily. I believe integrity is the most important foundation for our human resources. Integrity underpins the Group's most important corporate activities in the areas of respect for human rights, safety & security, and corporate ethics. Without integrity, we cannot earn the trust of all our stakeholders including customers and investors.

FYE2023 was the first year of our medium-term management plan NS Vision 2026, and we made a strong start during the year, despite an adverse business environment with soaring raw materials prices such as energy costs. It was also a year to reaffirm the power of the NSHD Group's human resources. In particular, amid our intense focus on price management, I believe that our success in obtaining customers' understanding to proceed with price changes was due to our stable provision of value in the form of products and services that customers require. This was the result of our human resources working together with integrity to perform various functions, from production and sales to the back office.

Our organizational culture ensures that we fulfill our social responsibilities as a company in line with the Group's Code of Conduct. We have been working to increase employee engagement through empathy with the Group Philosophy and Vision. In this way, I believe that the Group can make an even greater contribution to society.

## Developing Human Resources through Exchanges

Each operating company takes measures to secure and develop its human resources appropriately for the situation of the company and region. Meanwhile, to address common issues that need to be handled at the Group level, we have found it effective to build networks and organizations across operating companies. These enable human

resources throughout the world with expert knowledge and experience in their respective fields to make connections, sharing each operating company's best practices to strengthen the comprehensive capabilities of the entire Group. We have already formed these kinds of structures for projects in areas such as IT security and carbon neutrality, as well as networks for enhancing productivity, and these are functioning effectively. The HR Division has also created a Group network centered on personnel affairs for Nippon Sanso Holdings. It is used for mutual sharing of the status of progress on promoting active participation and comfortable working environments for women, along with promotional case studies. It has also been used to conduct an exchange of opinions regarding action plans developed as a result of the first Groupwide engagement survey, conducted in 2022. Looking ahead, we will use what we learn through these opportunities to enable discussion of new personnel measures and revisions of systems to suit the respective situations in each company and region.

In addition, we recognize that human resource exchanges between regions are not only useful for immediate business operations but are also extremely effective opportunities for employees to acquire the necessary skills, such as communication, autonomy, proactivity, and cultural understanding, and to develop the global mindset needed to lead the Group in the future. We will actively promote human resource exchanges, including remote and on-site assignment.

The Group has excellent talented human resources all over the world. We will work to prepare an environment in which all employees will be able to commit themselves deeply to the Company's Vision and Mission and carry out their duties toward the achievement of NS Vision 2026, thereby growing as people and contributing to society and the earth, working with pride as "The Gas Professionals" or Thermos professionals.



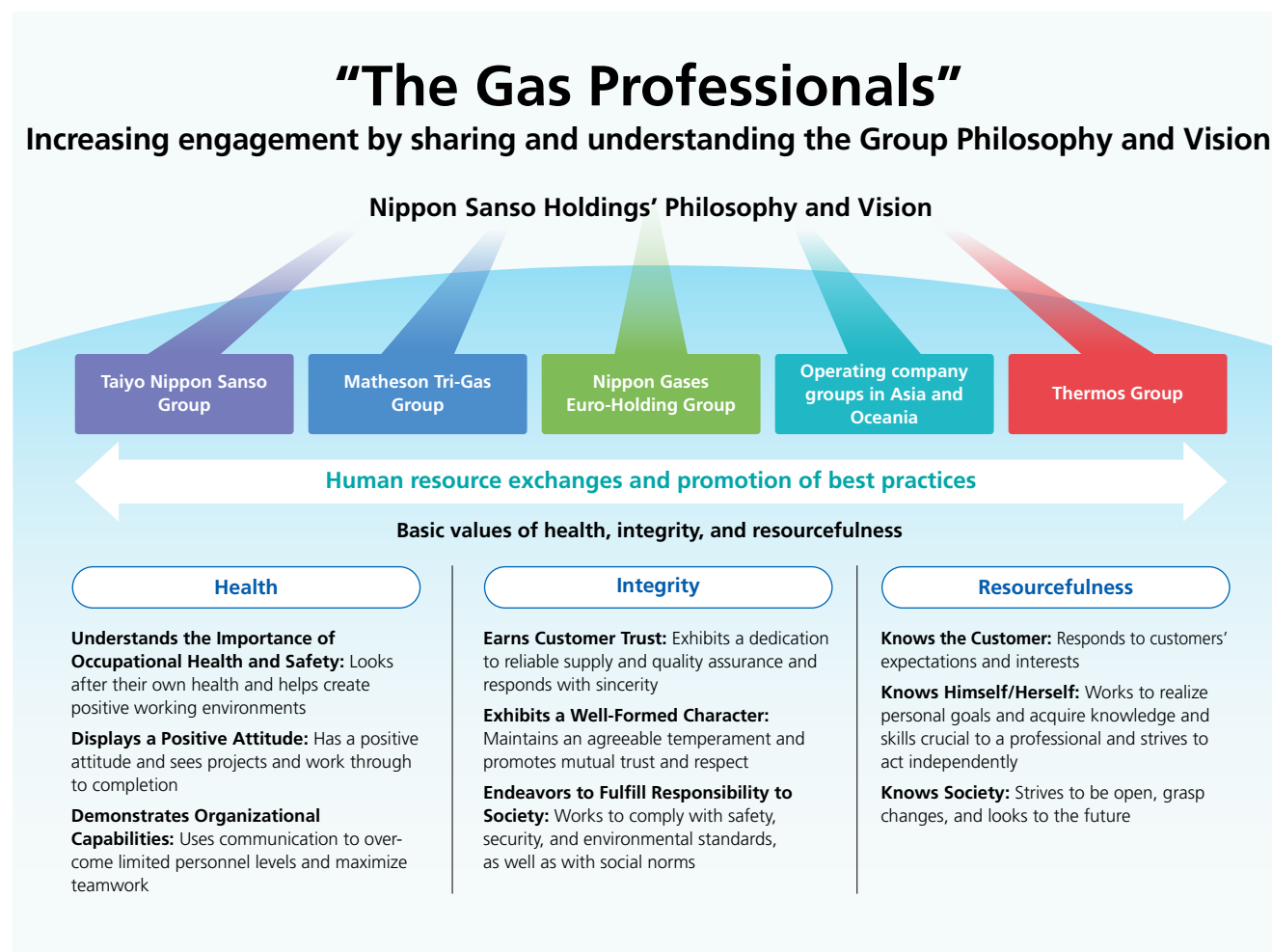
**Yasukazu Takada**

Head of HR Division  
Nippon Sanso Holdings Corporation

The Power of Human Resources:

## HR Philosophy

The NSHD Group's business is operated through the collective individual efforts and capabilities of approximately 20,000 employees worldwide. We aim to encourage even deeper understanding of the Group Philosophy and Vision at the industrial gases business Group companies in the four global regions and the Thermos Group. By promoting the development of human resources sharing the same values globally, we aim to promote the development of our businesses and the achievement of medium-term management plan NS Vision 2026.



In February 2021, the Company formulated the Global Policy on Respecting Human Rights, Contributing to Communities, Employment, Labor, and Health, which is applied across the entire Group. Under this policy and the Group Code of Conduct, all Group officers and employees are involved in respecting human rights and providing appropriate working environments. They develop awareness through internal training and other such opportunities, so that they can contribute to society through business activities underpinned by an awareness of fulfilling our corporate social responsibility.

Furthermore, the Group Philosophy has the tagline “The Gas Professionals.” To nurture such professionals with a sense of mission and a desire to contribute to society and the earth, it is important to focus on the qualities of health, integrity, and resourcefulness. These values have been inherited by the Company from the time of its predecessor, the former Taiyo Nippon Sanso Corporation, and they are also shared by the Thermos business. The essence of health, integrity, and resourcefulness is also shared in an easily understandable form by all Group companies and this is supplemented with each company's own individual values.

### Employee Engagement

Human resources are the starting point for all value creation. In order to respond to a rapidly changing business environment, labor market, and other factors, as well as achieve our objectives in the five focused fields and segment specific strategies, we need to secure and retain diverse human resources, such as people with various experiences and mid-career hires, of any gender, nationality, or age group, and create comfortable working environments that enable them to deliver their full potential. To create such an environment, the NSHD Group started conducting the Groupwide engagement survey in 2022, to gauge whether employees empathize with



## The Power of Human Resources: HR Philosophy

the Company's Vision and work proactively with a voluntary desire to contribute, and to determine their state of well-being (physical, mental, and social health). The results of the survey are analyzed by region, organization, and priority to assist with the continuous examination and revision of various initiatives.

### Promotion of Diversity

In a post-COVID-19 era, the Company needs to respond to diversification of social and work-related values, and changes in the population and labor market. We also need to incorporate new insights for increasing customer satisfaction and productivity. It is therefore necessary to continuously promote measures for accepting diverse human resources.

#### (1) Initiatives to Promote Women's Active Participation

As a particular focus for the diversification of human resources, the NSHD Group has been promoting women's active participation across the entire Group. We have set targets for FYE2026 of a rate of female employees for the Group of at least 22% and a rate of female management posts of at least 18%. The degree of active participation by women is different by region in the Group, even within the same industrial gases business. Therefore, we will deploy measures suitable for the situation in each region. We will also work to accelerate our progress by sharing information on the measures deployed between HR departments within the Group.

#### Examples of Initiatives:

- Japan** Launched Promotion Project Team for Women's Active Engagement at Taiyo Nippon Sanso Corporation (plan to propose measures to management in the second half of FYE2024)
- United States** Strengthened recruitment competitiveness by presenting the rate of female management posts/employee activity status using social media
- Europe** Conducted sponsorship program for women in management, female support network, led by female managers
- Asia (Southeast Asia)** Provided webinars on promoting women's active participation
- Thermos** Conducted career advancement training for female employees
- NSHD** Introduced female employees working in each region in the Group's internal bulletin

#### (2) Employment of People with Disabilities

We are promoting the creation of workplaces where employees with disabilities can work in their own way with peace of mind, while tailoring these efforts to the situation in each region. Our Japanese operating company, Taiyo Nippon Sanso Corporation, has been actively promoting the employment of people with disabilities for some time, and they are active across a wide range of positions, including general duties, management, accounting, sales, logistics, technology management, production management, R&D, and engineering. As of April 2023, the employment rate was higher than the government's statutory employment rate at 2.44%. Furthermore, we are also taking steps to employ people with disabilities overseas, in line with local laws and regulations.

### Initiatives for Work-Life Balance

Corporate growth is driven by people working with motivation, and it is essential to encourage individuals to look after their health. From a perspective of promoting diversity, including women's active participation, we believe it is necessary to provide an environment where individual employees can maintain a balance between work and personal life, while demonstrating their full potential. Based on this idea, we are working toward flexible working systems and environments to facilitate work-life balance in view of the customs and laws of each country and region.

### Human Resource Exchanges

Global human resource exchanges are extremely effective for promoting strategies targeting the entire Group and the sharing of technologies and expertise, as well as for developing global human resources to lead the Group. As of March 31, 2023, more than 80 employees had transferred between countries and regions worldwide, where they are working in various positions and roles. Furthermore, the current ratio of non-Japanese employees working at NSHD is approximately 5%, and we believe it is necessary to promote human resource exchanges between the holding company and overseas operating companies from a perspective of developing executives for the holding company who will supervise global business. We will continue to promote human resource exchanges across regions with a view to both business promotion and human resource development.

### System for Promoting Groupwide Initiatives

Each operating company is engaged in measures to secure and develop human resources in accordance with their local situation. However, for responding to universal issues that the entire Group needs to address and sharing best practices between operating companies, as a pure holding company, NSHD's HR Division coordinates with the HR divisions of each operating company to promote a united effort.



## The Power of Human Resources: Workplace

# Employees Working in Various Regions

## The Gas Professionals: Employees Doing Their Jobs at Various Operating Companies

As “The Gas Professionals,” we will carry out our mission and realize the social significance of the Company.

The Company has adopted the tagline “The Gas Professionals” for its Group mission. In more than 30 countries and regions worldwide, individual employees demonstrate their capabilities to create new value. Through their efforts, we aim to remain the preferred choice for customers as a corporate group.

To be the ideal industrial gases supplier for our customers, the NSHD Group must be a professional, stay one or two steps ahead so that it can propose even better ways to use gases, and continue its tireless efforts to improve the reliable supply and quality of products. To achieve this, we will listen to customers, correctly discern what they require, and provide them with the value they expect using our products and services, while constantly striving to increase efficiency and productivity, and to hone our internal operations.

We are proud of the role that industrial gases play as part of the infrastructure for industry. Industrial gases are widely used in society, and their safe and reliable supply is taken for granted. To carry out our mission and realize our social significance as one of the companies that supplies vital industrial gases to a society where individuals live abundant lives, each of our employees in the regional segments of Japan, the United States, Europe, and Asia and Oceania is committed to doing their job.

In this section, employees responsible for working in sales, logistics, operating process improvement, and supply chain management relate memorable episodes from their work.



**Eita Echigo**  
Japan

Sales Development, Industrial Gas Unit  
Taiyo Nippon Sanso Corporation



I think that creating demand for gases, and understanding and maximizing the benefits and effects that customers can obtain through industrial gases, is an example of “The Gas Professionals.”

[Please see here for details.](#)



**Álvar Pescador Calleja**  
Spain

Productivity Technician, Productivity  
Department-Iberia  
Nippon Gases España, S.L.U.



My core value is discerning what is efficient. To make improvements, it is important to extract and analyze objective information and work toward actionable decisions.

[Please see here for details.](#)



**Marie Robertson**  
United States

ROC Manager  
Matheson Tri-Gas, Inc.



Matheson Tri-Gas is making a concerted effort to promote continuous improvement and innovation at the Remote Operation Center so that it can promote remote operation in the industrial gases industry.

[Please see here for details.](#)



**Nguyen Huong Thao**  
Vietnam

Supply Chain Management  
Nippon Sanso Vietnam  
Joint Stock Company



The main objective of supply chain management is to reduce corporate operating expenses while maintaining a reliable supply of the industrial gases vital to customers' production activities.

[Please see here for details.](#)

## Promotion of Women's Active Engagement Roundtable Discussion: Female Diversity, Employee Growth

## Promoting Active Participation of Women on a Global Scale

Part 2

### What Opportunities Do NSHD Group Employees Have in Order to Realize Their Personal Goals through Business?

Continuing our discussion from last year on the theme of "What opportunities do NSHD Group employees have in order to realize their personal goals through business?" from the perspective of human resources, we held a roundtable discussion with representatives from our four geographic hubs and the Thermos business.

This time, all five of the participants are women, each in a managerial role. With "rate of female employees" and "rate of female management posts" as KPIs in the medium-term management plan NS Vision 2026, the participants considered the nature of an organizational culture in which women participate actively and achieve their personal aspirations.

➔ Please see here for Part 1 in *Integrated Report 2022*.

### Being Undervalued Made Me Stronger

**Shingo Noguchi** ■ Please tell us about some of the barriers that you have come up against in your careers to date.

**Tracy Chou** ■ I suppose the main one for me is having to look after my household and children while working. In my case, my mother-in-law helped me with childcare, and stepped in when I had to work late; but in Taiwan, company support systems are not well developed. To be frank, I could say that even Nippon Sanso Taiwan (NSTW) has almost no support for working women. During the COVID-19 pandemic, we used telework for roughly three months, but this was really the only time when there was any flexibility in the work system. I would love to see NSTW join those that have introduced support systems to make it easier to handle housework and childcare.

**Tomoko Hayakawa** ■ I think that many women really struggle with the worry that they may not be able to take on the responsibility and work of a management role in the same way as a man. For myself, as the first woman to have a management role in Thermos, I worried each day if my performance was good enough. However, I realized that eventually the issue would be resolved naturally as I accumulated experience. There are probably many women who think that a management role would be impossible for them, so I hope that by sharing my own experience I might be able to help in promoting active participation of women.

**Toshie Furuumi** ■ I am actually wondering if I even encountered any barriers. It's probably that once you've overcome it, you no longer feel it. Having said that, one of my colleagues recently became unable to continue working due to needing to take care of a parent, and so she decided to take a leave of absence for a time. She has said to me in an email that she definitely intends to return to work, and we definitely want her to return. She has a strong passion for the company and for her work, and I look forward to being able to welcome her back.

**Leah Hull** ■ There is so much I want to say. I feel that it is the same in the United States, with the general trend being that women take on the burden of housework and childcare, and then have to make a career on top of that. Without any support, it becomes extremely difficult to maintain work-life balance. Luckily for me, my leadership is understanding and we have trust, so I'm able to be flexible when the need arises. However, if there are systems that enable people to have flexible work styles and to balance work with their personal life, then I think it's important to introduce them.

**Kathleen Sels** ■ I agree completely. I have also experienced challenges with work-life balance, and am constantly searching for a good balance between work and my personal life. I also encountered various barriers when I was starting out in my career.

#### Facilitator:

#### Shingo Noguchi

HR Division  
Nippon Sanso Holdings Corporation

#### Participants:

#### Toshie Furuumi

Executive Officer,  
Head of the Medical Unit  
Taiyo Nippon Sanso  
Corporation

#### Leah Hull

Vice President,  
Production Operations,  
Continental Carbonic  
Products, Inc.

#### Kathleen Sels

Sales Manager,  
Sales BNF  
Nippon Gases  
Belgium NV

#### Tracy Chou

Director, Financial &  
Accounting Division  
Nippon Sanso  
Taiwan Inc.

#### Tomoko Hayakawa

General Manager,  
Administration Division  
Vacuumtech Philippines Inc.  
(on assignment from  
Thermos K.K.)





## Promotion of Women's Active Engagement Roundtable Discussion: Female Diversity, Employee Growth

Back then there were only a few female managers in the company and men dominated the industrial gases industry. As a young woman, I was not always taken serious and sometimes needed to prove I was able to do the same work as my male coworkers. However, being undervalued made me stronger, and I developed a spirit of self-reliance. It is easier to succeed when you are undervalued by those around you than when you are over-valued.

### Regional Disparities in the Level of Active Participation by Women

**Noguchi** ■ Ms. Furuumi, you are leading the Promotion Project Team for Women's Active Engagement at Taiyo Nippon Sanso, aren't you?

**Furuumi** ■ Yes, that's right. The project was set up in October 2022 and has nine members. All of us are women, with a wide age range from 20s to 50s. The main objective of the project is to examine a range of perspectives regarding what should be done to foster an organization where women can participate with enthusiasm, and to provide recommendations. We have just started an awareness survey, and plan to hold various events such as interviews with external experts and roundtable discussions.

**Hayakawa** ■ As part of this initiative, I heard that your team has visited Thermos to conduct interviews. Thermos has many female employees, and the numbers are also increasing in the engineering, product development, and sales divisions, which were previously made up mainly of men. However, even so I still feel that there are issues to be addressed at Thermos Japan. I am the first female manager at Thermos, and we have continued by adding a second and a third; however, it would be great if the company selected women for management roles more actively and became a place where female employees could achieve their aspirations.

**Noguchi** ■ Currently, you are on assignment in the Philippines. What is the situation like there?

**Hayakawa** ■ I am posted in the role of director, but I don't think that the employees are thinking about the fact that I am a woman. Approximately 60–70% of the company's 1,200 employees are women, and half of the 10 local managers are women. The managers of human resources and general affairs, accounting, and logistics

are also women. The environment is far less gender conscious than in Japan.

**Kathleen** ■ The situation in Europe is also quite advanced. At Nippon Gases Europe (NGE) they are currently supporting efforts to build a women's network throughout all areas of Europe as part of a women's sponsorship program. This network initiative is called WING, which stands for Women's IKIGAI Nippon Gases. Do you all have similar initiatives in your own regions?

**Leah** ■ We don't have one in the United States yet, but I think an initiative could be extremely beneficial.

**Kathleen** ■ I'm sure it would. Actually, it's unfortunate that some say that this initiative isn't necessary because women already have plenty of opportunities for development and growth. While it is true that NGE has already done a lot to encourage active participation of women, we still need women's networks in every region to encourage both men and women to support the diversity and inclusion goals and to create awareness in the gender challenges that still exist. We have to keep striving toward that goal; change won't happen if we wait for it.

**Noguchi** ■ Tracy, how is the situation in Taiwan? I imagine that in Asia, as in Japan, there still tend to be few female managers.

**Tracy** ■ There are many women in management roles at NSTW, and there is no disparity, including in pay. The hiring standard for new recruits is only ability; gender is not a consideration in the decision. I believe that men and women are also treated equally in promotion, and that they have equal opportunities.

**Furuumi** ■ It sounds like things are really advanced in Taiwan. Here in Japan, which is to say Taiyo Nippon Sanso, there are still a lot of issues to address. I would really like to hear all about the different initiatives from everyone.

**Noguchi** ■ At NSHD, we have just set the rate of female employees and the rate of female management posts as KPIs for the first time. Could you all share what you think about this and how it has been received in your region?

**Furuumi** ■ Setting specific numerical targets is really a step forward. However, the task now is to consider what specific actions will be taken toward achieving these targets. In some cases, it may be necessary to communicate the idea through a top-down approach.

Through the Promotion Project Team for Women's Active Engagement, we are working to propose ideas with the hope that at least one of them will be adopted. We would like to propose ideas that everyone can get behind and support.

**Leah** ■ When a new metric or standard is introduced, I always ask myself, "what kind of behavior will this indicator drive?" I think that the KPIs are good, and that the initiative is desirable, but I want to pay careful attention to whether it will ultimately produce the kind of behaviors and results that I want.

**Tracy** ■ KPIs in an integrated report are nothing more than numbers to us. How do they translate into reality? For example, we have to look at them by region and by position. Is there a target for the rate of women holding higher positions? Maybe the rate of women among ordinary employees is quite high, but is low at the higher levels. Even if the proportion of the number of people is high, the impact could be seen as low. In other words, I think we need to know the specific breakdown of the KPIs, and the types of initiatives being carried out in each region and organization.

**Hayakawa** ■ I agree. The targets may have been set, but if we don't clearly spell out what we should do to move toward them, then no progress will be made. As such, we need to think about more specific measures.

**Kathleen** ■ For me, I have somewhat mixed feelings about it. These recent KPIs will probably have some effect in terms of increasing the numbers of female employees and managers. But in the future, I would like the organization to be one that doesn't require such KPIs. That would be ideal.

### Increasing Employee Engagement through the Mentoring System

**Noguchi** ■ The next item I'd like to ask you about is increasing employee engagement. What kind of measures do you think we should take? And do you have any expectations of NSHD?

**Kathleen** ■ We already have several programs in place at NGE. The women's sponsorship program that I mentioned before is a good example. There is also a Growing Our Leadership (GOL) and a talent pipeline program, which have been set up to develop, improve, and

## Promotion of Women's Active Engagement Roundtable Discussion: Female Diversity, Employee Growth

grow the skills of future leaders. In addition, we also conduct an employee engagement survey. Analysis of the results is used to create action plans, and we strive to extend the good results and correct the bad ones. These initiatives are increasing employee engagement by enabling smooth communication and synergy effects inside the company.

**Hayakawa ■** I think employee engagement surveys are an effective measure, as it is extremely important to analyze the current status of the organization and employees. The role of management is also important. In a situation where remote working has become established and communication is insufficient, we need to look at how we can improve the workplace environment, how we can bring teams together, and how we can build trust with our team members. I believe this is the key to team success.

**Furuumi ■** I agree that the engagement survey is important; and as Kathleen said, it is also important to consider what action to take based on the results, and that we need messaging not only from managers but also from senior management. NSHD has an event called Operational Excellence Day, and I think it would be interesting to try holding an engagement version of this event as well.

**Leah ■** It is important to increase the engagement score, and it would be ideal to have a system for doing this. Even if we don't introduce it companywide, the introduction of a mentoring system, for example, could also be extremely effective. Employees could consult from time to time with their mentors, providing a real sense of support. It may be difficult to make it work for the entire organization, but it could boost communication significantly.

**Noguchi ■** Last year the NSHD Group conducted an employee engagement survey. Looking at the results, engagement appears to be extremely high at NSTW. Tracy, what do you think is behind this result?

**Tracy ■** First of all, it might be because many of the employees have been working there for over 20 years. They know each other well, and I imagine that they will be able to continue working together going forward. Communication between departments is good, and pay is also not bad, which is also a factor. Another important factor is that many of NSTW's customers are high-performance companies,

which has boosted our earnings in turn. The high level of employee engagement is possibly also due to the effects of a low-pressure environment.

**■ Toward Further Diversity**

**Noguchi ■** Considering your own position, how would you all like to contribute to diversity and promote active roles for women?

**Leah ■** I would like to conduct an initiative to communicate to junior and senior high school students that this career path and industry exists. In the past, we had opportunities to visit schools and talk about which classes students should take if they want to work in this industry in the future. I would like to increase this kind of engagement.

**Kathleen ■** As a mentor to a junior female employee in another department, I offered advice and support extending beyond her daily work duties, and found it extremely fulfilling. I would like to continue this mentoring role. I am also one of the founders of the WING Network in the BNF (Benelux & France) region. The activities of this network are focused on growing the female talent pipeline, improving the results of the next employee engagement survey regarding gender topics, and actively encouraging everybody to create an inclusive workplace with diverse teams.

**Tracy ■** I think that there are various things that I could do as well. Many of the employees at NSTW have been working there for a long time, so we have an atmosphere where it is easy to talk to team members and there are strong links between employees. As such, even if we encounter some difficulty, we are able to support each other, and in most cases we all work together toward achieving the target. These kinds of individual personal bonds are important when thinking about issues such as diversity and promoting active participation of women, so I want us to continue to value them in the future.

**Hayakawa ■** When I think about what I could do to contribute, I can do my utmost to offer junior women advice and support based on my experience, and consult with them about various matters. I intend to make a dedicated effort to these kinds of activities now and in the future.

**Furuumi ■** In thinking about what I should do in the Promotion

Project Team for Women's Active Engagement that started last year, I will make a proposal about this to senior management in September, but my role as leader is to get approval from senior management for the initiatives that everyone in the project comes up with and to work toward realizing them. Right now, I am having interviews with various people, talking at roundtable meetings, and conducting awareness surveys using questionnaires. In the process, I am hearing many people say that we need to change the awareness not only of women but also of the male management-level employees. I also believe that mentoring is important for changing the awareness of women. For female employees in the future, rather than a rigid mentoring system, I think that we should create an environment where they can communicate easily. It's not so much that it will take time to prepare a robust system, but that we need to try and make a start on it.

**Noguchi ■** Thank you everyone for giving up a lot of your time for this discussion. Your valuable contributions today will be posted on the Group's website, where I hope that it will be read by people in the younger generation, particularly young women.



Facilitator:  
Shingo Noguchi

## Promotion of Women's Active Engagement Roundtable Discussion: Female Diversity, Employee Growth

**Leah** ■ I have also found it very interesting to hear what everyone had to say. It was extremely valuable to learn that while each region has its own unique culture, we all face the same kinds of difficulties.

**Kathleen** ■ I feel the same way. It was a very enjoyable conversation. I was really glad to hear about people's different approaches, activities, and other information from regions outside of Europe. I hope we have other opportunities like this so we can share best practices on a global scale.

**Noguchi** ■ Thank you, everyone. This discussion has also been very valuable for me in terms of hearing about your expectations of NSHD. In the engagement survey held in November–December 2022,

one of the questions asked if the Company is promoting diversity. Unfortunately, the score for the NSHD Group was relatively low compared to the global manufacturing and chemical industries overall. Looking ahead, the human resources department will refer to the feedback we have received from everyone as we strengthen our hiring process and training to increase the rate of female employees and the rate of female management posts. We will also work to create environments where women and people from the LGBTQ community can work with a sense of ease and security, promote diversity, and increase employee engagement. All of you female managers who have participated in our discussion today

represent our operating companies, and you are also role models for our less experienced employees. I really feel that as you work proactively with integrity in your respective roles, you will help to foster a better corporate culture and promote the further development of the NSHD Group. Let's continue working together as fellow members of the NSHD Group.

➡ Please see here for the full discussion.

**Toshie Furuumi**

After studying pharmacology at university, Ms. Furuumi joined Taiyo Nippon Sanso Corporation. Although the cosmetics business that she wanted to work in was halted, she built her career through sales, marketing, and planning proposals in the medical field. After serving as General Manager of the Marketing and Planning Department in the Medical Division and the Bio-Medical Division, among others, she was appointed to her current role in 2023. She has led the Promotion Project Team for Women's Active Engagement since 2022.

**Kathleen Sels**

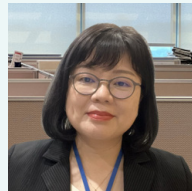
Ms. Sels held various positions in the Sales Division of Linde Gas in Benelux over 18 years from 2001. In 2019, she transferred to Nippon Gases Belgium NV, where she worked as a key Account Manager in the BNF (Benelux & France) region. She was appointed Sales Manager for the Belgium region in December 2022.

**Tomoko Hayakawa**

Ms. Hayakawa joined Nippon Sanso in 1994 when she graduated from university, and was assigned to the Thermos Business Department. In 2003, she was transferred to Thermos K.K., where she was appointed manager of the Administration Department in 2011. In July 2019, she took up her present assignment at the company's third overseas stainless steel vacuum-insulated bottle plant, Vacuumtech Philippines Inc. She is currently stationed in Manila, the Philippines.

**Leah Hull**

With a career of over 20 years mainly in the defense industry, Ms. Hull has worked in diverse roles including plant operation support, safety, quality and cost control, business strategy, and R&D activities. In August 2022, she transferred to Production Operations at Continental Carbonic Products, Inc. as Vice President seeking opportunities to use her career experience in a larger organization.

**Tracy Chou**

Ms. Chou developed her career in the MIS Department, Internal Audit Department, and Accounting Department for more than 10 years. In 2004, she joined Nippon Sanso Taiwan, Inc. She currently serves as General Manager of the Financial & Accounting Division. In 2012, she acquired an EMBA.





# Performance Highlights

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## CFO Message



We will continue to focus on 5 key fields outlined in our MTP, and we will drive improved profitability through our strong project pipeline, solid pricing management, expanded productivity programs, enhanced globalization benefits, and business portfolio optimization.

**Alan David Draper**

Senior Executive Officer  
Group Finance and Accounting Office, and CFO

### Summary FYE2023 and High Level MTP Update:

We, Nippon Sanso Holdings (NSHD), performed very well financially this past FYE2023. Despite a challenging macro and geo-political environment, our nearly 20,000 employees delivered another record financial year. Here are some of the team's key financial achievements compared to prior year:

- Sales increased +24% to ¥1.186T
- Core Operating Income (COI) increased +19.9% from ¥102.7B to ¥123.1B
- Operating income increased +18.1% from ¥101.1B to ¥119.5B
- Net income attributable to owners of the parent increased +14.0% to ¥73.0B
- Operating cash flows increased to ¥187.9B, an increase of +26.4%
- Free cash flows increased to ¥89.8B, an increase of +15.4%
- Adjusted net D/E ratio continued to reduce from 0.94 times to 0.81 times
- Dividend increased for the 9th consecutive year to ¥38 a CAGR of 14%
- Return on Capital Employed after Tax (ROCE after Tax) increased 60bps from 4.8% to 5.4%

We are on track to achieve the key financial metrics outlined in our medium-term plan (MTP) NS Vision 2026. Not unexpectedly, due to unprecedented energy pass through, inflation, cost recovery, and surcharges, our ratio-based margins, EBITDA percent sales and Core Operating Income percent sales, are lagging our MTP expectations. Energy cost pass-through and pricing surcharges increase sales and costs on a yen for yen basis while having no impact on absolute yen profits, but a deteriorating impact on margin percentages. We expect over

## CFO Message

the course of the MTP that energy costs will moderate and normalize, and with this normalization the margin percentages will be in the expected range outlined in NS Vision 2026. However, if higher energy pass-through and surcharges remain in place, we will work hard and do our best to drive the absolute yen profits higher regardless of pass-through and inflationary factors.

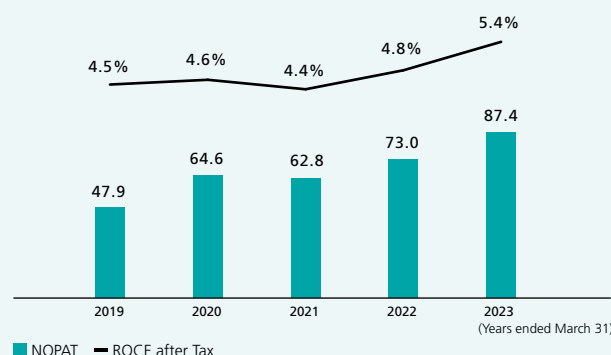
### FYE2024 Targets, Outlook, and Key Lever

Headwinds and challenges remain in FYE2024. Some of our larger concerns are: volatile energy, trade and geopolitical tensions, electronics slowdown, recessionary pressures, elevated inflation, tight labor markets, and upward interest rate trends. Excluding the impact of currency and an accounting deconsolidation of a Japan entity (¥33B), NSHD revenues are expected to grow approximately 2%. COI excluding currency is expected to grow over 5%. Our target is for profits to grow faster than sales as it assists our margin expansion efforts. We expect higher interest expense in the coming quarters due to our debt structure. Our variable interest rate Euro based debt and to a lesser degree, our U.S. based debt, are the main drivers of the anticipated interest expense increase of approximately ¥11B. As of time of this writing, we have 37% variable debt and 63% fixed debt. We will continue to monitor market conditions and adjust our debt structure as appropriate. Given the significantly higher interest expense, net income attributable to owners of the parent is expected to contract 3.5% in FYE2024.

Our adjusted D/E ratio is expected to temporarily increase in FYE2024 to 0.85 times. This is due to the expected conversion of a tranche of hybrid debt to clean debt during the year. Since hybrid debt has 50% characteristics of equity and 50% characteristics of debt, the refinancing has a negative impact on our D/E ratio. The impact of the conversion is about 11 bps using

#### ROCE after Tax and NOPAT

(Billions of yen)



#### ROCE after Tax

(Return On Capital Employed after Tax)

$$= \frac{\text{NOPAT (Net Operating Profit After Tax)}}{(\text{Interest-bearing debt} + \text{Total equity attributable to owners of parent})^*}$$

\* The average of the amounts at the end of the comparative fiscal years of the previous and current fiscal years is used.

Indicator based on profitability and investment efficiency

Mar 31, 2023 balance sheet and therefore without the conversion, our adjusted D/E ratio would be down approximately 7 bps from FYE2023.

Our ROCE after Tax has improved significantly over the past year. The year ended at 5.4% ROCE, an improvement of 60 bps over FYE2022. We are on track and approaching our MTP goal of >6% in FYE2026. Actions in process to further improve ROCE are: solid project pipeline with good financial and economic returns; strong pricing management; expanded productivity programs; globalization advancement; and a continued focus on improving low profit businesses by either restructuring them to achieve improved profitability or exiting those which are neither profitable nor a strategic fit into the NSHD Group.

Pricing management is an important aspect of our success and will remain a key focus going forward. During the last year, we learned to raise prices in more flexible, efficient, effective, and timely manner. Our team shared best practices across

businesses which excited and energized the commercial teams and motivated them to be more confident and successful with price initiatives. The price actions taken were paramount in order to recover unprecedented energy and inflation costs from our customers via pass through, cost recovery, surcharges, and price. Looking forward, we need to maintain price even if energy costs moderate, because wages, maintenance, contract services, materials, crude feed, and nearly all cost types have continued inflation.

### NS Vision 2026 Medium-Term Comments

Our target is to generate ¥730B of accumulated operating cash flows throughout the four years of our MTP NS Vision 2026. We expect 60% of operating cash flow generation to be reinvested into the business through capital investments and acquisitions. Capital investments will be split with approximately 45% on underlying base capital and the remaining 55% primarily on



## CFO Message

growth and strategic initiatives. The remaining 40% of operating cash flow generation will be used toward debt reduction and payment of dividends consistent with the approach of the last few years.

Since March 2019, the NSHD Group reduced its adjusted D/E ratio by 47% from 1.54 times to 0.81 times and during the most recent fiscal year, the ratio improved with a 13 basis point decline. Reducing our debt and improving our adjusted D/E ratio remains a significant objective of the organization and we will continue to reduce our debt consistently over time. I am confident that we will achieve our MTP target adjusted D/E ratio < 0.7 times.

We do not have plans nor do we expect any material change in our capital structure. Our capital and human resource allocation remains consistent with the last several years. Capital projects are assessed and prioritized globally to ensure projects with the best returns are prioritized higher than lower financially returning projects. Human resources are allocated across the business based on growth, opportunities, strategic initiatives,

and special needs. Our dividend increased 9 consecutive years at a 14% CAGR. We will continue to increase our dividend steadily over time and expect to maintain a dividend net income ratio in the 20–30% range. The payout ratio will trend higher as debt is reduced and our adjusted D/E ratio improves.

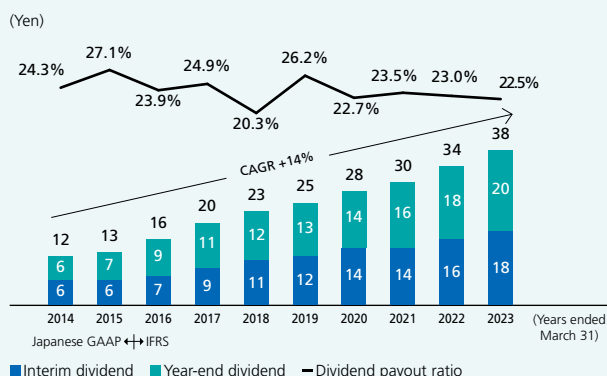
Our vision, “We aim to create social value through innovative gas solutions that increase industrial productivity, enhance human well-being, and contribute to a more sustainable future” is at the core of our MTP NS Vision 2026 where we are focused on 5 fields to help propel our business forward commercially and financially over the coming years. The fields are Sustainability management, Exploring new business toward carbon neutrality, Total Electronics, Operational excellence, and DX initiatives. We are moving forward favorably in all five pillars, but I want to call special attention to Exploring new business toward carbon neutrality. What does this phrase mean? It means that our NSHD Group is using our products, technologies, expertise, and applications to help reduce our customers’



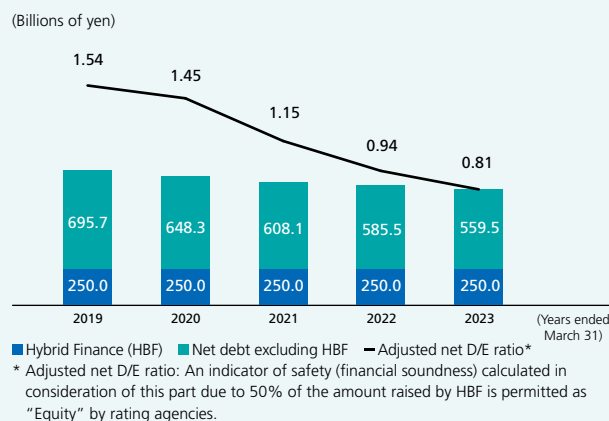
carbon emissions. Approximately 50% of the ¥120B of project back log at March 31, 2023 have sustainable traits. Project back-log consists of approved projects which exceed –¥500MM in expected capital spend or the approximate local currency equivalent.

There are many sustainable opportunities for industrial gases because our customers and the industries in which they participate, such as steel, chemical, cement, glass, automotive, and electronics, are all moving toward carbon neutrality. In addition, government stimulants and subsidies for companies that engage in sustainability projects provide further incentive towards faster and more economical adoption of carbon neutrality initiatives. We are working with our expansive customer base across these industries to identify industrial gas applications and solutions which enable our customers to reduce their GHG emissions and environmental footprint. These projects are exciting for us because they contribute to the benefit of society and are positive for our business performance.

### Dividend Trend



### Net Interest-Bearing Debt



## CFO Message

We have four large approved projects that will contribute towards our future growth. They include three HyCO projects and an air separation unit supporting a Direct Air Capture (DAC) project. We are proud of our team in winning these projects and I know they will continue to identify and compete for similar projects in the future. We analyze project assumptions, market conditions, and ensure the estimated internal rate of returns are reasonable and exceed the respective regional hurdle rates so that once the project is on stream, it will have an accretive impact on profit and ROCE. In addition to the solid economics, these 4 projects are contracted with tier 1 financially stable customers with long term supply contracts and take or pay obligations. The construction period varies by project, but are typically in the 24 to 30 months range from contract signing. These large projects will comprise a large portion of the capital spend over the course of NS Vision 2026.

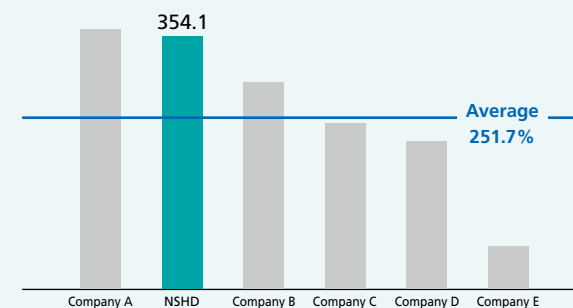
## Closing Remarks

Over the past several years, we have purposely increased our transparency and the details provided to the investment community. This will continue to expand over time as we introduce new reporting aspects across the Group. In addition, the number of investor meetings that we hold with Japanese and non-Japanese investors continues to expand and we attribute a portion of the increase as a result of increased non-Japanese stock ownership. Going forward, we will increase the number of new investor meetings and touch points and will focus on delivering meaningful information to all existing and potential investors.

We will continue with our successful business model, we will continue to focus on 5 key fields outlined in our MTP, and we will drive improved profitability through our strong project pipeline, solid pricing management, expanded productivity programs, enhanced globalization benefits, and business portfolio optimization.

### TSR 10 Years (%)

—Compared to Same-Industry Competitors in Japan and Overseas—



Source: Refinitiv EIKON

(Note) Total Shareholder Return (TSR) = Investor's rate of return for the 10 year period April 1, 2013 to March 31, 2023; includes both stock price change and dividends earned. Note that the calculation includes reinvested dividends



# Performance Highlights

## Overview of Business Results for FYE2023

In the current year under review (from April 1, 2022 to March 31, 2023), the NSHD Group has faced a challenging and unpredictable business environment as a result of geopolitical issues in Ukraine, trade tensions between the United States and China, unprecedented global energy costs, global inflation, and yen depreciation. These items resulted in shipment volume of air separation gases (oxygen, nitrogen, and argon), our main product, decreasing from the previous fiscal year. However, due to solid price management such as pass through, and various productivity initiatives, the NSHD Group achieved the following results for the fiscal year under review.

Revenue on a consolidated basis was ¥1,186.6 billion, core operating income was ¥123.1 billion, operating income was ¥119.5 billion, and net income attributable to owners of the parent was ¥73.0 billion.

As for the impact of foreign exchange rates year-on-year, JPY depreciated against the USD from ¥113.04 to ¥136.00 (+¥22.96, or +20.3%), against the EUR from ¥131.11 to ¥141.62 (+¥10.51, or +8.0%), and against the AUD from ¥83.33 to ¥92.67 (+¥9.34, or +11.2%). As a result, overall revenue and core operating income were favorably impacted by approximately ¥79.6 billion and ¥9.9 billion, respectively.

## Consolidated Business Performance for FYE2023

	Unit	FYE2022	FYE2023	YoY
Revenue	Billions of yen	957.1	1,186.6	+229.5 (+24.0%)
Core operating income* <sup>1</sup>	Billions of yen	102.7	123.1	+20.4 (+19.9%)
Core operating income margin	%	10.7	10.4	(0.3)
EBITDA margin* <sup>2</sup>	%	20.4	19.3	(1.1)
Adjusted net D/E ratio* <sup>3</sup>	Times	0.94	0.81	(0.13)
ROCE after Tax* <sup>4</sup>	%	4.8	5.4	+0.6

\* Please see the following page [P.42](#) for notes.

(Forex rate (full-term) / Average Forex rates)

	Unit	FYE2022	FYE2023	YoY
USD	Yen	113.04	136.00	+22.96
EUR	Yen	131.11	141.62	+10.51

## Figures of Revenue and Income (Loss) by Reportable Segment for FYE2023

Reportable segment	Revenue		Segment income* <sup>5</sup>		YoY factors for increase / decrease
(Unit: Billions of yen)	FYE2022	FYE2023	FYE2022	FYE2023	
Japan	372.0	420.4	30.9	31.6	Volume decreased on air separation gases and LP gas / Increase in revenue due to higher selling prices resulting from higher costs / Shipment volumes for electronic industry were firm / Continued increase in manufacturing and logistics costs due to the impact of rising energy prices and general inflation, etc.
United States	224.8	303.0	27.3	37.0	Shipment volume of air separation gases was flat with prior year / Price revisions in conjunction with cost increases / Revenue from carbon dioxide gas was strong / In equipment and installation, revenue increased significantly in hard goods for welding, and cutting-related products / Electronics-related revenue turned slightly negative
Europe	209.7	272.8	26.3	34.9	Shipment volumes in air separation gases declined due to lower customer requirements / Significant cost increases due to rising energy prices and general inflation, etc. / Absorbed by sales price revision / Productivity initiatives and cost reduction efforts contributed to the positive performance
Asia and Oceania	123.5	159.9	12.8	15.4	Shipment volume in air separation gas remained firm / Sales revenue increased. In LP gas, of which a large portion of sales are in the Australia region, revenue increased due to price increases linked to higher purchase costs and firm trends in shipped volume / In electronic-related business, revenue increased from robust sales for both gases and equipment
Thermos	26.8	30.1	6.4	6.0	(Japan) Milder restrictions for outside activities from spring 2022 / Both sales of portable mugs and sports bottles increased / Sales for the kitchenware products such as frying pans were strong / Segment income decreased because of both rising raw material prices due to inflation and production costs increasing due to the weak yen (Overseas) Revenues are generally firm
Adjustments	0.1	0.0	(1.1)	(2.0)	
Total	957.1	1,186.6	102.7	123.1	

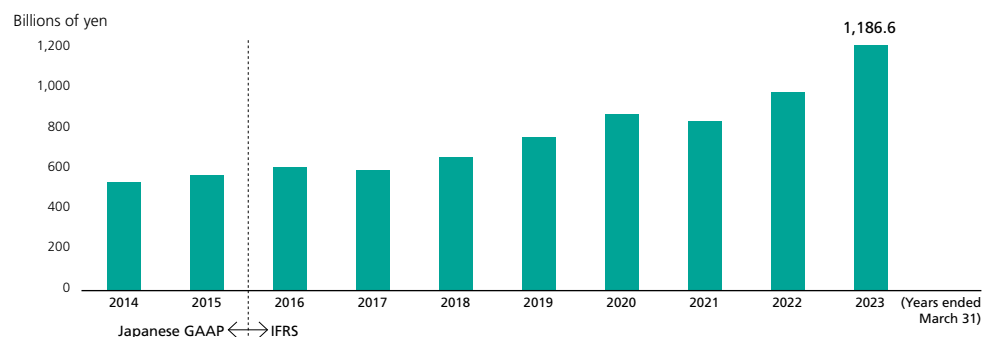


## Performance Highlights

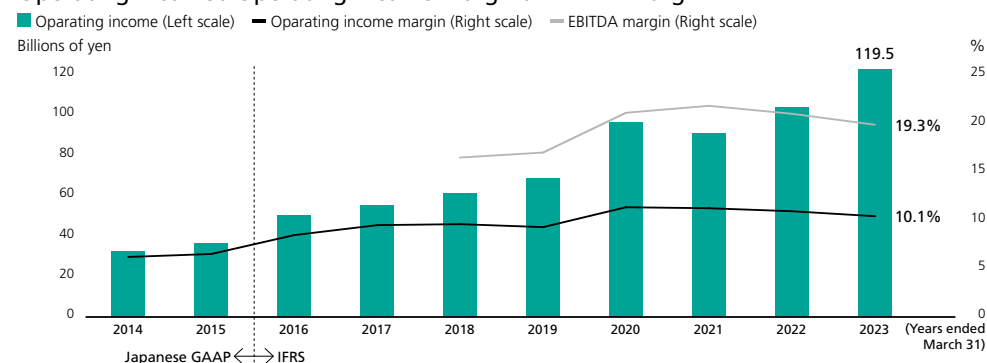
### Main Financial Indicators (FYE2014 to FYE2023)

\* Up to FYE2015, results are presented under Japanese accounting standards (Japanese GAAP), and from FYE2016 onward, results are presented under International Financial Reporting Standards (IFRS).

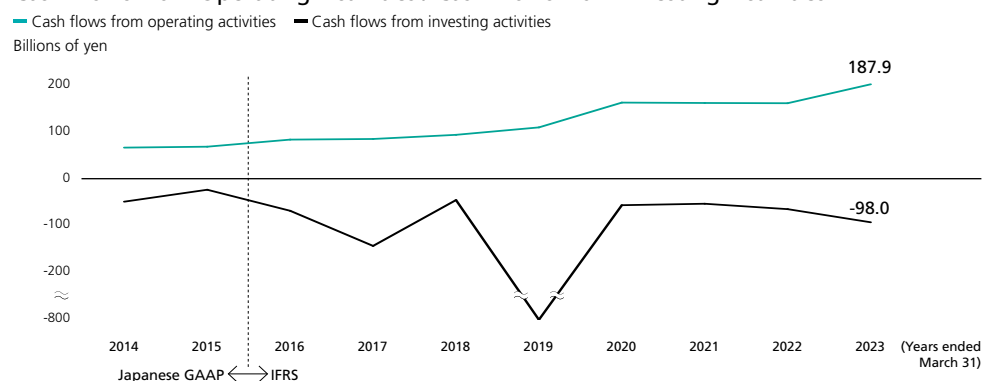
#### Revenue



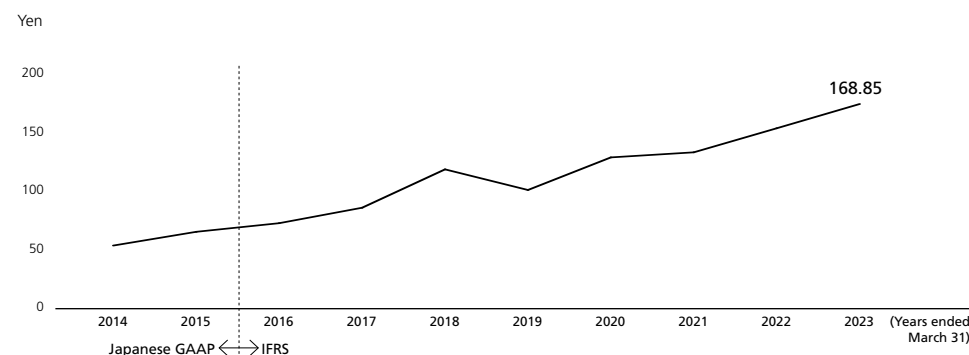
#### Operating Income / Operating Income Margin / EBITDA Margin



#### Cash Flows from Operating Activities / Cash Flows from Investing Activities



#### Basic Earnings per Share (EPS)



\*1 Core operating income is calculated as operating income excluding certain gains and expenses attributable to non-recurring factors (non-recurring items\*).

\* Non-recurring items are costs of structural reform (cost for withdrawal or downsizing business operations and special retirement allowances), losses caused by disasters or serious accidents, and other gains and expenses (such as disposal of idling assets).

\*2 Indicator that shows profitability based on Cash Flow, excluding the impact of M&A and CAPEX. Calculation formula: Earnings Before Interest Taxes, Depreciation and Amortization (Core operating income + Depreciation and amortization) / Revenue

\*3 Indicator of financial soundness. Calculation formula: ((Interest-bearing debt – equity-type debt\*) – cash and cash equivalents) / (equity attributable to owners of the parent + equity-type debt\*)

\*1 Equity-type debt: The amount of debt procured by hybrid finance that has been recognized as equity credit by rating agencies. In this fund procurement, rating agencies have recognized equity credit for 50% of the procured amount.

\*2 Hybrid finance: A form of debt financing that has features resembling equity, such as voluntary deferral of interest, extremely long-term redemption periods, and subordination during liquidation or bankruptcy procedures. This kind of financing does not cause stock dilution, and a certain ratio of the funds procured in this way can be recognized as equity credit by rating agencies provided that certain conditions are met.

\*4 Indicator of capital efficiency. Calculation formula: Core operating income after Tax (+ Dividend received) [NOPAT] ((Core operating Investment income/loss from Equity in earnings (losses) of affiliated companies included in Core operating income) × (1 – effective tax rate) + Investment income / loss from Equity in earnings (losses) of affiliated companies included in Core operating income + Dividend received)) / ((Interest-bearing debt – Total equity attributable to owners of parent)\*1) [Capital employed]

\*1 The average of the amounts at the end of the comparative fiscal years of the previous and current fiscal years is used.

Note that return on capital employed (ROCE) had been disclosed and utilized until FYE2022. However, for the purpose of comparability with our peers, ROCE after Tax is disclosed and utilized from FYE2023. Calculation formula: ROCE = Core operating profit / (outstanding interest-bearing debt + equity attributable to owners of the parent\*2)

\*2 Equity attributable to owners of the parent is calculated as net assets – non-controlling interests.

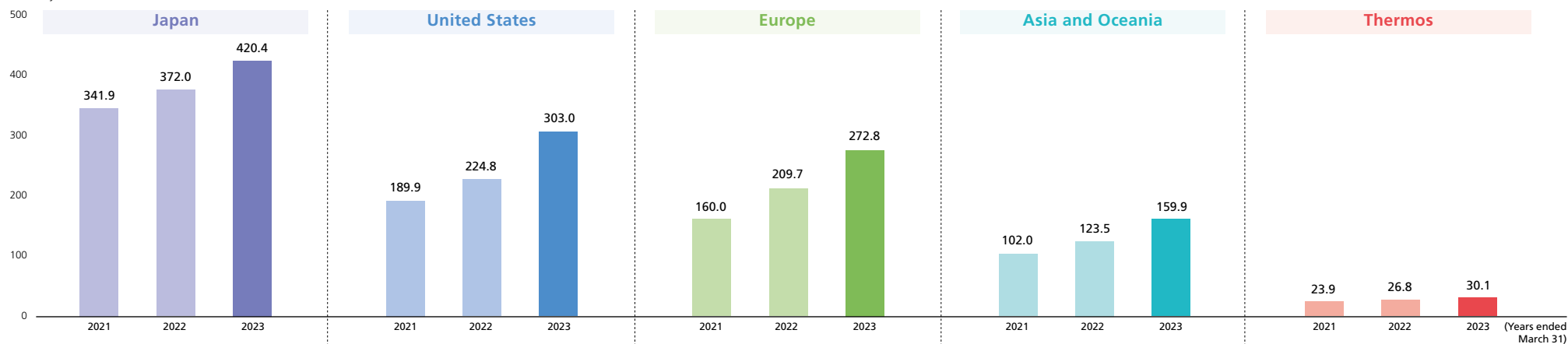
\*5 Segment income represents core operating income, which is calculated by excluding from operating income certain gains or losses attributable to non-recurring factors such as losses arising from business withdrawal or downsizing.

## Performance Highlights

## Performance by Segment (FYE2021 to FYE2023)

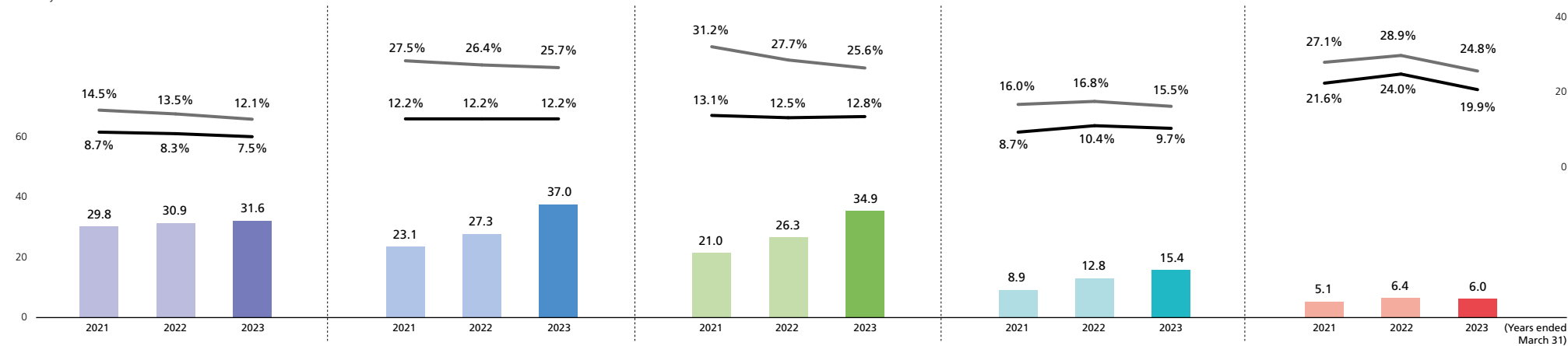
## Revenue

Billions of yen



## Core Operating Income / Core Operating Income Margin / EBITDA Margin

Billions of yen



## Performance Highlights

Indicators with ☒ mark have been assured by KPMG AZSA Sustainability Co., Ltd.

Please see here for detailed data.

Sustainability Data: [Please see here.](#)

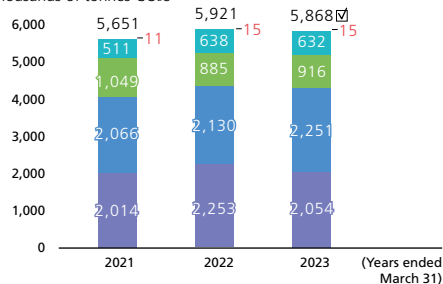
## Main Non-Financial Indicators (FYE2021 to FYE2023)

■ Japan ■ United States ■ Europe ■ Asia and Oceania ■ Thermos

Reporting boundary: Nippon Sanso Holdings and its main consolidated subsidiaries

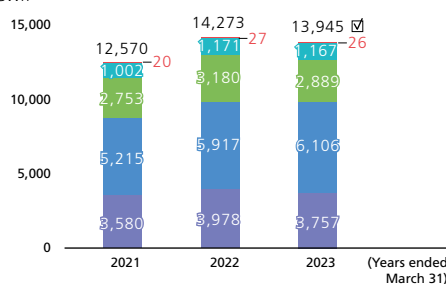
## Environment

## GHG Emissions

Thousands of tonnes CO<sub>2</sub>e

## Energy Consumption

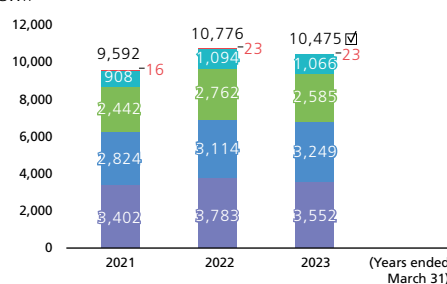
GWh



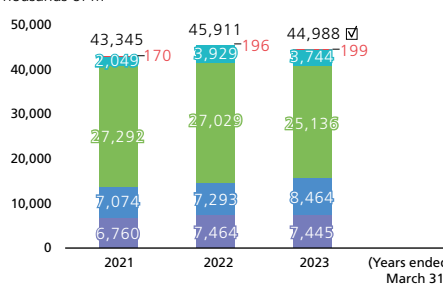
\* Due to a revision in the method of aggregation, the figures presented in previous fiscal years have been retrospectively amended.

## Electricity Consumption

GWh



## Water Withdrawal

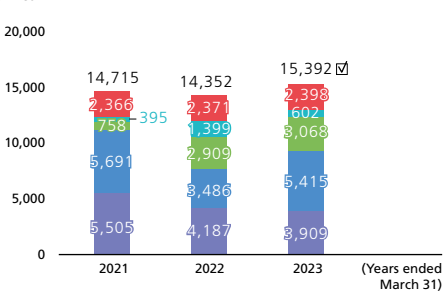
Thousands of m<sup>3</sup>

Reporting boundary: Gas production plants operated by consolidated subsidiaries of Nippon Sanso Holdings in Japan, business locations with facilities specified under the Water Pollution Prevention Act, and main overseas consolidated subsidiaries

## Environment

## Waste Generated (Including Valuable Materials)

Tonnes



\* Waste generated by the consolidated subsidiaries of Nippon Sanso Holdings in Japan is the volume for which the Company issued a manifest.

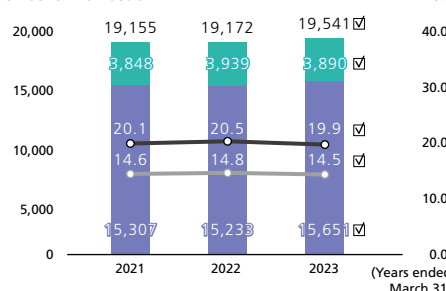
\* Due to restrictions on availability of information, of the consolidated subsidiaries presented on P91, Continental Carbonic Products, Inc. is not included among the aggregated total.

## Society

## Number of Employees by Gender (Consolidated)

Number of individuals

%



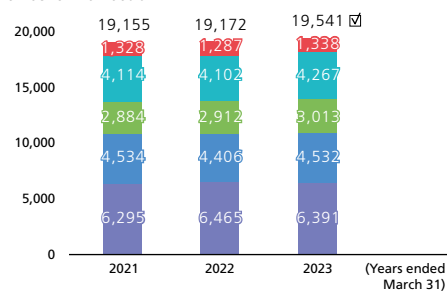
■ Male (Left scale) ■ Female (Left scale)

— Female employees as a percentage of the total number of employees (Right scale) — Female managers as a percentage of total managerial positions (Right scale)

\* Numbers above are aggregated from actual figures of the Nippon Sanso Holdings Group companies as of the end of each fiscal year. Due to differences in the reporting periods, part of the data includes figures as of the end of December.

## Number of Employees by Segment (Consolidated)

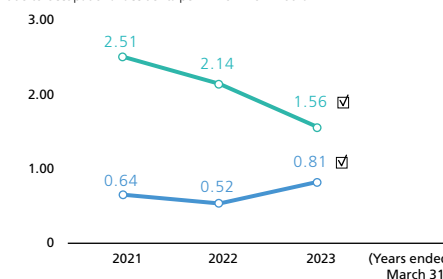
Number of individuals



\* Numbers above are aggregated from actual figures of the Nippon Sanso Holdings Group companies as of the end of each fiscal year. Due to differences in the reporting periods, part of the data includes figures as of the end of December.

## Frequency Rate of Occupational Accidents Resulting in Lost Workdays\*

\* The frequency rate expresses the frequency of accidents resulting in lost workdays in a fiscal year, calculated as the number of injuries / fatalities due to occupational accidents per million work hours



— Taiyo Nippon Sanso Group — Nippon Sanso Holdings Group

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

\* To improve the accuracy of data aggregation, values presented in previous fiscal years have been retroactively amended.

GHG emissions: GHG emissions in Japan are calculated using emission factors provided in Japan's Act on Promotion of Global Warming Countermeasures (for electricity, up until FYE2021 the basic emission factors for each electricity provider and from FYE2022 the adjusted emission factors for each provider). For GHG emissions overseas, Scope 1 emissions are calculated using emission factors set forth in Japan's Act on Promotion of Global Warming Countermeasures. Scope 2 emissions are calculated using country-specific emission factors published by the IEA. However, for electricity in Europe, beginning FYE2021 a separate emission factor for each electricity provider is used, and emissions are calculated making reference to the Guarantee of Origin. Furthermore, from FYE2022, emissions from electricity use at Taiyo Gases Co., Ltd. and Top Thermo Manufacturing (Malaysia) Sdn. Bhd. are calculated using emissions coefficients for each electricity provider, while emissions from electricity use in the United States, China, Taiwan, and Singapore are calculated using published grid coefficients for each country.





# Sustainability

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## CSO Message

**By leveraging the technology of NSHD, “The Gas Professionals,” we will help find solutions for environmental and social issues with a vision extending beyond 2050.**

### Progress on ESG Essential for the Next 100 Years

Our fundamental approach to sustainability is to balance economic value with social and environmental value, enhancing both values at the same time. With global environmental problems and various social issues in need of solutions, the importance of contributing to the attainment of the SDGs as a corporation is increasing. Additionally, initiatives on the non-financial front have become as important for a corporation's sustainable growth as financials, and the promotion of environmental, social, and governance (ESG) initiatives is also essential. With a history of more than 100 years, NSHD sees a need to gear up for the next century.

With the transition to a holding company structure in October 2020, the NSHD Group, active on the global stage, has broadened its horizons to further enhance efforts at sustainability, revising its Code of Conduct and other policies. In 2021, we reorganized the sustainability framework and established the Group Sustainability Management Office. Moreover, NSHD endorsed the Task Force on Climate-related Financial Disclosures (TCFD) in 2019, signed the United Nations Global Compact (UNGC) in 2022, and has participated in other initiatives. Regarding governance, as of 2022, five of our nine directors were outside directors, including two women. These ESG-related initiatives have been given high marks by external entities that evaluate sustainability, raising NSHD's score on ESG matters.

In formulating our medium-term management plan for 2022, we have revisited our materiality related to sustainability. Including the three preconditions that form the premise of our corporate existence, namely respect for human rights, safety and security, and corporate ethics, we have identified 24 key issues (materialities). In light of this, in the medium-term management plan NS Vision 2026, we have prominently featured non-financial initiatives, launched eight non-financial programs, and set Group KPIs for major

materialities.

Climate change, water security, effective resource utilization, biodiversity, and other global environmental sustainability issues are of paramount importance. While advancing our initiatives, we will support our customers in their global environmental initiatives through our business solutions (i.e., industrial infrastructure). To reduce GHG emissions, NSHD will further improve the energy efficiency of its production equipment and expand the use of renewable energy. Through our four core technological domains—combustion, hydrogen manufacturing, CO<sub>2</sub> capture, and oxygen manufacturing—we will assist our customers in their environmental contributions, aiming for a carbon neutral society by 2050 and an eye on the future beyond 2050.

As a corporate group that handles industrial gases, delivering to our customers a safe, secure, and reliable supply of gas is the cornerstone of our business. With the mindset that “selling gas is selling safety,” we will ensure safety and security while contributing to a healthy, safe, and secure society and lifestyles.

NSHD possesses many advanced technologies cultivated over the years. Moreover, Thermos contributes to lowering environmental impact by reducing the use of plastic by encouraging people to carry their own bottles, and by conserving energy with its superior vacuum-insulation technology (for maintaining hot or cold temperatures). The Company also proposes a more abundant lifestyle by offering sustainable products through its wide range of contact points with consumers. Moreover, we believe there is still vast potential for innovation in the industrial gases sector. We will address environmental and social problems through our products and services that utilize these technologies.

A year has passed since the start of the medium-term management plan, and we have had a smooth start on the non-financial side of the plan. NSHD has been able to achieve the KPIs ahead of



#### Takeshi Miki

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

schedule in safety (Safety First Program) and global environmental contribution (Carbon Neutral Program II).

As “The Gas Professionals,” NSHD aims for sustainable growth and further expansion of corporate value on the path to a pleasant future for people, society, and the earth, as outlined in its vision, by providing innovative gas solutions.

# Sustainability Initiatives
















For more on our initiatives related to sustainability, please refer to here.

Sustainability Topics: [➔ Please see here.](#)

In NS Vision 2026, NSHD identified sustainability management as one of its most important priorities. Based on our fundamental approach to balancing and enhancing both economic value and social and environmental value, we have identified materialities (priority issues) related to sustainability, set targets, and created programs and KPIs to achieve these targets. We cover issues related to enhancing our non-financial value, such as the Ten Principles of the UNGC, as well as the risks and opportunities identified in TCFD scenario analysis.

## List of Materialities and Key Initiatives

In the materialities we reviewed in 2021, we identified 24 priority issues based on the preconditions for our existence as an enterprise, namely respect for human rights, safety and security, and corporate ethics. To address these identified priority issues, we created eight non-financial programs for the entire NSHD Group to undertake. Under our medium-term management plan, we contribute to the realization of a sustainable society by reinforcing and augmenting initiatives to advance these eight programs.

	Materiality	Principal Initiatives	Relevant SDGs
E	Providing products and services that contribute to resolving environmental and social issues / Climate change mitigation and adaptation / Effective use of resources and prevention of pollution / Conservation of water resources / Conservation of biodiversity	Development and sales expansion of products that contribute to solutions for environmental and social issues / Reduction of GHG emissions / Further promotion of energy conservation and efficiency of energy use / Promotion of the use of renewable energy and green power / Carbon capture and offsets / Appropriate waste management and recycling / Efficient utilization of water	     
S	Safety and Security / Product and service safety and quality / Respect for Human Rights / Sustainable supply chain / Diversity and inclusion / Development and maintenance of human resources / Employee and family health / Improvement of employee engagement / Contribution to regional and industrial development as social infrastructure / Provision of comfortable and prosperous lifestyles / Coexistence with local communities / Improvement of productivity and promotion of production optimization / Technology and R&D capabilities that support the creation of customer value and social value / Pursuit of customer satisfaction / Promotion of initiatives for digital innovation / Protection and effective utilization of intellectual property	Initiatives to ensure safe and reliable supply / Reinforcement of quality assurance and management systems / Sharing information on workers' and other accidents and best practices / Safety education / Investment for safety / Creation of environments to promote innovation and diversity / Embrace and motivate diversified talents / Promote cross-regional talent exchanges / Enhance successor development plans / Health management initiatives / Contribution to the medical field / Initiatives for resolving social issues / Provision of comfortable and prosperous lifestyles / Promotion of sophisticated ICT use / Strategic acquisition of intellectual property and promotion of use in business	     
G	Corporate Ethics / Strengthening communication with stakeholders / Strengthening information security measures	Rigorous employee education and training / Prevent compliance violations / Detect compliance violations through disseminating and operating the whistleblowing system / Dialogue with shareholders and investment analysts / Enhancement of information disclosure / Maintenance and improvement of information security systems	  

## Sustainability Initiatives

For more on the eight non-financial programs, please refer to here.

Eight Non-Financial Programs: [➡ Please see here.](#)

### NSHD Group's Eight Non-Financial Programs

The global movement toward sustainability is gaining momentum, as represented by the SDGs and ESG. Amid discussions on how to address new challenges such as climate change, corporations need to quantify these problems in order to measure progress on resolving them. The NSHD Group has established eight non-financial programs to pursue under sustainability management, one of the key strategies in the medium-term management plan NS Vision 2026. By steadily executing these eight programs, we will steadily advance the Group's sustainability initiatives.

#### (1) Reduce GHG Emissions of the NSHD Group

##### Carbon Neutral Program I

Aiming for carbon neutrality by 2050, and considering international social demands for GHG reduction, NSHD has set the following GHG emission reduction targets:

##### GHG emission reduction targets (compared to FYE2019)

- 18% reduction (target for FYE2026)
- 32% reduction (target for FYE2031)

##### Main Measures

(1) Further promotion of energy conservation and improvement in energy efficiency, (2) Promotion of renewable energy use and greening of electricity, and (3) CO<sub>2</sub> capture and carbon offsets

#### (2) Lower GHG Emissions of Customers through Environmentally Friendly Product Offerings

##### Carbon Neutral Program II

We are working toward a goal of recording the GHG reduction contributions that exceed the GHG emissions of the NSHD Group through FYE2026. To this end, the NSHD Group is moving aggressively to help its customers reduce their GHG emissions.

##### Environmentally Friendly Products and Services

(1) Manufactured products and services: GHG reduction contribution through gas applications developed by the NSHD Group, and (2) Industrial gases: GHG reduction contribution utilizing the properties of industrial gases

#### (3) Reduce Waste

##### Zero Waste Program

NSHD is keen to reduce waste emissions, landfill disposal, etc., by promoting the 3Rs (reduce, reuse, recycle) of waste disposal at each operating company.

For example, in Japan, we started an initiative called Halve Amount of Landfill Disposal (HALD) last fiscal year, aiming to halve the amount of industrial waste disposed of in landfills by the Taiyo Nippon Sanso Group by FYE2026. We aim to achieve this goal by reducing industrial waste and through more recycling.

#### (4) Effectively Use Water Resources

##### Sustainable Water Program

The NSHD Group regards conservation of water resources as one of its materialities, and is committed to conserving water resources in its corporate activities through the more efficient use of water.

Since the operation of ASUs requires the use of cooling water, we are specifically working on ways to more effectively use water resources and mitigate water risks by thoroughly recycling cooling water and replacing equipment with higher-efficiency plants.

#### (5) Nurture a Safety Culture

##### Safety First Program

For the NSHD Group, which handles various high-pressure gases, safety forms the foundation of its corporate existence. With the mindset that "selling gas is selling safety," we have designated the frequency rate of accidents resulting in lost workdays as an essential safety KPI for maintaining a safe and reliable supply of gases.

Lost time injury rate: 1.6 or lower (target for FYE2026)

#### (6) Initiatives Aimed at Improving Quality and Reliability

##### Quality Reliability Program

To improve quality and reliability, we endeavor to permeate a quality-oriented culture and further improve the awareness of quality in our employees. We also advance the introduction of automation technologies, such as laboratory information management systems. Currently, we are focusing on our quality audit program\* that began in FYE2022 and is being implemented across the entire NSHD Group.

\* Each operating company conducts quality audits of applicable business sites in three-year cycles based on the priority audit items decided by NSHD.

#### (7) Diversification of Human Resources and Enhancement of Engagement

##### Talent Diversity Program

The NSHD Group proactively welcomes diverse talents, cultures, and values as it strives to train employees into "The Gas Professionals." We are particularly focused on promoting the active participation of women in the workplace, for which we have set KPIs, and are promoting the exchange of personnel across regions.

##### Women's Participation KPIs

Rate of female employees:	Rate of female management posts:
22% (target for FYE2026)	18% (target for FYE2026)
25% (target for FYE2031)	22% (target for FYE2031)

#### (8) Permeation and Thorough Implementation of Compliance

##### Compliance Penetration Program

The NSHD Group positions respect for human rights, safety and security, and corporate ethics as preconditions for its corporate existence. Each operating company offers various compliance training courses aimed at getting employees to expand their awareness of compliance and acquire correct knowledge.

With a shared understanding that ensuring all employees take compliance training is the basis for establishing compliance, we have set rate of receiving compliance training as one of the non-financial KPIs in our medium-term management plan.



## Sustainability Initiatives

For more on the eight non-financial programs, please refer to here.

Eight Non-Financial Programs: [➔ Please see here.](#)

### List of Non-Financial Programs and Non-Financial KPIs

Management monitors KPIs related to the eight non-financial programs in our medium-term management plan. Through this monitoring, we aim to strengthen and enhance the NSHD Group's sustainability management and move toward the realization of a sustainable society.

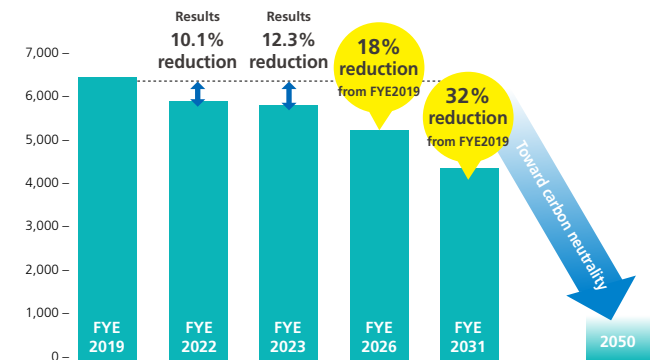
	Non-Financial Programs	Initiative	Non-Financial KPIs	NS Vision 2026 Final-Year Targets (FYE2026)	FYE2023 Results
E	Carbon Neutral Program I	Reduce the Group's GHG emissions	Reduction rate of GHG emissions* <sup>1</sup>	18%	12.3%
	Carbon Neutral Program II	Reduce customer GHG emissions through environmental product offerings and applications	Lower customer GHG emissions	Lower customer GHG emissions through environmental product offerings and applications > NSHD Group GHG emissions	7,308,000 > 5,868,000 t-CO <sub>2</sub> e
S	Safety First Program	Reduction in lost time injury rate	Lost time injury rate* <sup>2</sup>	≤ 1.6	1.56
	Talent Diversity Program	Utilization of diverse talent	Rate of female employees	≥ 22%	19.9%
			Rate of female management posts	≥ 18%	14.5%
G	Compliance Penetration Program	Compliance education and enforcement	Rate of receiving compliance training	100%	99.7%

\*<sup>1</sup> 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.

\*<sup>2</sup> 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.

### Carbon Neutral Program I GHG Emission Reduction Targets

GHG emissions (Thousands of tonnes CO<sub>2</sub>e)



\* 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)

### Carbon Neutral Program II

Realize a Reduction in GHG Emissions through Environmental Products, Offerings and Applications\*

GHG Emission Reduction Contribution		
FYE2023	Total: 7,308 thousands of tonnes CO <sub>2</sub> e	
	Products and services 3,556 thousands of tonnes CO <sub>2</sub> e	Industrial gases 3,752 thousands of tonnes CO <sub>2</sub> e
FYE2022	Total: 6,865 thousands of tonnes CO <sub>2</sub> e	
	Products and services 3,176 thousands of tonnes CO <sub>2</sub> e	Industrial gases 3,689 thousands of tonnes CO <sub>2</sub> e
FYE2021	Total: 5,066 thousands of tonnes CO <sub>2</sub> e	
	Products and services 2,892 thousands of tonnes CO <sub>2</sub> e	Industrial gases 2,174 thousands of tonnes CO <sub>2</sub> e

\* Please refer to [here](#) for a breakdown of environmental products, offerings, and applications.

# TCFD Reporting

For more on the report in line with the recommendations of the TCFD, please refer to here.  
Report in Line with the Recommendations of the TCFD: [➡ Please see here.](#)

**NSHD is committed to realizing a comfortable future for people, society, and the earth by engaging in activities to reduce environmental impact, conserve energy, and expand the number of products that contribute to the reduction of GHG emissions. Furthermore, in November 2019 NSHD endorsed the TCFD\* and has since endeavored to improve information disclosure. Going forward, we will strive to enhance corporate value across the Group through not only internal improvement activities but also dialogue with stakeholders while augmenting information disclosure in line with the TCFD recommendations.**

\* The TCFD announced its final recommendations report in June 2017, which recommends that all companies and other organizations disclose information about governance, strategy, risk management, and indicators and targets regarding climate change-related risks and opportunities.

## Governance

The Company has established a governance structure for climate change issues, and the entire Group is engaged in initiatives on climate change. Up until now, sustainability activities have been promoted under the supervision of the CSO. Moreover, the Company established the Group Sustainability Management Office in November 2021, and the Sustainable Development Committee in July 2023, to provide general oversight of sustainability activities, such as deliberation and formulation of climate change-related strategies and risks.

## Strategy

- Based on the TCFD recommendations, we identified opportunities and risks under the transition scenario (under 2°C scenario) and the physical climate scenario (4°C scenario), then performed an assessment of the opportunities and risks, mainly for the gas business, in each region based on an indicator of “potential for impact” × “magnitude of impact.” Significant negative financial impacts to the Company were considered to be risks, while positive impacts were treated as opportunities.
- For the transition scenario, the Sustainable Development Scenario (SDS) of the International Energy Agency (IEA) was used, and for the physical climate scenario, the Fifth Assessment Report (RCP8.5) of the UN's Intergovernmental Panel on Climate Change (IPCC) was used as a reference for impact analysis.
- Our website discloses the results of our analysis and synthesis of the NSHD Group's opportunities and risks and their possible impact on our procurement, operations, and products and services.

## Signatory to the UNGC

NSHD signed the UNGC and was registered as a participating company in January 2022.

For more on the UNGC, please refer to here.

Participation in Initiatives: [➡ Please see here.](#)

## Risk Management

We will construct a Groupwide risk management structure, and will identify, assess, and manage climate-related risks.

### Climate Change Risk Identification, Assessment, and Management Process

Committees	Risk Identification, Assessment, and Management Process
<ul style="list-style-type: none"> <li>Global Strategy Review Committee</li> <li>Global Risk Management Committee</li> <li>Technological Risk Liaison Committee</li> </ul>	<ul style="list-style-type: none"> <li>Construction of risk management system in Nippon Sanso Holdings Group companies to enable early discovery of long-term risk, prevention, and rapid response in cases of risk materialization</li> <li>Risk importance determined by occurrence frequency × Financial or strategic impact</li> <li>Annual Global Strategy Review Committee meeting (Chairperson: President CEO) to determine financial or strategic impact on business</li> <li>Specific countermeasures for items determined by the Global Strategy Review Committee determined at the Technological Risk Liaison Committee meeting held between Nippon Sanso Holdings and operating companies, then deployed globally</li> </ul>

## Indicators and Targets

In the medium-term management plan, we will set out indicators and targets to be used for assessing and managing risks and opportunities, then use them to evaluate our progress.

Initiatives	Disclosed Details
<ul style="list-style-type: none"> <li>We disclose Scope 1, Scope 2, and Scope 3 GHG emissions. <a href="#">➡ P.88</a></li> </ul>	<ul style="list-style-type: none"> <li>Sustainability data <a href="#">➡ P.87</a></li> <li>Independent assurance report <a href="#">➡ P.94</a></li> </ul>
<ul style="list-style-type: none"> <li>We disclose non-financial KPIs in our medium-term management plan. <a href="#">➡ P.9</a></li> </ul>	<ul style="list-style-type: none"> <li>Eight non-financial programs and non-financial KPIs <a href="#">➡ P.48</a></li> </ul>



# Value Creation in Each Business

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## Note: Changes in Names of Reportable Segments

The names of reportable segments were previously "Gas Business in Japan," "Gas Business in the United States," "Gas Business in Europe," "Gas Business in Asia and Oceania," and "Thermos Business." Effective from FYE2023, these names were changed to "Japan," "United States," "Europe," "Asia and Oceania," and "Thermos," respectively.

There is no impact on the segment information from this change.

The names of reportable segments for the previous fiscal year (FYE2022) have been changed to conform to the current fiscal year's presentation.

# Top Messages from the Five Segments



## Kenji Nagata

Member of the Board,  
Nippon Sanso Holdings Corporation  
President, Taiyo Nippon Sanso Corporation

As The Gas Professionals, our vision is to remain a company that advances industries and helps solve issues in society by maximizing the potential of gas, beginning with industrial gas. To this end, we are reinforcing core businesses, mainly industrial gas, while pursuing business optimizations. TNSC provides solutions that improve productivity, efficiency, safety, and security for its customers by supplying not just industrial gas, but the functions and benefits it offers. Moreover, we are keen to grow through the provision of new products and solutions that contribute to the realization of carbon neutral society and surpass the borders of the gas business while innovating with a focus on gases. We strive to enhance corporate value through sustainable business management that enhances employee engagement from a solid foundation in compliance that we are strengthening along with initiatives for the environment, safety, security and quality.



## Scott Kallman

Member of the Board,  
Nippon Sanso Holdings Corporation  
Chairman and CEO,  
Matheson Tri-Gas, Inc.

The Matheson Tri-Gas (MTG) business model is supported by our strategic pillars of Safety, Quality, and Profitable Growth, all aligned with the NSHD Strategic Focus Fields. Our Safety and Quality Processes promote the implementation of best practices in which we strive to achieve Operational Excellence resulting in safer, more efficient operations and related cost reductions. This foundation of Safety and Quality is leveraged to support sales growth to the semiconductor market sector through the Total Electronics Focus Field and to capture new growth opportunities across the business in support of the NSHD Carbon Neutral goals. This effort, along with ongoing growth in our industrial market sector, presents exciting future prospects to expand the sales and profitability of MTG and NSHD to the benefit of our most important Customer, the NSHD Shareholders.



## Eduardo Gil Elejoste

Member of the Board,  
Nippon Sanso Holdings Corporation  
Chairman and President,  
Nippon Gases Euro-Holding S.L.U.

Nippon Gases continues to attain new carbon neutral business opportunities, amid having dealt with soaring energy prices and other significant economic and political challenges in FYE2023. Building on biomethane, green hydrogen, and greening combustion, these new business opportunities allow us to continue providing the highest-quality industrial gas solutions, while contributing our part in achieving a carbon neutral world. Additionally, we work tirelessly to deserve and keep the trust of society and the communities in which we operate, by improving the performance of our organization with people and operational excellence—ensuring that our employees adhere to the highest standards of safety and compliance and by continuing to promote diversity and inclusion.



## Tsutomu Moroishi

Senior Executive Officer,  
Group Corporate Planning Office\*

In Asia and Oceania, we operate in 12 countries and regions. We will continue to invest aggressively in new plants because of the strong growth potential in these markets. While continuing to expand our product lineup, we aim to become a major player in each country and region. Beginning in the current fiscal year, we changed our organization into a four subsegment structure with the aim of managing our operations more closely attuned to trends in each regional market.

While thoroughly ensuring safety at our plants and managing quality and governance, we aim to create workplaces where our diverse employees can thrive through the building of regional networks.

We propose solutions to our customers that utilize Group technologies, and aim to reduce power use at our factories as part of our efforts to realize a carbon neutral society.

\* The Oceania and Asia Management Division has been established within the Group Corporate Planning Office to oversee business promotion for companies in Asia and Oceania.



## Yuji Kataoka

President, Thermos K.K.

At Thermos K.K., we propose new ideas for products and services with high levels of safety and quality in response to changes in lifestyles throughout the pandemic, and we endeavor to expand recognition of the Thermos brand by expanding business overseas.

Moreover, we are focused on training personnel who can take on new challenges. At our factories, we are reducing the amount of electricity and water used by improving manufacturing efficiency. We are also committed to collecting used stainless steel vacuum-insulated bottles with an eye toward realizing a circular society.

Through our business activities, we aim to reduce the burden on the global environment while facilitating abundant lifestyles in society.



# Business Characteristics of Each Segment

For more financial information, please refer to our results briefing materials.

IR Information: [Please see here.](#)

Business: [Please see here.](#)

## Characteristics of Each Segment (Business Operation Structure of Four Global Regions and Thermos)

	FYE2023 (Billions of yen)	Breakdown of Sales by Industry (FYE2023: Cumulative basis)	Segment Strategy	Business Environment* * Key considerations as of the start of FYE2024
Japan	<p>Our aim is to maximize value by focusing on measures to optimize profitability, along with an emphasis on “strengthening core business through profitability improvement” and “growth exploration and expansion.”</p> <p>Revenue: <b>420.4</b></p> <p>Segment operating profit: <b>31.6</b></p> <p>Segment operating profit margin: <b>7.5%</b></p>	<ul style="list-style-type: none"> <li>Steel and metals ..... 15%</li> <li>Automobiles and other transportation equipment ..... 5%</li> <li>Electronics ..... 27%</li> <li>Food and foodstuffs ..... 1%</li> <li>Healthcare ..... 9%</li> <li>Chemicals and energy ..... 26%</li> <li>Other ..... 17%</li> </ul>	<p><b>Growth Strategy</b></p> <ul style="list-style-type: none"> <li>Strengthen new products and services</li> <li>Expand the solutions business</li> <li>Advance development of carbon neutral-related products</li> <li>Develop business in domestic growth markets (electronics, stable isotopes and biotech)</li> </ul> <p><b>Business Changes</b></p> <ul style="list-style-type: none"> <li>Review low-earnings businesses</li> </ul>	<p><b>Anticipated Opportunities</b></p> <ul style="list-style-type: none"> <li>Equipment and installation projects in electronics business</li> <li>Demand for electronic materials gases for next-generation semiconductors</li> </ul> <p><b>Concerning Risks</b></p> <ul style="list-style-type: none"> <li>Shrinking industrial gas market scale</li> <li>Sharp increases in energy prices</li> <li>Supply chain disruptions due to procurement difficulties and raw material shortages</li> </ul>
United States	<p>Matheson Tri-Gas will aggressively tap into new business opportunities through a combination of its vertical integration and cross-selling strategies, based on a culture that prioritizes best practices in Safety, Quality, and Profitable Growth.</p> <p>Revenue: <b>303.0</b></p> <p>Segment operating profit: <b>37.0</b></p> <p>Segment operating profit margin: <b>12.2%</b></p>	<ul style="list-style-type: none"> <li>Steel and metals ..... 8%</li> <li>Automobiles and other transportation equipment ..... 10%</li> <li>Electronics ..... 7%</li> <li>Food and foodstuffs ..... 13%</li> <li>Healthcare ..... 7%</li> <li>Chemicals and energy ..... 13%</li> <li>Other ..... 42%</li> </ul>	<p><b>Growth Strategy</b></p> <ul style="list-style-type: none"> <li>Achieve operating leverage: Establish vertical integration in targeted markets allowing cross-selling through all modes of gas supply</li> <li>Develop the on-site portfolio: Offset economic volatility with the stable in-flow of fees related to these projects</li> <li>Pursue select M&amp;A opportunities: Acquire independent distribution businesses that supplements existing bulk capabilities again achieving market vertical integration</li> </ul>	<p><b>Anticipated Opportunities</b></p> <ul style="list-style-type: none"> <li>Cross-selling of cryogenics, dry ice and freezing equipment to the food processing market</li> <li>Expanded gas sales to semiconductor manufacturers due to the CHIPS and Science Act</li> <li>Capital projects in support of carbon neutral initiatives related to the Inflation Reduction Act</li> </ul> <p><b>Concerning Risks</b></p> <ul style="list-style-type: none"> <li>Trends in overall U.S. economy toward a possible inflation-induced recession</li> <li>Continued cost increases related to production and distribution</li> <li>Labor shortages of key skill sets necessary to sustain overall growth</li> </ul>
Europe	<p>Nippon Gases aims to grow further through its strategic pillars, namely Reinforced Governance, People Excellence, Optimized Base Business, Operational Excellence, and Profitable Growth.</p> <p>Revenue: <b>272.8</b></p> <p>Segment operating profit: <b>34.9</b></p> <p>Segment operating profit margin: <b>12.8%</b></p>	<ul style="list-style-type: none"> <li>Steel and metals ..... 19%</li> <li>Automobiles and other transportation equipment ..... 1%</li> <li>Electronics ..... 3%</li> <li>Food and foodstuffs ..... 19%</li> <li>Healthcare ..... 10%</li> <li>Chemicals and energy ..... 18%</li> <li>Other ..... 30%</li> </ul>	<p><b>Growth Strategy</b></p> <ul style="list-style-type: none"> <li>Focus on resilient markets, optimize base business</li> <li>Invest in application technologies</li> <li>Evaluate marketing mix and product portfolio</li> <li>Efficiently allocate resources to business needs</li> </ul>	<p><b>Anticipated Opportunities</b></p> <ul style="list-style-type: none"> <li>Growth in demand when European economy rebounds</li> <li>Business development and new business creation through marketing activities</li> <li>Investment projects with and without government subsidies related to carbon neutrality</li> <li>Geographical expansion and M&amp;A opportunities</li> </ul> <p><b>Concerning Risks</b></p> <ul style="list-style-type: none"> <li>Current trends in overall European economy</li> <li>High volatility in energy prices</li> <li>Supply shortages due to supply chain disruptions</li> </ul>

## Business Characteristics of Each Segment

### Characteristics of Each Segment (Business Operation Structure of Four Global Regions and Thermos)

	FYE2023 (Billions of yen)	Breakdown of Sales by Industry (FYE2023: Cumulative basis)	Segment Strategy	Business Environment* * Key considerations as of the start of FYE2024
<b>Asia and Oceania</b>	<p>Revenue: <b>159.9</b></p> <p>Segment operating profit: <b>15.4</b></p> <p>Segment operating profit margin: <b>9.7%</b></p>	<ul style="list-style-type: none"> <li>Steel and metals ..... 3%</li> <li>Automobiles and other transportation equipment ..... 5%</li> <li>Electronics ..... 44%</li> <li>Food and foodstuffs ..... 2%</li> <li>Healthcare ..... 3%</li> <li>Chemicals and energy ..... 24%</li> <li>Other ..... 19%</li> </ul>	<p><b>Growth Strategy</b></p> <ul style="list-style-type: none"> <li>Acquire large-scale on-site projects, expand production capacity in ASUs</li> <li>Expand new products and sales areas</li> <li>Win opportunities in global HyCO business</li> <li>Management: Move to new management structure</li> </ul>	<p><b>Anticipated Opportunities</b></p> <ul style="list-style-type: none"> <li>Robust ongoing demand in emerging countries</li> <li>Stronger demand for electronic materials gases</li> </ul> <p><b>Concerning Risks</b></p> <ul style="list-style-type: none"> <li>Increase in electricity and logistics costs (costs related to production and transportation of gas products)</li> <li>Impact from trade friction</li> <li>Changes in government political and economic policies</li> </ul>
<b>Thermos</b>	<p>Revenue: <b>30.1</b></p> <p>Segment operating profit: <b>6.0</b></p> <p>Segment operating profit margin: <b>19.9%</b></p>	<p><b>Breakdown of Sales by Region</b> (FYE2023: Cumulative basis)</p> <ul style="list-style-type: none"> <li>Japan ..... 84%</li> <li>Asia ..... 16%</li> </ul>	<p><b>Growth Strategy</b></p> <ul style="list-style-type: none"> <li>Expand new products, directly managed stores and e-commerce platform business</li> <li>Develop reciprocal communications systems with users of vacuum-insulated bottles</li> <li>Improve Thermos brand awareness and maximize brand equity</li> </ul>	<p><b>Anticipated Opportunities</b></p> <ul style="list-style-type: none"> <li>Demand for economization as prices increase for bottled beverages</li> <li>Demand from foreign tourists visiting Japan</li> <li>Attention and interest in sustainable products amid heightened environmental awareness</li> </ul> <p><b>Concerning Risks</b></p> <ul style="list-style-type: none"> <li>Higher prices for raw materials and energy due to the weak yen</li> <li>Increase in labor costs at overseas manufacturing plants</li> </ul>





Strategy by Segment

# Japan

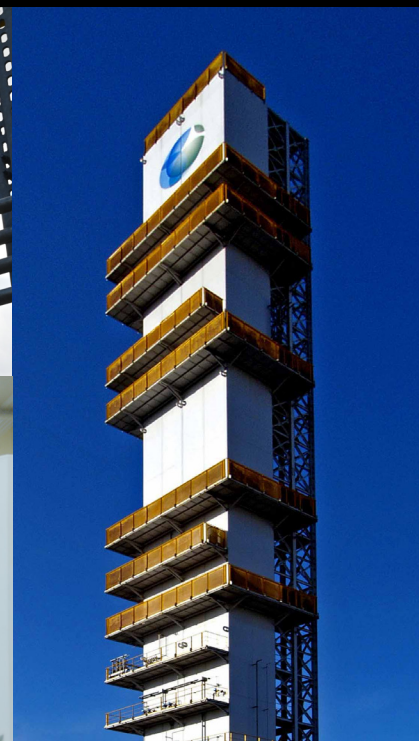
Position in Final Year of  
NS Vision 2026

## 01 Strengthen Core Business: Profitability Improvement

Enhance profitability by rationalizing and optimizing existing base business

## 02 Growth Strategy: Exploration and Expansion

Start new business lines by advancing development in new materials for semiconductor, production processes and related equipment, stable isotopes, and carbon neutral fields



## Strategy by Segment: Japan

### Market Position and Business Strengths

over  
**40%**

(Market share in Japan)

- Founded in 1910
- Employees: About **6,300**
- R&D: **5** bases,  
Plant engineering: **1** base
- Bulk gas production: **33** bases
- Electronic material gases  
production: **4** bases
- Total Gas Centers: **17** bases
- Supply gas and meet customer  
needs with extensive sales and  
operational network and through  
more than **220** partner companies

### Business Environment (Opportunities and Risks)

#### Opportunities:

- Stronger demand as new production facilities are commissioned for electronics market
- Opportunities to supply electronics materials gases for domestic next-generation semiconductor production
- Expansion in demand related to CO<sub>2</sub> capture, storage, and handling
- Expansion in fields using oxygen combustion as measure to conserve energy

#### Risks:

- Impact on earnings from increase in energy costs
- Unreliable procurement of rare gases (helium, neon, krypton, etc.)
- Severe labor shortages in Japan

### Key Aspects of Sustainability

#### Safety

- Conduct safety management and training at the Technical Academy

#### Environment

- Growth in sales of products that help the environment exceed our own GHG emissions  
→ Oxygen combustion burners, hydrogen and ammonia combustion burners
- Reduction in electricity consumption

#### Diversity and Inclusion

- Proactively hire and promote diverse human resources
- Launch of project to empower women
- Reduce overtime and increase ratio of employees taking paid vacation

### Short-Term Initiatives

**TNSC works tirelessly to improve productivity, increase margins, and advance the development of new products with “Profitability” as its slogan.**

- Thoroughly manage prices of products in response to increases in costs for raw materials and fuel
- Ongoing initiatives to minimize costs in each division
- Shift management resources to core and growth businesses, optimal business portfolio

### Future Initiatives

#### Sustainability

##### Diversity and Inclusion

- Support employee work-life balance and increase options for flexible work styles
- Create education and training systems linked to corporate philosophy and vision

##### Safety

- Double the number of employees who have attended the Technical Academy by FYE2026, reduce the number of accidents and occupational injuries

#### Maintain and Improve Profitability

##### Optimal Business Portfolio

- Monitoring of business portfolio based on capital efficiency

##### Electronics

- Organize the team in response to recovery in domestic semiconductors, strengthen marketing and supply chain  
→ Expand sales of products designed specifically for semiconductor customers

##### R&D

- Focus on R&D and delve deeper into untapped markets for realizing a carbon neutral society
- R&D into new materials for electronics market

##### Innovation

- Launch projects to improve potential and practicality of developing new products and businesses in fields that could emerge as new core businesses

#### Operational Excellence

- Advance automation and efficient operations through DX and AI initiatives at production plants
- Improve business with advanced digitalization of order systems

Position in  
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2026**



## Strategy by Segment: Japan

### Market Position and Business Strengths

Taiyo Nippon Sanso Group (TNSC), the predecessor to NSHD, is an operating company that was founded in 1910 to support Japan's manufacturing industry, which was still in its early stages, through the supply of domestically produced industrial gas. With over 110 years of business history, TNSC currently employs approximately 6,300 domestic group employees. The TNSC Group's sales network is spread across the whole country with more than 220 contracted sales agencies, giving it a domestic industrial gas market share of over 40%, No. 1 in the industry. To ensure reliable supply for these sales, TNSC has 33 bulk gas production bases, four semiconductor material gas production bases, and 17 Total Gas Centers that directly supply customers.

Additionally, we have five R&D sites and a plant engineering center for the manufacture of ASUs, a core product in the industrial gases business. These facilities play a crucial role in supporting not only domestic operations but also the global operations of the NSHD Group in both R&D and plant fabrication.

### Background to Strategy (Business Environment)

The Japanese economy is exiting its long historical deflationary environment. There are more opportunities to install equipment and facilities in projects for growing companies that are benefiting from stronger demand for semiconductors. U.S.–China trade friction in advanced industries and a return to domestic production has led to increased demand for electronics materials gases, an area of strength for the group, and opportunities for new material gas development. In addition, in the context of carbon neutrality, we expect demand related to CO<sub>2</sub> capture, storage, and handling equipment, in light of the government's hydrogen strategy unveiled in the Green Innovation fund project.

On the other hand, business risks currently include fluctuations in electricity costs, which affect future energy price trends, and the impact of unreliable procurement of rare gas on the operations of customer factories. We also need to respond to issues that include severe labor shortages and the entrenchment of a weak yen.

### Key Aspects of Sustainability

TNSC in particular identifies (1) safety, (2) the environment, and (3) diversity and inclusion as three key aspects of sustainability.

- (1) Safety: Various safety measures are of the utmost priority in our business, and we provide safety training aimed at eliminating accidents. The Technical Academy has been established as our center for preparing to implement safety management and training, and where we hold danger-sensing courses. A variety of safety training videos have been made available for viewing internally and externally via the internet, thereby contributing to safety management for employees and customers.
- (2) Environment: As an initiative to reduce our own GHG emission levels, we are replacing old plants with more efficient ones to reduce power consumption. We are also installing solar panels at filling stations and pressure test sites to also reduce energy consumption. In addition, we promote the TNSC Carbon Neutral Business Project for various industries, such as steel (blast furnace, electric arc furnace), aluminum, non-ferrous metals, and glass. We are also involved in a project to develop oxygen combustion technologies that use hydrogen and ammonia as fuel, while utilizing government subsidies. Through these initiatives, we are keen to make GHG reduction contributions through our products that help the environment on a level that exceeds our own GHG emissions.
- (3) Diversity and inclusion: We are actively recruiting people and promoting diverse personnel in various aspects, and we launched the Promotion Project Team for Women's Active Engagement as an internal project. In addition, we are also advancing activities aimed at reducing overtime hours and increasing the percentage of paid holidays taken.

### Short-Term Initiatives

Considering our current environment, our short-term initiatives continue to focus on improving productivity, increasing profitability, and promoting the development of new products under the slogan "Profitability." With disciplined product price management to counter the rising cost of raw materials and fuel, we continue to take steps to cut costs thoroughly in each business unit. As well, we aim to achieve an optimal business portfolio, shifting management resources from non-core businesses to both core and growth businesses.

### Future Initiatives

As for sustainability, amid an aging population and declining birth-rate, we will improve our work environment and employment models to be friendlier to women and senior citizens, and strengthen personnel training by expanding our educational system that is linked to our corporate philosophy and vision.

For maintaining and improving profitability, we intend to reinforce our marketing and supply chains through a review of internal organizational systems in order to appropriately seize business opportunities in the expanding electronics market. In our exploration efforts toward realizing carbon neutrality, we have launched a project team to fortify our efforts to identify and nurture core businesses for the future.

In operational excellence, NSHD continues to improve the efficient operation of production plants through the use of DX and automation, and promote even more efficient business management with the advanced digitalization of order entry and order placement systems.

Strategy by Segment

# United States

Position in Final Year of  
NS Vision 2026

- 01 Industry benchmark for Safety, Quality, and Profit Growth
- 02 A major supplier to the food processing, manufacturing, and semiconductor industries
- 03 Sustainability program that delivers profit growth and related shareholder value



## Strategy by Segment: United States

### Market Position and Business Strengths

# 9%

(Market share in the United States)

- Market shares
  - Major market share in Dry ice
  - Nitrous oxide
  - Welding fuel gases
  - Key semiconductor gas mixes
- More than **300** locations and over **4,500** employees in the United States
- Over **100** production facilities including ASUs, on-site generators, liquid carbon dioxide plants, dry ice plants, HyCO, nitrous oxide plants, and major industrial, specialty, and electronics cylinder fill plants
- Over **100,000** customer accounts with more than **2,000** delivery vehicles, trailers, and rail cars

### Business Environment (Opportunities and Risks)

#### Opportunities:

- Growth in the food processing industry and its demand for dry ice, liquid carbon dioxide, liquid nitrogen, and freezing equipment
- Expansion of business opportunities in electronics industry due to U.S. CHIPS and Science Act
- New carbon neutral projects related to the Inflation Reduction Act

#### Risks:

- Slowdown in economic growth and related impact on metal fabrication and manufacturing
- Further increase in power, fuel, wages, and logistics costs
- Shortage of labor in key skills including distribution drivers

### Key Aspects of Sustainability

#### Environment

- Continue to research and implement latest technology in safety systems on our delivery vehicles
- Development of gas analysis capabilities to support supply to next-generation semiconductor devices
- Comprehensive implementation and maintenance of CO<sub>2</sub> recovery systems in Continental Carbonic Products' dry ice operations
- Identification of renewable energy sources to be used in our ASUs

#### Diversity

- Good progress in placing diversity candidates in key administrative and leadership roles through our Mid-Term Plan.
- Continued focus on development of junior diversity candidates for future senior roles.

### Short-Term Initiatives

- Complete large-scale projects underway as planned while competing for new opportunities in our On-site & Pipeline and HyCO businesses
- Continue to invest in the liquid carbon dioxide and dry ice business and maximize profitability

### Future Initiatives

#### Sustainability

- Assess and implement actions aimed at reducing water usage in high-stress regions as identified by the World Resources Institute (WRI)
- Pursue large-scale oxygen plant projects in support of CCUS (CO<sub>2</sub> capture, use, and storage) processes
- Identify and realize opportunities for production of green hydrogen

#### Maintain and Improve Profitability

- Achieve cost reduction goals through productivity improvement and optimized asset utilization
- Continue price management to offset uncontrollable cost increases
- Expand plant network, on-site business, and HyCO along with capture of profitable M&A opportunities
- Strengthen production capacity of strategic electronic gases and related equipment

#### Operational Excellence

- Manage and reduce our controllable costs through our companywide cost reduction program
- Focus on DX of our distribution operations with continued enhancement of our logistics management, our delivery vehicles digital capabilities, and development work to automate material handling in our dry ice and cylinder fill plants

Position in  
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## Strategy by Segment: United States

### Market Position and Business Strengths

Matheson Tri-Gas (MTG) was established in 1927 as a specialty gas company, acquired by Nippon Sanso in 1983, and merged with another Nippon Sanso-acquired industrial gases company, Tri-Gas, in 1999 to form MATHESON TRI-GAS, Inc. Multiple acquisitions and capital construction projects grew MTG to its present form. Notably, MTG operates 43 ASUs and is the largest supplier of dry ice and wholesale acetylene and propylene in the United States.

In 2019, MTG acquired HyCO sites divested due to the merger of Praxair and Linde, rounding out its product lineup. MTG is in 44 states and employs more than 4,500 people at over 300 locations. MTG has an approximate 9% share of the U.S. market, ranking fourth among the major U.S. industrial gas suppliers.

### Background to Strategy (Business Environment)

The U.S. economy is experiencing historically high rates of inflation due to higher energy prices partially related to the Russia–Ukraine war and compounded by rising wages due to labor shortages and related higher logistics costs. Near-term decline in semiconductor demand after the pandemic is slowly recovering and is expected to be supplemented by U.S. production capacity expansion due to the CHIPS and Science Act.

Ongoing demands of the food processing market and third-party logistics contractors is supporting a growing demand for dry ice. There is an increase in environmental business opportunities following the enactment of the Inflation Reduction Act which is likely to be a noteworthy tailwind during this time.

### Key Aspects of Sustainability—Safety and Quality

The MTG Management Team works tirelessly to enhance the safety consciousness of our employees and reduce the incidence of work-related accidents. Indicative of this effort are numerous industry Safety awards from the U.S. Compressed Gases Association. Also, a priority of management focus is our Quality performance and meeting our commitments to Customers. Our Quality Management System includes certification by independent external auditors of our Food Safety System and ISO standard compliance. We constantly strive for greater efficiency in our power and fuel consumption and to achieve zero waste, as seen in our dry ice operations deployment of CO<sub>2</sub> gas recovery systems.

### Short-Term Initiatives

Against this background, we are focusing on the following three points as short-term initiatives:

- (1) Deliver the business case returns on capital projects underway as we compete for new on-site & pipeline and HyCO projects
- (2) Manage total costs through our formal cost reduction program delivering hard dollar savings to offset expenses that are uncontrollable
- (3) Continue to invest and maximize profits in the liquid carbon dioxide and dry ice business

### Future Initiatives

In the areas of sustainability and the environment, we will leverage our recent success being selected to supply large-scale oxygen plants for direct air capture of CO<sub>2</sub> for new project wins. We will also look for additional green production opportunities in hydrogen as demonstrated by our HyCO project supporting production of renewable diesel.

To successfully go forward in efforts to improve our sustainability, we recognize the value of new and diverse thinking and are working to further increase the ratio of women in key management roles and to increase the overall diversity of the Team.

Lastly, MTG will continue to assess investment opportunities such as our current expansion of strategic electronic materials production and development efforts in digital transition in the form of automating material handling activities to improve the safety, repeatable quality, and cost-effectiveness of those operations.



Strategy by Segment

# Europe

Position in Final Year of  
NS Vision 2026

- 01 Optimize core businesses
- 02 Organizational systems that focus on outstanding human resources
- 03 Strengthen governance
- 04 Pursuit of Operational Excellence
- 05 Acquire application technologies that satisfy requirements of customers



## Strategy by Segment: Europe

### Market Position and Business Strengths

# 9%

(Market share in Europe)

\* 12% for countries where we have a business presence

- Business presence in **13** European countries
- Network for supplying each region in Europe
  - CO<sub>2</sub> carrier (ship for transporting liquefied carbon dioxide): **3** vessels
  - Pipelines: **14** lines
  - Trucks: More than **1,000**
- Number of customers: About **150,000** companies
- Operational plants: **195**
- Number of employees: About **3,000**

### Business Environment (Opportunities and Risks)

#### Opportunities:

- Increase in gas demand as the European economy recovers
- Business development through marketing activities and new business creation
- Carbon neutrality investment projects (such as biomethane and hydrogen)
- Growth in resilient industries, such as food & beverage and healthcare

#### Risks:

- Current trends in the broader European economy
- High volatility in energy prices
- Supply shortages due to disruption of supply chains
- Ammonia plants shut down due to rising natural gas prices, tighter supply-demand conditions for CO<sub>2</sub>

### Key Aspects of Sustainability

#### Safety

- Ongoing safety education, such as "Safety First: Everyday, Everywhere"

#### Environment

- Our GHG emissions have decreased by 36% from the base year (FYE2019). Energy-saving measures, such as reducing ASU power consumption and installing solar panels
- Carbon neutrality support projects for customers in aluminum, non-ferrous metals, glass, and steel (electric arc furnaces) industries
- R&D projects related to green hydrogen
- Promotion of refrigerants with low GWP (Global Warming Potential)

#### Diversity and Inclusion

- Continue to strengthen diversity and inclusion
- Promote "Women Sponsorship Programs"

### Short-Term Initiatives

- Disciplined price management to mitigate impact from cost increases
- Strengthen project replication and training in productivity improvement activities
- Increase sales in resilient markets, such as food & beverage, healthcare, and the environment
- Fast response to the demand for carbon neutral-related products. Focus on greening combustion biomethane, green hydrogen, CO<sub>2</sub> capture

### Future Initiatives

#### Sustainability

- Educational training related to the environment, safety and quality
- Promote renewable energy use (purchase EAC\* for electricity)
- Acceleration of carbon neutral measures
  - (1) Oxy-fuel combustion technology
  - (2) Biomethane-related business
  - (3) Green hydrogen production projects
  - (4) CO<sub>2</sub> capture opportunities
- Continuous monitoring of governance guidelines, compliance policies
- Continue to promote women sponsorship programs, community engagement programs, and young employee communities

#### Maintain and Improve Profitability

- Timely and strong price management in response to cost trends
- Expand in electronic material gas sales and resilient markets
- Relentlessly pursue operational excellence
- Leverage DX (process automation, transportation, production planning, etc.)
- Diversify sources of CO<sub>2</sub> from fossil fuels to natural or biogenic origin

\* Energy Attribute Certificates: Certificates related to environmental attributes such as power generation methods and energy sources

Position in  
Final Year of  
**NS Vision  
2026**



## Strategy by Segment: Europe

### Market Position and Business Strengths

The Nippon Gases Euro-Holding Group (NGE) became a part of the NSHD Group in December 2018 and has been operating in Europe under the NIPPON GASES brand. In Europe, NGE has a market share of 9%, and it boasts a 12% market share in the countries where it has a business presence (13 countries: Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, and the United Kingdom).

With three CO<sub>2</sub> carriers (liquid carbon dioxide transport ships), 14 pipelines and more than 1,000 trucks, NGE has a network able to supply a variety of industrial gases to over 150,000 customers throughout Europe.

### Background to Strategy (Business Environment)

The European economy has been recovering from the downturn caused by COVID-19, and is likely to continue growing in the future, especially in resilient industries (food & beverage, health and medical care, the environment) that are less exposed to economic trends. Moreover, investment in environmental-related areas is gaining momentum towards achieving a carbon-free society. We are also actively engaging in marketing and new business development activities while utilizing government subsidy programs in various countries when possible.

As a current issue to watch, we are keeping an eye on trends in energy prices. The historical surge in natural gas and electricity prices triggered by the Russia–Ukraine crisis seems to have settled down somewhat since the second half of 2022, but the impact on selling costs and supply chains is likely to linger for some time.

### Key Aspects of Sustainability

We identify (1) safety, (2) the environment, and (3) diversity as key aspects of sustainability.

- (1) Safety: In addition to our own employees, we provide safety training to delivery service providers in a bid to eliminate accidents. We continue to improve safety through campaigns like “Safety First: Everyday, Everywhere”.
- (2) Environment: As a result of reducing the power consumption of ASUs and installing solar panels at filling stations, our GHG emissions have decreased 36% compared to the base year (FYE2019). In addition to projects to help customers become carbon neutral in the fields of aluminum, non-ferrous metals, glass, and steel (electric arc furnace), we are also working on green hydrogen-related R&D projects with and without government subsidies.
- (3) Diversity: We also continue to promote Women Sponsorship Programs, and young employee communities.

### Short-Term Initiatives

With these in mind, as short-term initiatives, we will relentlessly pursue operational excellence by strengthening projects replication and training in Europe to improve productivity while engaging in price negotiations to offset rising costs.

In addition, we will focus on sales to resilient markets and strive to fast respond to the demand for carbon neutral-related projects, centered on the combustion and biomethane businesses.

### Future Initiatives

In terms of sustainability, we continue to provide environmental, safety and quality-related education and training, and promote the use of renewable energy and reductions in CO<sub>2</sub> emissions by purchasing EAC for electricity (certification of environmental attributes such as power generation methods and energy conservation) and considering the use of biogas and biomethane. From an employee diversity perspective, we will continue to strengthen diversity and inclusion and monitor diversity-related KPIs. An analysis of the gender pay gap and training on unconscious bias will also be carried out.

For maintaining and improving profitability, we will continue to manage prices (pricing activities) in accordance with trends in costs, while also working on reducing electricity and transportation costs. We are also keen to expand sales of electronic materials gases and in resilient markets.

In terms of operational excellence, we will continue to deploy DX in process automation, transportation, production planning, etc., while also creating synergies with other NSHD Group companies.

Strategy by Segment

# Asia and Oceania

Position in Final Year of  
NS Vision 2026

- 01 Become an industrial gases supplier with a diverse product lineup, and become a major player in each country and region
- 02 Conduct efficient and disciplined operations through activities to enhance productivity
- 03 Strong growth in revenue while improving the operating profit margin
- 04 Rebuild our business platform





## Strategy by Segment: Asia and Oceania

### Market Position and Business Strengths

## Developing the industrial gases business and electronics business in a four subsegment structure

- Operations in **12** countries and regions
- Average annual growth rate of **10%** over past 10 years
- Over **4,000** employees in the region
- Operating more than **25** ASUs, as well as carbon dioxide plants, nitrogen plants, and hydrogen plants
- Special gas production bases: **6** facilities
- Special gas supply services: **3** sites

### Business Environment (Opportunities and Risks)

#### Opportunities:

- Solid demand in emerging countries (brisk demand for infrastructure and automobiles in Southeast Asia, likelihood of reduced transportation costs as logistical congestion alleviated)
- Growth in demand for electronic materials gases (expansion of semiconductor production in anticipation of stronger demand)
- Expect increase in LPG and CO<sub>2</sub> demand in Australia

#### Risks:

- Risks associated with insufficient price management versus rising costs
- Impact on regional economies from U.S.–China trade friction
- Unstable natural gas costs and increasing logistics costs

### Key Aspects of Sustainability

#### Safety

- Conduct risk simulations, review daily operations from a safety perspective

#### Environment

- Reduce power consumption through plant efficiency improvements and installation of solar panels
- Propose ways to improve fuel efficiency for customers with electric arc furnaces and glass melting furnaces where GHG emission reduction is a challenge

#### Diversity and Inclusion

- Host Women Empowerment network meetings, hold internal events for International Women's Day

#### Compliance

- Compliance training, internal control training, labor law training, and more

### Short-Term Initiatives

#### Australia

- Manage procurement costs and price
- Expand business portfolio through related equipment and device sales, maximize synergy with existing businesses

#### Southeast Asia and India

- Build regional networks and promote collaboration
- Manage price and work to increase productivity

#### East Asia

- Explore new opportunities for setting up ASUs
- In electronics, tap into regional demand for specialty gases and optimize production plants

### Future Initiatives

#### Sustainability

##### Safety

- Improve safety indicators, including those for occupational accidents, by 10% annually

##### Quality

- Thoroughly manage quality based on Group quality management standards

##### Environment

- Utilize oxygen combustion, argon welding, etc.

##### Human Resources

- Strengthen human resource functions of each company through development of regional networks

##### Governance

- Strengthen compliance and risk management while preserving organizational culture of individual companies

#### Maintain and Improve Profitability

- Concentrate investment in in-house products, such as electronic materials gases, and growth sectors (collaboration in Japan, enhancing supply capacity, and efficient factory operations)
- Explore new businesses for a carbon neutral society

#### Operational Excellence

- Thoroughly control costs, including working capital management (enhance business operations in terms of both price management and cost controls)
- DX strategy (unify IT security levels and promote labor-saving and cost reductions through automation)

Position in  
Final Year of  
**NS Vision  
2026**

## Strategy by Segment: Asia and Oceania

### Market Position and Business Strengths

The NSHD Group's business in Asia and Oceania was launched in Singapore in 1982. Today, our industrial gases business spans Australia, Southeast Asia (seven countries), India, and China, while our electronics business primarily covers China, Taiwan, and South Korea. East Asia in particular, where global semiconductor manufacturers have a significant presence, is a crucial market area for our electronics business.

In April 2023, we revamped the management structure of our Asia and Oceania business, transitioning to a subsegment structure. In light of the business environment and our strategic direction, we divided our management structure into four subsegment: Oceania, Southeast Asia & India, East Asia electronics, and China, and then embarked on a new journey under this structure.

### Background to Strategy (Business Environment)

The outlook for economies in Australia and the Asia region in 2023, though marred by concerns about weak semiconductor demand and a downturn in the steel industries in China and Vietnam, generally calls for a recovery to pre-pandemic levels.

In China, exports are brisk but there are concerns over slowing growth in domestic demand due to the rapid aging of the population. In emerging countries, especially in Southeast Asia, demand remains strong and regional growth is being driven by digitalization, such as growth in the e-commerce market.

In the electronics business, centered on East Asia, we see the potential for further growth in semiconductor production as demand increases in the future. In Australia, population growth is likely to drive growth in demand for LPG and CO<sub>2</sub>.

Risk factors include the possibility of being unable to reflect in prices the entire amount of increased electricity costs, and a possible impact from U.S.–China trade friction.

### Key Aspects of Sustainability

First, in the field of safety, we continue to focus on periodically holding safety meetings, conducting risk simulations, and revising routine work from a safety perspective. Concerning the environment, along with reducing power consumption through efficiency improvements in plant operation procedures, we are advancing proposals to enhance combustion efficiency for customers with electric arc furnaces and glass melting furnaces. In Australia, we are also working on the installation of solar panels at our business locations.

From a diversity perspective, we are planning and implementing internal events for Women Empowerment network meetings and International Women's Day.

In compliance, we conduct regular training on compliance, internal controls, and labor laws, addressing various key topics and with the intention of improving employee understanding.

### Short-Term Initiatives

In Australia, we aim to strengthen the management of procurement costs and price while expanding our business portfolio, including medical devices and LPG container sales, in order to maximize synergies with existing businesses.

In Southeast Asia and India, we are focusing efforts on building intra-regional networks, promoting collaboration, and strengthening activities in price management and productivity improvement in response to rising costs and inflation.

In the electronics business, we aim to create synergies by sharing best practices across companies through the creation of a total electronics network.

### Future Initiatives

We will strive to improve various safety indicators, such as RI (Recordable Injury), PVA (Product Vehicle Accidents), and PPD (Property Damage), by 10% annually and rigorously manage products in line with NSHD's quality management rules. From a governance perspective, while maintaining each company's unique organizational culture, we will strengthen their compliance and risk management systems.

For the environment, along with the introduction of technologies that increase efficiency in production and logistics, we will focus on activities that utilize Group technologies in oxygen combustion and argon welding, for example. We will also make environmental proposals for realizing a carbon neutral society.

In terms of revenue, we will concentrate investment in the construction of production facilities for our own products, such as electronic materials gases and helium, and in other growth fields. Through collaboration with the East Asia electronics subsegment and between countries like Japan and the United States, NSHD will proactively work on improving the responsiveness of the electronics business, such as by expanding its supply capacity in electronic materials gases and through more efficient plant operations.

For operational excellence, while referring to initiatives in Japan, the United States, and Europe, we are keen to increase efficiency in plant operations in tune with regional demand, while advancing business operations in terms of both price management and cost controls. As a part of our DX strategy, we are unifying IT security levels and using automation to save labor and lower costs.

Strategy by Segment

# Thermos

Position in Final Year of  
NS Vision 2026

01 We aim to achieve sustainable growth and become a value-creating company trusted by everyone.

- Improve customer satisfaction, brand value, and product competitiveness
- Deepen and expand core businesses, product lineup, and sales channels
- Develop and strengthen human resources





## Strategy by Segment: Thermos

### Market Position and Business Strengths

- Established in 1980 in Japan
- Approximately **300** employees
- Bases in **15** countries worldwide, including Japan
- Manufacturing plants in Malaysia, the Philippines, and China
- THERMOS brand is available in over **120** countries worldwide
- Customer satisfaction about **95%** for our best-selling JNL series of portable vacuum-insulated mugs
- Launch more than **100** new products every year, with a new product sales ratio of about **20%**
- The Thermos Group produces **37** million products per year globally

### Business Environment (Opportunities and Risks)

#### Opportunities:

- Increase in savings mentality among consumers due to rising bottled beverage prices (stronger demand for stainless steel bottles)
- Recovery in foreign tourist demand after the lifting of COVID-19 border controls
- Growing environmental awareness among consumers (more attention on sustainable products)

#### Risks:

- Higher prices for raw materials and energy due to yen depreciation
- Increase in labor costs at overseas production plants
- Rising logistics costs and a shortage of logistics personnel

### Key Aspects of Sustainability

#### Safety

- Continuously improve through product safety reviews and new product assessments
- Safety training for all employees

#### Environment

- By optimizing the production division, reduced waste by 410 tonnes and water usage by 20,488 m<sup>3</sup> by December 2022
- Prohibited the internal use of PET bottles and plastic containers

#### Diversity and Inclusion

- Educational activities for female managers
- Promote employment of people with disabilities

#### Quality

- Hold quality improvement meetings twice a year for major overseas factories
- Update quality audit procedures

### Short-Term Initiatives

#### Japan

- Introduce new products that differentiate from competitors
- Expand lineup of tumbler products and broaden target user base
- Improve brand recognition and market share in frying pan market

#### South Korea

- Enhance brand awareness through e-commerce sites
- Introduce children products channels

#### Southeast Asia

- Integrate brand strategies and raise brand awareness
- Introduce common products within regions

### Future Initiatives

#### Sustainability

##### Safety

- Safety training for all employees, thorough checks of safety devices, and proper operation of production equipment

##### Environment

- Reduce energy consumption, and defective products (waste) through efforts to improve efficiency in plant production
- Start collection of used bottles at directly managed stores

##### Quality

- Disclose customer opinions received by customer service department
- Strengthen quality audits

##### Diversity

- Employ people with disabilities, promote women into management positions, etc.

#### Maintain and Improve Profitability

- Strengthen development of new products
- Expand number of directly operated stores and increase sales through online channels
- Expand kitchen products and bring them to market

#### Operational Excellence

- Strengthen activities to improve productivity centered on production plants (reduce raw material procurement costs, review production processes)

Position in  
Final Year of  
**NS Vision  
2026**



## Strategy by Segment: Thermos

### Market Position and Business Strengths

Thermos, the pioneer of vacuum-insulated bottles, has a history of over 100 years since its brand inception and is loved in over 120 countries worldwide.

Thermos has bases in 15 countries worldwide, including Japan, and produces 37 million products annually at its manufacturing plants in Malaysia, the Philippines, and China.

Thermos launches more than 100 new products every year, and the level of customer satisfaction for its best-selling JNL series of portable vacuum-insulated mugs is a high 95%.

### Background to Strategy (Business Environment)

The rapid rise in raw material prices appears to have reached a plateau. In overseas markets, concerns are mounting about the growing weakness in private consumption due to monetary tightening. However, the Japan market looks likely to recover to the pre-pandemic level of 2019 after the lifting of restrictions on movement during COVID-19, and foreign tourist demand is gradually returning after the removal of border restrictions.

Due to restrictions on movement over the past few years in Japan, people still tend to cook at home, and opportunities for cooking at home are increasing. Amid inflation, however, demand is likely to increase for low-priced products like those offered by private brands. Furthermore, consumer awareness of the environment is increasing every year, giving a boost to environmentally friendly consumer spending habits.

In these circumstances, demand for stainless steel bottles has increased owing in part to price hikes for bottled beverage, but we also recognize the risk that higher energy costs, labor costs at overseas manufacturing plants, and logistics costs will lead to higher product costs.

### Key Aspects of Sustainability

In terms of safety, which is crucial for the continuation of our operations, we conduct product safety reviews and new product assessments in our ongoing efforts to ensure safety and improve quality. We also regularly conduct safety training for all employees.

In terms of the environment, NSHD has been working hard to increase efficiency in manufacturing while reducing power consumption, waste, and water usage. As of December 2022, we reduced waste by 410 tonnes and water usage by 20,488 m<sup>3</sup>.

Internally, we prohibit the use of PET bottles and plastic containers, and have initiated activities to collect used stainless steel bottles at Group company offices. We are advancing SDG activities in all internal departments, and disclose the content of these activities on our website.

As for diversity initiatives, we are concentrating efforts on training female managers and hiring people with disabilities.

### Short-Term Initiatives

Domestically, we intend to expand our lineup of tumbler products and broaden our target user base, and endeavor to improve brand recognition and market share in the frying pan market. Another key initiative is the introduction of customization services and limited-edition products at our directly operated stores and online shops.

Overseas, especially in South Korea, we are keen to increase brand awareness through e-commerce sites and introduce children products channels business in emerging countries in Southeast Asia.

### Future Initiatives

Looking ahead, we will improve our work environment by training employees on safety and the proper operation of production equipment. In addition, while strengthening quality audits, we will share customer opinions received by our customer service department with the aim of maintaining and improving product quality. We also plan to reinforce new product development with a focus on expanding our lineup of kitchen products.

In our directly operated stores, we will initiate the collection of used bottles, thereby contributing to the reduction of waste in society as a whole through the sale of sustainable beverage containers.

From the perspective of diversity in personnel, we will actively promote the employment of people with disabilities and the training of female managers.

Furthermore, through activities to reduce costs centered on manufacturing plants, we will further strengthen our efforts to reduce procurement costs for raw materials and review production processes, while also working to reduce the loss rate in defective products.

**Point**

Director Scott Kallman and Director Eduardo Gil Elejoste attended the shareholders meeting in June 2023 in person, having been unable to attend 2020–2022 shareholders meetings in-person due to the impact of the spread of COVID-19 after they were elected as directors at the shareholders meeting in June 2019

# Governance

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## Corporate Governance Dialogue

# Now Our True Value Is Being Tested

Taiyo Nippon Sanso Corporation was launched in 2004 as the result of the merger of Nippon Sanso Ltd. and Taiyo Toyo Sanso Co., Ltd. In 2014, the Company became a consolidated subsidiary of Mitsubishi Chemical Holdings Corporation (now Mitsubishi Chemical Group Corporation), and changed its name to Nippon Sanso Holdings Corporation in 2020 along with its transition to a holding company structure. Even during the stormy period of the past 10 or more years, the Board of Directors has been steadily building a structure that has now essentially reached an ideal form. What kind of governance was the Group aiming for? And, how is the Group's governance going to function going forward? Outside Director Katsumi Nagasawa, who has many years of experience as executive of a global company, and Executive Officer Yutaka Okuda, who has been involved with the Board of Directors' Secretariat for many years, had an open discussion about these questions.

**Yutaka Okuda**  
Executive Officer,  
Group Legal Office

**Katsumi Nagasawa**  
Outside Director





## Corporate Governance Dialogue

### Discussion at Board of Directors' Meetings Has Become More Active

**Okuda** ■ I joined the Company in June 2008 as a mid-career hire. I have worked as the Board of Directors' Secretariat since that time, and have seen some significant changes in the Board's composition over these 15 years. I believe that these changes were driven by the Company's continuous governance reforms based on the introduction of Japan's Corporate Governance Code in 2015. Mr. Nagasawa, what is your impression of the current composition and activities of the Board of Directors?

**Nagasawa** ■ My impression is that Nippon Sanso Holdings' corporate governance is highly advanced, and I think it is one of the leading companies on the Tokyo Stock Exchange (TSE) Prime Market in this area. Last year, when Masako Miyatake and I joined, the outside directors became a majority, which brought the Board of Directors' structure into perfect compliance with the Corporate Governance Code. In addition, it has broadened the Board's skills matrix, and I hear that Board discussions have become more active than they were before.

In the course of merging, becoming a subsidiary of Mitsubishi Chemical Group, and transitioning to a holding company, I am able to easily understand that the Company's governance system has undergone some rapid transformations. I am sure this has meant hard work for the people involved, but the changes in the business environment have also served as a driving force for reform. In 2018, the Company acquired the European business, and later it transitioned to a holding company structure, which completed the business structure of four global regions and Thermos.\*<sup>1</sup> The people responsible for the four hub businesses are participants in the Board of Directors, and with a majority of outside directors, the management structure is extremely well balanced. So far, we have been building the structure, and now I see us as entering the execution phase.

**Okuda** ■ Our current directors have a broad makeup, including people with experience in business and in international law, as well as tax expertise. As a result, our discussions have been extremely active. Outside directors are provided with a pre-briefing of items for discussion at Board of Directors' meetings, to ensure that they understand them thoroughly. These briefings are also to address

questions and allow various opinions, which we use to revise and enhance the Board of Directors' meeting materials compared to the original versions. From the perspective of the Secretariat, enhancing the materials promotes more active discussion.

**Nagasawa** ■ That's right. This year, we have added new members and they have offered questions and comments from new perspectives. The skills matrix is very important.

**Okuda** ■ As I mentioned before, our acquisition of the European business in 2018 was an extremely important turning point for the Group. Adding Europe to the Company's business domain forced us to think about how to manage global governance. I think the answer was the holding company structure.

**Nagasawa** ■ The primary characteristic of NSHD is surely its structure of four global regions and Thermos. From the perspective of an outside director, the post-merger integration (PMI)\*<sup>2</sup> has been extremely successful. Sometimes PMIs might involve forcing companies to adopt a Japanese approach, but in the case of the NSHD Group, each region is delegated its own authority. All of the companies have similar business styles, but as you would expect, the business practices differ by region, and there are also some differences in working environments. Getting these regions to operate smoothly together starts with respecting their different environments and characteristics. I think the Group has been doing extremely well on this point.

**Okuda** ■ By the same token, there is also much to be learned from each region. For example, when the Company acquired the European business of U.S. company Praxair, after the acquisition I was deeply impressed by their quarterly reports on business conditions. Specifically, the first item reported on by the person responsible for the European business was not earnings, but safety.

Naturally, as "The Gas Professionals," we have always emphasized safety, but I was surprised to see safety always at the front of the business condition reports. After that, other regions also began to report on safety first.

\*1 Four global regions and Thermos: Refers to the NSHD Group's business in Japan, the United States, Europe, and Asia and Oceania, and the Thermos business.

\*2 Refers to the process for maximizing integration effects after an acquisition or merger.

### A Simple Holding Company System

**Nagasawa** ■ With Japanese management only, I believe that the standard for making judgments would be too narrow. So, we now have two international CEOs on the Board. This is extremely beneficial from the perspective of information sharing, including with Kenji Nagata of Japan, and everyone is very quick to understand any topic discussed.

This information includes hard realities, and sometimes we hear about cases where the situation on the ground is quite different from what it should be in theory. This kind of information sharing is extremely beneficial. On the other hand, from a governance perspective, the matters that are discussed and decided by the Board of Directors are always communicated properly throughout every part of the Group. This gives me the impression that the current governance system is in really good shape.

**Okuda** ■ One example of a hard reality would be during the first half of the previous fiscal year, when the worldwide rise in energy prices such as crude oil and natural gas caused a surge in electricity charges, which make up a significant portion of the Company's production cost. At the time, the Board of Directors treated this as its top priority issue, but I think that the rapid sharing of the response status in each region at Board of Directors' meetings provided an extremely useful reference to which our countermeasures were built.

**Nagasawa** ■ Nippon Sanso Holdings today is what you might describe as "lean." Its structure doesn't have any excess. That is one answer, I think. In addition, another debate might emerge when the business environment changes, but for now at least, I think that the current system is working well: that is, delegating authority to each region over whatever matters can be handled locally, while Nippon Sanso Holdings retains control over essential matters. One of the issues to be addressed was how to go about grasping the practical operations of each region, but currently the Audit & Supervisory Board visits each region and reports to the Board of Directors. I think that this is an important part of the governance system.

**Okuda** ■ At the time when we transitioned to the holding company structure, we started with the concept of conducting the bare minimum of operations with as few people as possible. However, it



## Corporate Governance Dialogue

remains a subject of debate as to whether such a structure is capable of exercising governance over the entire Group, and whether it would be possible to leverage the comprehensive capabilities of the Group.

Right now, we are implementing an activity called Operational Excellence, in which the regions present their best practices to one another so that we can incorporate them globally. Moreover, we intend to develop a new business by responding to carbon neutrality, but there are various nascent businesses in each region. We have started work on sharing these effectively and developing them Groupwide.

**Nagasawa** ■ Another important characteristic is that the Company's parent company is Mitsubishi Chemical Group. Naturally, we must respect the approach and business management policies of our parent company, but I hear from President CEO Hamada that ultimately the Company considers independent management to be fundamental. As an outside director, I must take care to ensure fair and equitable management for minority shareholders, who make up just under 50%.

**Okuda** ■ Currently, there are no directors dispatched from Mitsubishi Chemical Group, and the Advisory Committee on Appointments and Remuneration also comprises outside directors and the President CEO, so the Company has retained its independence in terms of structure as well.

**Nagasawa** ■ In that sense, I think that making independent outside directors the majority in June 2022 also sent a clear message.

### Having Diverse Judgment Criteria Enables a Strong Response to Change

**Okuda** ■ Mr. Nagasawa, you are also the chair of the Advisory Committee on Appointments and Remuneration. One of the main missions of the committee is selection of the CEO. Can you tell me anything about the current status of this mission?

**Nagasawa** ■ We are not at the stage where I can announce details, but the discussion of the process at the Advisory Committee on Appointments and Remuneration has almost concluded, and we are about to move into the concrete execution phase.

Up until now, Japanese companies have been organized for an incumbent president to select his/her successor. However, this also means that arbitrary selection can occur, and recently various guidelines

have emerged. It is important to construct a process for selecting and developing CEO candidates that have external accountability. In this case, rather than serving CEOs being the ones to select and develop successors, the fundamental idea is to have outside directors also get involved in the selection and development processes.

**Okuda** ■ In a global company, it is not enough to have the CEO be the one talented person; rather, there must be a pool of global human resources from which the CEO is selected. What do you think is necessary to develop such global human resources?

**Nagasawa** ■ That is an extremely difficult problem. It is really a discussion about how to select and develop a CEO not only from the perspective of business in Japan but also from a global perspective. If a truly talented person is available, it is not necessary that they be Japanese. In other words, we need to accept diversity. It is important for the Board of Directors or the Advisory Committee on Appointments and Remuneration to have this awareness when they engage in this process.

**Okuda** ■ Speaking from a global perspective, I don't think that countermeasures against cyberattacks were as pressing an issue in 2020 as they are now. Recently, this has become an urgent priority for all companies, and the Company has established a global IT Security Council based primarily in Europe. This means that Europe has the most advanced cybersecurity capabilities. I therefore think that it is natural for each region to lead in its field of expertise, not only Japan.

**Nagasawa** ■ The Company has set up a number of global committees such as the Global Strategy Review Committee and the Global Risk Management Committee to pick up various expertise and generate synergies. I imagine that such committees will also continue to be used going forward.

Another important thing when considering the future of the Company is diversity, such as promoting active participation of women. Based on my experience, I have come to think of diversity as fundamental to a strong organization. Uniform, cookie-cutter type organizations can be very strong in a certain environment. They have the power to make rapid breakthroughs. However, they are extremely weak in the face of change. Without diversity, companies can end up unaware of risks. The basis of diversity is in human resources, and this gives rise to various different opinions.



**Okuda** ■ We have an American CFO, and our discussions with him have taught us a lot about the differences through his senses, perceptions, and experiences compared with those of a Japanese person. This is another way in which we can directly realize the importance of diversity.

**Nagasawa** ■ My various overseas experiences have led me to think that by spending time with diverse people you develop diverse judgment criteria. This is extremely important in the world of management, and I think it is good to adopt a slightly different judgment criteria when looking at work overseas. I've often found that this can enable you to better understand what others are thinking.

**Okuda** ■ Along with sending Japanese employees on assignment overseas, I think we need to increasingly bring overseas employees here on assignment at the head office as well.

**Nagasawa** ■ Sharing know-how and creating synergies is not possible by staying still. Exchanges of human resources and global communication are essential. Isn't the Board of Directors quite advanced in this regard?

**Okuda** ■ Yes, I think the Board is leading the way in terms of diversity.

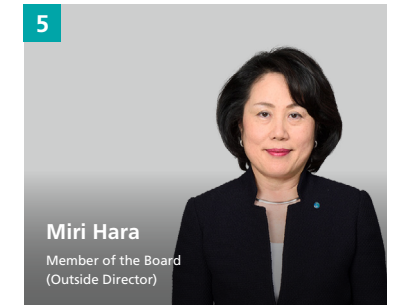
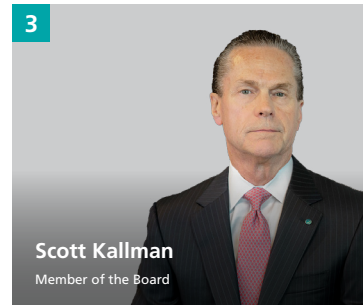
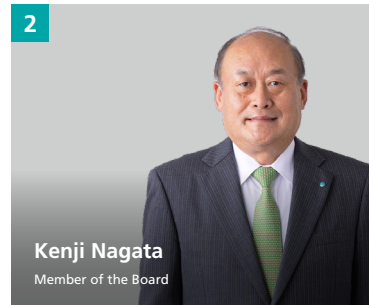
**Nagasawa** ■ However, just having the structure in place is no guarantee that it will work well. People also need to observe the spirit of diversity. By spirit I mean that people should be constantly aware of diversity and the ideas behind Japan's Corporate Governance Code, and reflect this in their actual behavior. Presently, I am certain that it is working well. However, we are about to enter the execution phase, where our true value will be tested.

# Members of the Board of Directors, Audit & Supervisory Board Members, and Executive Officers

The careers of each officer can be viewed here.  
Members of the Board of Directors,  
Audit & Supervisory Board Members, and Executive Officers:

[Please see here.](#)

## Members of the Board of Directors



## Executive Officers

**Tsutomu Moroishi**  
Senior Executive Officer

**Takeshi Miki**  
Senior Executive Officer

**Alan David Draper**  
Senior Executive Officer

**Yutaka Okuda**  
Executive Officer

**Kazuhiko Nishikawa**  
Executive Officer

## Audit & Supervisory Board Members



# Skills Matrix

In order for the Board of Directors to function effectively it must consist of a diverse team of directors who have a broad range of knowledge and experience in corporate management. To this end, we have defined the knowledge and experience that play important roles in Group management across the following categories: (1) Corporate management, (2) Finance and accounting, (3) Legal and risk management, (4) Sales and marketing, (5) Development and technology, and (6) Production and procurement. We will strive to enhance the effectiveness of the Board of Directors further by assigning employees with knowledge and experience in these categories to the right positions and at the appropriate times.

	Name	Positions / Career highlights	No. of years in position	Corporate management	Finance and accounting	Legal and risk management	Sales and marketing	Development and technology	Production and procurement	Experience working overseas	Experience working in other companies	Independence
Members of the Board of Directors	1 Toshihiko Hamada	President CEO	3	●			●	●		●		
	2 Kenji Nagata	Member of the Board Representative Director and President, Taiyo Nippon Sanso Corporation	5	●			●			●		
	3 Scott Kallman	Member of the Board Chairman and CEO, Matheson Tri-Gas, Inc.	4	●			●			●	●	
	4 Eduardo Gil Elejoste	Member of the Board Chairman and President, Nippon Gases Euro-Holding S.L.U.	4	●			●			●	●	
	5 Miri Hara	Member of the Board (Outside Director) Founder and partner, Tax Corporation Yokohama Benten Accounting, Inc. Outside director, SECOM Co., Ltd.	2		●						●	●
	6 Katsumi Nagasawa	Member of the Board (Outside Director) Former vice president and executive officer, Hitachi, Ltd. Outside director, Sugino Machine Limited	1	●				●	●	●	●	●
	7 Masako Miyatake	Member of the Board (Outside Director) Professor, Keio University Law School / Special Counsel, Blakemore & Mitsuki Deputy Secretary-General, Japan / International Dispute Resolution Center Outside director, SUMIDA CORPORATION	1			●				●	●	●
	8 Hideo Nakajima	Member of the Board (Outside Director) Former Secretary General, Japan Fair Trade Commission Special Advisor, White & Case LLP / White & Case Law Offices	0		●	●				●	●	●
	9 Katsuhito Yamaji	Member of the Board (Outside Director) Former managing executive officer and director, Yamaha Motor Co., Ltd.	0	●				●	●	●	●	●
Audit & Supervisory Board Members	1 Satoshi Wataru	Audit & Supervisory Board Member Former senior executive officer of Group Human Resources & Corporate Secretariat Office, General manager of Human Resources Department, Nippon Sanso Holdings Corporation	0	●	●							
	2 Akihiro Hashimoto	Audit & Supervisory Board Member (Outside Auditor) Former senior general manager, Mizuho Bank, Ltd.	6	●	●					●	●	●
	3 Masahiro Osada	Audit & Supervisory Board Member (Outside Auditor) Former managing executive officer (in charge of Corporate Management Department and Finance & Accounting Department), Mitsubishi Chemical Corporation	3	●	●					●		
	4 Kazuya Kobayashi	Audit & Supervisory Board Member (Outside Auditor) Senior general manager, Mizuho Financial Group, Inc.	3	●	●					●	●	●

Notes: 1. Details on the definition of table headings

Corporate management: Experience serving as CEO, executive, or executive officer of a listed company or CEO of a local subsidiary of a global company

Experience working in other companies: Experience working outside of the NSHD Group's companies or the parent company Group's companies

Notes: 2. The chart does not present all of the officers' knowledge and experience.

# Corporate Governance

## Our Approach to Governance

NSHD's Board of Directors has formulated the Principles of Corporate Governance as a guide to its basic approach to corporate governance. The purpose of corporate governance is to sustain growth and improve corporate value for the Company over the long term.

NSHD is a company that has an Audit & Supervisory Board and Internal Accounting Auditors. In accordance with the Companies Act, NSHD has a General Meetings of Shareholders, a Board of Directors, an Audit & Supervisory Board, and independent public accountants.

In holding the General Meeting of Shareholders, we adhere to the principle of respecting the rights of shareholders and ensuring equality. On this basis, we strive to provide appropriate material for the shareholders' meeting at an early stage, utilize electronic voting platforms, and offer meeting material's in both Japanese and English.

Our Principles of Corporate Governance specify the following four roles for the Board of Directors.

- (1) Total management oversight
- (2) Maintenance of an internal control system (a structure to ensure the appropriateness of operations)
- (3) Selection, appointment, dismissal, evaluation, and determination of remuneration for the CEO and other members of management
- (4) Formulation of management strategy and make decisions on significant business execution

The Board of Directors consists of four internal directors and five outside directors. All five outside directors are independent. Having a majority of independent outside directors increases the objectivity of business execution oversight by the Board of Directors. Although NSHD's parent company is Mitsubishi Chemical Group Corporation, having a majority of independent outside directors ensures that minority interests will be protected and NSHD will remain independent from its parent.

We pay attention to diversity in the composition of the Board of Directors. Currently, two directors are of foreign nationality (heads of U.S. and European businesses), and two are women. We have created a skills matrix that maps out the experience, knowledge, and

abilities that our directors should possess, and appoint directors who balance out this skills matrix. Internal directors who are well acquainted with our business and outside directors with diverse skills and experience discuss management strategies, capital investments, M&A proposals, and other important matters at meetings of the Board of Directors.

For internal control systems, the Board of Directors determines structures for compliance, risk management, sustainability, etc., and the outcomes of various initiatives are reported regularly to the Board of Directors.

For the appointment, dismissal, and remuneration of directors, auditors, and managers (including the CEO and executive officers), NSHD has established the Advisory Committee on Appointments and Remuneration as an advisory body to the Board of Directors. Comprising the CEO and five independent outside directors, the committee deliberates on matters referred to it by the Board of Directors, and the chair of the committee is an independent outside director selected by the members. With independent outside directors constituting the majority of members on the committee, we can ensure transparency and impartiality in decisions related to officer appointments and remuneration, and independence from the parent company.

Director remuneration includes fixed compensation as well as a performance-linked bonus and a non-financial KPI-linked bonus.

Every year, the Board of Directors conducts an effectiveness evaluation in order to improve the effectiveness of its activities. The effectiveness evaluation is done through a questionnaire, where directors answer questions about the aforementioned roles of the Board of Directors and whether it was able or unable to effectively address issues identified in the previous fiscal year, in addition to other points that should be discussed by the Board of Directors. Based on the results of the questionnaire, the Board of Directors holds a discussion and decides which topics should be deliberated in the next fiscal year. Our aim is to increase the effectiveness of the Board of Directors' activities by creating measures to improve upon issues or topics that had not been effectively carried out in the past.

We also prioritize dialogue with shareholders. NSHD discloses corporate information in a timely and appropriate manner based on

its IR Policy approved by the Board of Directors. NSHD holds quarterly financial briefings and meets with investors on over 300 occasions throughout the year. The content of these discussions with shareholders is reported to the Board of Directors twice per year.

The Audit & Supervisory Board consists of four full-time members, including three outside members (two of whom are independent outside members). Auditors attend key internal meetings, such as meetings of the Board of Directors and the Management Committee, and conduct audits in Japan and overseas Group companies, interviewing top management (directors and executive officers) and reviewing important documents, in accordance with the auditing policies and plans decided by the Audit & Supervisory Board. The Audit & Supervisory Board also works closely with the internal audit division and independent public accountants, and exchanges information and opinions regularly with outside directors and auditors to enhance the effectiveness of audits.

## History of Changes in NSHD's Corporate Governance

June 2015	Appointed two independent outside directors (two of 11 directors)
October 2015	Formulated Principles of Corporate Governance and Disclosure Policy (now IR Policy)
June 2016	Established Advisory Committee on Appointments and Remuneration Introduced performance-linked remuneration for directors
June 2019	Appointed two directors of foreign nationality (heads of U.S. and European businesses)
October 2020	Transitioned to holding company structure
June 2021	Increased independent outside directors to three (three of nine directors; one female outside director)
June 2022	Increased independent outside directors to five (five of nine directors; two female outside directors) Introduced non-financial KPIs linked to remuneration of directors

Please refer to our website for details on corporate governance.

Corporate governance [Please see here.](#)

Securities report (Japanese only) [Please see here.](#)



## Corporate Governance

### Remuneration for Officers

Remuneration for directors and Audit & Supervisory Board members is determined by resolution at the annual General Meeting of Shareholders in line with the total compensation limits for directors and Audit & Supervisory Board members. The amount of remuneration for each director is determined in accordance with the remuneration standard resolved at the Board of Directors by the President CEO, who is delegated by the Board of Directors, while remuneration for each Audit & Supervisory Board member is determined through internal discussions within the Audit & Supervisory Board and by the approval of the Board of Directors and the Advisory Committee on Appointments and Remuneration. The Advisory Committee on Appointments and Remuneration deliberates the appropriateness of remuneration proposed after being consulted by the Board of Directors and the Audit & Supervisory Board and reports the results of its deliberations to the Board of Directors and the Audit & Supervisory Board. The committee also deliberates remuneration systems that lead to improvements in NSHD's corporate value while referring to external remuneration surveys.

Directors' remuneration consists of basic monthly remuneration, performance-linked bonuses, and non-financial KPI-linked bonuses, and is reflected in the amount paid to each person. In addition, directors and outside directors whose main duties are as officers of subsidiaries are paid only the fixed basic monthly remuneration. Remuneration for Audit & Supervisory Board members, including outside members, consists of base salary.

#### Breakdown of Remuneration for Officers



Fixed	Basic monthly remuneration	Fixed remuneration by rank
Variable	Performance-linked bonuses	Rank-based standard amounts are linked to the achievement of budgets in each fiscal year of the medium-term management plan (20.5% of consolidated revenue and 20.5% of consolidated core operating profit margin), as well as the rate of year-on-year growth in earnings (19.6%), consolidated core operating profit (19.6%), and net income attributable to owners of the parent (19.6%). Percentages in parentheses indicate the weighting in the evaluation.
	Non-financial KPI-linked bonuses	Linked to the achievement of non-financial KPIs (specific KPIs: (1) lost time injury rate, (2) rate of receiving compliance training) set in the non-financial medium-term management plan.

### Relationship with the Parent Company

We concluded a basic agreement with our parent company, Mitsubishi Chemical Group Corporation (MCG), on May 13, 2014. Under this agreement, MCG committed to respecting our autonomy, supporting and cooperating with us under the MCG Group Management Regulations. In turn, we conduct all business functions independently, including management, finance, sales, and R&D.

In situations where the interests of the parent company conflict with shareholders other than shareholders of the parent company, the directors of Nippon Sanso Holdings act to avoid harm to the interests of the shareholders other than the shareholders of the parent company. We have appointed five independent outside directors and two full-time independent outside Audit & Supervisory Board members. These individuals oversee the Company to ensure there are no conflicts of interest between the parent company and shareholders other than shareholders of the parent company. Furthermore, we have voluntarily established the Advisory Committee on Appointments and Remuneration, which ensures independence from the parent company in the selection of a management team. While parent company MCG is a holding company, the Nippon Sanso Holdings Group and Mitsubishi Chemical Corporation, the main operating company of the MCG Group, engage in transactions, totaling ¥7,058 million in FYE2023.

### Succession Plan

In the NSHD Group's governance structure, we recognize the importance of grooming next-generation leaders. The Advisory Committee on Appointments and Remuneration has deliberated on the required qualifications of next-generation managers, the selection process, training policies, and selection of candidates. The NSHD Group has a business presence in 32 countries and regions around the world, and will continue to train human resources who are able to insightfully manage operations from a global perspective.

### Senior Management Training

In order to accelerate global business development, NSHD operates a training system aimed at developing the abilities of top management, in order to refine the decision-making capabilities of management from the diverse perspectives and knowledge expected of its leaders. The training that we implemented over the past three years is listed below.

- March 2021 Human rights
- November 2021 Internal control systems that officers should understand
- August 2022 Latest trends in information security and economic security
- April 2023 Prevent corruption globally

Those eligible for training include directors, auditors, and executive officers of NSHD and directors of Taiyo Nippon Sanso. In April 2023, in light of trending topics in training, we expanded the scope of eligible participants to senior management in the United States, Europe, Australia, and Asia. We will implement training in a timely manner that improves the caliber of the Company's management team.

# Compliance

For more on our compliance promotion structure, please refer to here.

Compliance: [➡ Please see here.](#)

The NSHD Group has decided on a basic compliance policy and updates its organizations and rules in order to ensure it is effectively implemented. The Group Chief Compliance Officer (GCCO) is in charge of all aspects of compliance, and Regional Chief Compliance Officers (RCCOs) are assigned to each region in a coordinated effort to carry out compliance activities on a global scale. In the FYE2023 report, messages from the RCCOs of Europe and East Asia are introduced following those of North America and Southeast Asia that featured last year.

## GCCO Message



### Kazuhiko Nishikawa

Executive Officer, Taiyo Nippon Sanso Corporation GCCO,  
with responsibility for Groupwide internal control  
Appointed in June 2023

### Excitement for New Appointment

The Nippon Sanso Holdings Group operates in four geographic hubs (Japan, the United States, Europe, and Asia and Oceania) and Thermos. To promote the Group's sustainable growth and long-term increase in corporate value, compliance is a foundational aspect of all of our business activities, in the same way as safety and quality. My role as GCCO is to direct and manage compliance promotion activities, create training and systems to firmly embed compliance promotion in our culture, and advance the building of these systems. In the current business environment of economic uncertainty, geopolitical instability, and increasing diversification of values and lifestyles, the need for rigorous compliance and appropriate risk management is even more pressing, and I want to ensure that this awareness is shared throughout the Group.

### Current Status of the NSHD Group's Compliance

Under the holding company structure, the NSHD Group has established RCCOs in North America, Europe, East Asia, Southeast Asia & India, Australia, Taiwan, and Japan. We work to create and promote corporate cultures that do not commit compliance violations, systems to prevent violations from happening, and systems for reporting them if they do occur. We also implement various forms of compliance training. These initiatives are tailored to the characteristics of each region and business, and I feel this makes them more relatable for employees and therefore highly effective.

In FYE2022, we conducted a compliance awareness survey for employees all over the world, which revealed differences in awareness in different regions and individual companies. To address this, we have established periods for strengthening compliance promotion in each region, during which we will issue messages from senior management and conduct a range of information dissemination activities.

In Japan, we conduct annual compliance training for all employees, including those of Group companies. At the beginning of each training, we issue messages from the CCO and the heads of each organization and company. Participants in the training have reported that they are satisfied with the training content overall, and this has led to increased awareness.

### Ideal Compliance Management for the NSHD Group

As I mentioned above, in today's world of economic uncertainty, geopolitical instability, and increasing diversification of values and lifestyles, the need for rigorous compliance and appropriate risk management is even more acute.

The Group holds a Global Compliance Committee meeting of the GCCO and RCCOs each year to share the details of their compliance promotion activities and issues in each region. Looking ahead, we will further enhance our internal control functions for the entire Group, while respecting regional autonomy and characteristics.

## Compliance

### East Asia CCO Message

#### Jack Yuan

Compliance Director  
Chief Compliance Officer East Asia  
Taiyo Nippon Sanso (China) Investment  
Co., Ltd.



#### Approach to Compliance in East Asia and Its Distinctive Characteristics

In East Asia, we have a business presence in both China and South Korea with various types of legal entities, from gas manufacturers, gas trading companies, and gas service companies to gas warehouse companies, which requires us to design and implement different compliance training programs customized to the staff of each unique business operation.

In today's operating environment, staff working at gas trading companies need a deep understating of competition law and regulations, while staff working at gas manufacturers should be educated more on trade secret and anti-bribery laws. Relevant case studies and simulations of how staff might be approached to pay a bribe are useful and interactive training approaches. Compliance training is a continuous strategy conducted via face-to-face communication throughout the year and based on new examples of possible fraud situations. Face-to-face training in person enables us to focus on the real awareness of each staff regarding compliance, specifically, how they view reporting potential wrongdoing and the consequences for failure to abide by our Code of Conduct.

#### Current Compliance-Related Measures

NSHD has established the improvement of compliance as one of the objectives in its medium-term management plan NS Vision 2026. We realize that to achieve this objective we must rely on compliance

training and communication, compliance review and monitoring embedded in day-to-day business management and decision-making process is a key institutional measure for our Company to effectively reinforce its penetration. Currently, we are endeavoring to develop a compliance review system as a prerequisite for social entertainment and gift conduct in business activities for the purpose of early prevention of bribery risk rather than correction measures after wrongdoing has occurred.

#### Approach to the Compliance Promotion System of Nippon Sanso Holdings Group as a Whole

Although we conduct business in different jurisdictions, where the laws and regulations may differ, we share the same corporate values and commitments and uphold a high standard of legal compliance and business ethics. In addition, for some groupwide issues, such as semiconductor export restrictions as a result of tension between China and the United States, or the intra-group transfer of personal data, we coordinate our compliance efforts with NSHD and other RCCOs.

#### Mission and Role as an RCCO

Fundamental to the role of RCCO is designing programs that help to ensure compliance with laws, regulations, and Company policies. This requires spending considerable time on the nuts and bolts and making sure the right resources, systems, and controls are in place. Meanwhile, an RCCO might face some challenges, even frustration, in designing and implementing an effective ethics and compliance program, but we should never give up. If a team member cannot understand, we should redouble our efforts to convince him or her to embrace compliance.

### Europe CCO Message

#### Laura Zanotti

Legal Director Europe  
Chief Compliance Officer Europe  
Nippon Gases Euro-Holding S.L.U.



#### Approach to Compliance in Europe and Its Distinctive Characteristics

At Nippon Gases, we've become recognized as a trusted supplier of industrial, medical, and specialty gases, and corresponding applications. Our main objective is to maintain the confidence of all our stakeholders, including customers, suppliers, our workforce, and broader society. Not meeting their expectations can expose us to risks that may jeopardize our operations and business. Thus, we endeavor to be viewed as a dependable and trustworthy partner for all. Moreover, our adherence to ethical standards and compliance is deeply embedded in our overall ESG approach.

We have designed and instituted stringent policies, protocols, and best practices at Nippon Gases, to guarantee that we operate within legal boundaries and uphold the highest ethical standards. Every employee, supervisor, manager, and executive at Nippon Gases individually and collectively commits to uphold ethical principles in all business activities, guided by our Code of Conduct. The Code, available in multiple European languages both in print and digital forms, provides guidance on ethical behaviors and also outlines the channels for reporting any potential non-compliance.

At Nippon Gases, we promote an environment where employees feel safe to voice their concerns. They have the option to report infractions via several channels, both within the Company and externally, via a dedicated hotline or through the email address [compliance@nippongases.com](mailto:compliance@nippongases.com). Employees reporting any compliance

## Compliance

### Europe CCO Message

violations have the option to do so anonymously and are safeguarded against any form of retaliation. Our strong culture of compliance, evidenced by our compliance performance, permeates all levels of our organization and is bolstered by effective interdepartmental communication and stringent tracking of our initiatives.

#### Current Compliance-Related Measures

A robust compliance program indicates that an organization has implemented suitable measures to ensure compliance with laws, regulations, and rules, and fosters an environment of ethical conduct among employees. The compliance program at Nippon Gases incorporates compulsory steps and additional measures, such as regular updates on compliance and frequent training, to enhance awareness.

Every year, our employees are mandated to participate in a training program on our Code of Conduct, which declares our commitment to compliance, that sets out our principles and values and provides guidelines on ethical decision-making, handling conflicts of interest, dealing with bribery and corruption, maintaining confidentiality, and upholding human rights. Our compliance program includes mandatory biennial training on the following modules and topics: Fair competition, Conflict of interest and anti-bribery, Email and document management, Data protection, and Respect for human rights.

In years without compliance training, we conduct a "Compliance Week." During this week, each employee is required to devote at least 10 minutes to discuss compliance issues in every internal or external meeting held. Suggestions gathered from these sessions are forwarded to our compliance team for potential program improvements. The focal point for our Compliance Week in FYE2022 was Cybersecurity, and this year we will be concentrating on our interactions with customers and suppliers.

Compliance matters are prioritized in all management agendas. Quarterly Compliance Review Board meetings are held at both local and European levels. During these meetings, all compliance issues

are reviewed in depth by local management teams and the European Management Team.

In the course of our compliance program in FYE2023, we accomplished the recertification of our Code of Conduct, with 100% of our employees participating, as well as mandatory Compliance module training, completed by 2,272 employees. A larger group participated in Human Rights training: 3,831. In addition to the compulsory trainings, an expanded training on Social Media usage was conducted and completed by 2,714 employees.\*

\* An employee may participate in multiple training sessions.

#### Approach to the Compliance Promotion System of Nippon Sanso Holdings Group as a Whole

Our compliance program aligns seamlessly with NSHD's global compliance program, which provides a distinct framework for legal, ethical, and responsible business conduct. We leverage this framework and tailor it to meet local requirements. Being part of NSHD, we operate with integrity and fairness, reinforcing our commitment to upholding the highest ethical, legal, and professional standards to maintain and enhance the Group's reputation. Honesty and respect are integral to all our actions.

#### Mission and Role as an RCCO

The role of the compliance officer is to guarantee that the Company's operations are fully compliant with legal requirements. The compliance officer supports the organization, to make sure:

- a) policies to avert unlawful, unethical, or inappropriate behavior are maintained and improved,
- b) risks that may potentially cause legal, financial, operational, or reputational harm are assessed, and
- c) measures to alleviate these risks are identified.

At Nippon Gases, the compliance role is not only a major role

within the senior management team of every organization but is also interwoven into the business processes, enabling us to promote ethical behavior from the ground up. This integration is key to achieving the best outcomes, and our track record affirms this effort. As a result, in the last fiscal year, we encountered only minor compliance issues, which were promptly addressed.



# Risk Management

For more on our risk management structure, please refer to here.

Global Risk Management Structure: [➡ Please see here.](#)

Risk Management: [➡ Please see here.](#)

On February 22, 2023, NSHD held the Global Risk Management Committee, chaired by President CEO Toshihiko Hamada.

Amid significant changes in the external environment, such as the invasion of Ukraine by Russia, discussions were held concerning the key risk themes for each operating company and the NSHD Group, sharing their risk recognitions and responses, centered on the topic of geopolitical tensions and trends in the semiconductor industry.

## Summary of the Global Risk Management Committee

### Topic 1

#### Key Risk Themes for the NSHD Group

##### Changes in the Business Environment



- (1) Amid significant changes in the external environment, we had a vigorous debate about the key risk themes of the NSHD Group.
- (2) The NSHD Group has a global business presence. While risk recognitions differ depending on the business environment, risk management activities can be improved with a better understanding of background factors and differences, while viewing risks from multiple angles.

##### Sharing of Risk Recognition and Risk Response

The external environment has significantly changed over the past year, as geopolitical tensions increased due to Russia's invasion of Ukraine and other events, and electric power and energy prices fluctuated. At the Global Risk Management Committee, we had a lively discussion about the key risk themes for the NSHD Group, and talked about the risks that each operating company faces.

##### 1. Changes in external and internal environment

Geopolitical risk, supply chains, energy and electricity, carbon neutrality

##### 2. Maintain and reinforce core business

Aging facilities, governance, compliance and corruption prevention

##### 3. Secure and train human resources who will support the aforementioned endeavors

Personnel shortages, diversity, succession planning

##### Understanding Risks from Multiple Perspectives

The NSHD Group has a global business presence. While perceptions of risk differ depending on the business environment, risk management activities can be improved with a better understanding of background factors and differences, while viewing risks from multiple angles.

### Topic 2

#### Geopolitical Tensions and Trends in the Semiconductor Industry

##### Strengths of the NSHD Group



- (1) Against a backdrop of geopolitical tensions, trends have significantly changed in the semiconductor industry, such as the onshoring of advanced semiconductor production, technological exclusivity, and reviews of supply chains.
- (2) The strength of the NSHD Group lies in its ability to respond quickly to trends in the semiconductor industry and produce semiconductor materials gases in Japan, the United States, China, and South Korea.

##### Content of Key Discussions

##### Companies in Japan

In Japan, we have launched projects related to the semiconductor industry. Although there are issues with production costs, the anticipated return of advanced semiconductor production in Japan, the United States, and Europe is a business opportunity. On the other hand, products exported from Japan to China are being replaced by locally produced products, which may reduce future business opportunities.

##### Companies in the United States

Geopolitical tensions are a major concern, especially for the United States, where the outflow of intellectual property and technological know-how to other countries is a concern. In light of the global situation, decentralizing semiconductor production bases across the United States, Japan, and Europe will likely become a risk avoidance strategy.

##### Companies in Asia and Oceania

The NSHD Group produces electronic material gases in Japan, the United States, China, and South Korea. Being able to respond quickly to trends in the semiconductor industry is a significant advantage for the Company. Although some aspects of semiconductor industry trends might be disadvantageous for the NSHD Group, we believe we can maintain a favorable position by offsetting these disadvantages.

### Topic 3

#### Speech by Chair Hamada (President CEO)

##### Via the Committee



- (1) The Global Risk Management Committee is similarly important as business operations. Each operating company should strive to reduce risks in their own organizations with an understanding of the differences and variations in the risk recognitions.
- (2) Daily efforts to get customers and society to recognize the value of industrial gases and the value of reliable supply are of utmost importance.

##### Significance of the Global Risk Management Committee

The Global Risk Management Committee, in conjunction with the Global Strategy Review Committee, are of equal importance to business operations. In business management, there are external risks that a single company cannot handle alone, such as the Russia-Ukraine conflict. Various risks were raised at the committee, and insightful data was presented about differences in countries, businesses, and workers, where such minor differences can lead to differences in the risk recognitions. I would like everyone to listen carefully to how other organizations, as well as your own organization, prioritize their risks, and to utilize this information to identify and reduce risks in each organization.

##### Value of Industrial Gases and Value of Reliable Supply

In times of emergency, there may be situations where industrial gases cannot be reliably delivered.

We believe there is meaning in daily efforts to get customers and society to recognize the value of industrial gases and the value of reliable supply. Such efforts will lead to a better understanding of the NSHD Group's significance, including in times of emergency.

## Information Security

NSHD has established the Global Information Security Council (GISC) as a countermeasure against cyberattacks. GISC sets and manages security standards, controls, and overall governance including identification and tracking of existing threats and incidents. GISC also discovers and fixes vulnerabilities, and reinforces technical solutions.

### Cesar Callejo

Global Information Security  
Council Chairman



### Development of Technologies and Securing of Personnel to Ensure Information Security

NSHD recognizes how cybersecurity incidents may affect the Company and therefore treats information security risk as a priority, putting focus on the Company's ability to timely identify risks and to react accordingly.

To be able to execute the global information security program and for it to be effective, NSHD is further developing both the global and regional information security functions, through investments in technology and by attracting specialized staff.

[Please see here.](#)

### Jan Van den Bulck

Global Information Security Director



### Importance of In-House Training as a Part of Daily Operations

At the NSHD Group, various departments and teams around the world are cooperating to facilitate the close scrutinization of compliance with Group company rules, as well as laws and regulations.

Emphasis is placed on employee training and awareness in order to improve their ability to identify potential information security threats. As a part of our daily operations, we believe that training employees to acquire skills for dealing with risks is a critical element of our information security program.

[Please see here.](#)

For more details on the structure and specifics of the Global Information Security Council, please visit our website.

**Global Information Security Council (GISC):** [Please see here.](#)

## Appropriate Taxation

In all countries and regions where we operate, we comply with laws and regulations to fulfill our tax obligations.

NSHD and its subsidiaries act with integrity in every country and region where we have a business presence. Every policy that governs our business activities, including our taxation policy, is aimed at strictly complying with all applicable laws and regulations.

In each country and region where NSHD has a business presence, the NSHD Group is committed to addressing the interests of various stakeholders by ensuring timely filing of tax returns and payment of appropriate tax amounts, as well as by implementing effective tax governance programs that ensure we take a transparent approach to adhering to laws and regulations about tax management.

Through this approach, the NSHD Group is able to pay all relevant taxes in accordance with applicable laws and regulations while maintaining a transparent, constructive, and cooperative relationship with various tax authorities around the world.

[Please see here.](#)

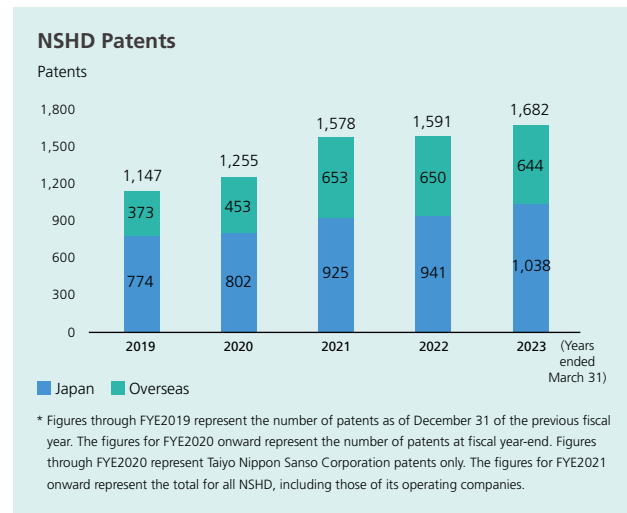
## Intellectual Property

**We will enhance our strategic proposal capabilities for intellectual property, while properly using our intellectual property.**

NSHD positions intellectual property as a vital asset. In order to contribute to both our business and society through intellectual property activities and to realize global sustainable growth for the NSHD Group, we engage in the strategic acquisition, protection, and utilization of intellectual property, which includes patents, utility models, designs, trademarks, and know-how.

As stated in our intellectual property policy, we respect the intellectual property rights of other companies and make every effort to ensure that we do not infringe upon them.

Moving forward, we will strengthen our strategic proposal capabilities by utilizing intellectual property landscape tools (analysis of intellectual property information) to improve our management of intellectual property.



[Please see here.](#)

## Dialogues with Stakeholders

**At NSHD, in line with our IR Policy and Code of Conduct, we engage in dialogues with investors, shareholders, and other stakeholders.**

### Investors and Shareholders

Based on our IR Policy, we engage in constructive dialogue with market participants (including shareholders, investors, potential investors, and securities analysts) based on the concept of fair disclosure with the aim of realizing sustainable growth and medium- to long-term improvement in corporate value. In addition, we endeavor to enhance our investor relations (IR) activities by providing fair, timely, and appropriate explanation and disclosure of accurate information, including the status of management and business operation, and to enhance corporate value by communicating the requests and assessment by the market participants to management to reflect them in business management.

Item	Unit	FYE2021	FYE2022	FYE2023
IR briefings	Times	6	6	6
Total number of discussions with domestic and overseas institutional investors and securities analysts (number of ESG-related discussions)	Events	268 (17)	365 (14)	324 (23)
IR briefings for individual investors (cumulative number of live and on-demand video views)	Times	2 (1,249)	3 (3,485)	2 (3,858)
Number of people attending the General Meeting of Shareholders	People	25*	35*	55

\* The number of people who attended the General Meeting of Shareholders has been low in the interest of preventing the spread of COVID-19.

[Please see here.](#)

### Other Stakeholders

Regarding our social responsibility and relationships with stakeholders, a section of the NSHD Code of Conduct establishes “2. Accountability & Respect for Stakeholders.” The President CEO has made concerted efforts to spread and entrench an awareness of this among Group employees.

[Please see here.](#)

# Corporate Data

## Company Overview (As of March 31, 2023)

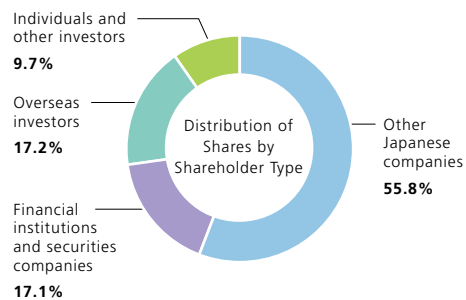
**Company name:** Nippon Sanso Holdings Corporation  
**Date founded:** October 30, 1910  
**Paid-in capital:** ¥37,344 million  
**Head office:** 1-3-26 Koyama, Shinagawa-ku, Tokyo 142-0062, Japan  
**Number of employees:** 19,579  
**Independent public accountants:** Ernst & Young ShinNihon LLC

**Stock exchange listing:** Tokyo Stock Exchange Prime Market  
**Transfer agent:** Mizuho Trust & Banking Co., Ltd.  
 2-8-4 Izumi, Suginami-ku, Tokyo 168-8507, Japan  
 Tel (toll free in Japan): 0120-288-324  
 Contact: Investor Relations, Group Finance and Accounting Office, Nippon Sanso Holdings Corporation  
 Tel: +81-3-5788-8512

## Share and Shareholder Information (As of March 31, 2023)

### Status of Shares

Number of shares authorized: 1,600,000,000  
 Number of shares issued: 433,092,837  
 Number of shareholders: 18,315



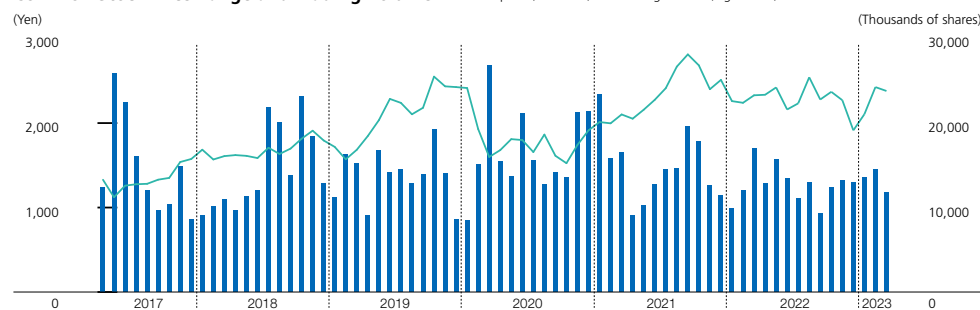
### Major Shareholders

(10 Largest Shareholders, Shares Held Rounded Down to the Nearest Thousand)

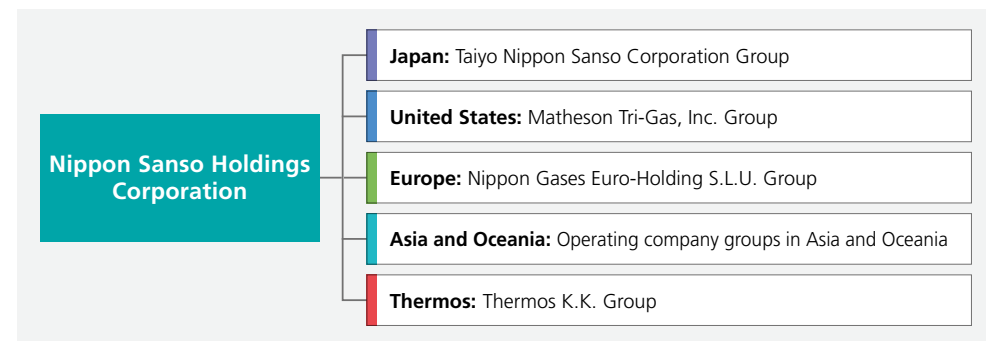
	Thousands of shares owned	Percentage of total (%)
Mitsubishi Chemical Group Corporation	218,996	50.59
The Master Trust Bank of Japan, Ltd. (trust account)	33,058	7.64
Client shareholding association of Taiyo Nippon Sanso Corporation	17,176	3.97
Custody Bank of Japan, Ltd. (trust account)	12,674	2.93
Meiji Yasuda Life Insurance Company	9,006	2.08
Mizuho Bank, Ltd.	4,332	1.00
JP MORGAN CHASE BANK	4,041	0.93
THE BANK OF NEW YORK MELLON (INTERNATIONAL) LIMITED	3,795	0.88
The Norinchukin Bank	3,500	0.81
Shareholding association of Nippon Sanso Holdings Corporation	3,099	0.72

\* Our Company holds 185,000 treasury shares.  
 The shareholding ratio is calculated based on the total number of issued shares, excluding treasury shares.

### Common Stock Price Range and Trading Volume



## Group Organization (As of March 31, 2023)



## Main Affiliated Companies (As of March 31, 2023)

### Taiyo Nippon Sanso Corporation

1-3-26 Koyama, Shinagawa-ku, Tokyo 142-8558, Japan  
 Tel: +81-3-5788-8000

### Matheson Tri-Gas, Inc.

909 Lake Carolyn Parkway, Suite 1300, Irving, TX 75039, U.S.A.  
 Tel: +1-972-560-5700

### Nippon Gases Euro-Holding S.L.U.

Calle Orense, 11-9o E-28020 Madrid Spain  
 Tel: +34-91-453-72-00

### Matheson Gas Products Korea, Co., Ltd.

94, Eumbongmyeon-ro, Eumbong-myeon, Asan-si, Chungcheongnam-do, South Korea 31443  
 Tel: +82-41-539-7400

### Shanghai Taiyo Nippon Sanso Gas Co., Ltd.

No.1959, Zhuanxing Road, Xinzhuang Industry District, Shanghai, P.R. China  
 Tel: +86-21-6442-2966

### Taiyo Nippon Sanso Trading (Shanghai) Co., Ltd.

1601, New Bund International Square, No.90 Qirong Road, Pudong New Area, Shanghai China  
 Tel: +86-21-5835-8700

### Nippon Sanso Taiwan, Inc.

5F-1 No. 1 Sec. 3 Gongdao 5th Road, East Dist., Hsinchu City 30069, Taiwan, R.O.C. (TFC ONE Building)  
 Tel: +886-3-572-6588

### Nippon Sanso Ingasco, Inc.

One Corporate Center, 23rd Floor, Dona Julia Vargas Avenue, Corner Meralco Avenue, Ortigas Center, Pasig City 1605, Philippines  
 Tel: +63-2-8626-1504

### Nippon Sanso Vietnam Joint Stock Company

No. 33, Road 3A, Bien Hoa Industrial Zone II, Bien Hoa City, Dong Nai Province, Vietnam  
 Tel: +84-251-3836706~09

### Nippon Sanso (Thailand) Co., Ltd.

282 Bangbon 3 Road, Kwaeng Nongkhaem, Khet Nongkhaem, Bangkok 10160, Thailand  
 Tel: +66-2-445-5010

### Leeden National Oxygen Ltd.

1 Shipyard Road, Singapore 628128  
 Tel: +65-6266-4868

### Taiyo Nippon Sanso India Pvt. Ltd.

A-201, ICC Trade Towers, Senapati Bapat Road, Pune, India 411016  
 Tel: 91-20-30237000

### Supagas Pty Ltd

5 Benson Road, Ingleburn, NSW 2565, Australia  
 Tel: +61-2-8788-4444

### Thermos K.K.

21F Mita NN Bldg., 4-1-23 Shiba, Minato-ku, Tokyo 108-8450, Japan  
 Tel: +81-3-5730-0130



# Awards

## Japan

Designated as “Health & Productivity Management Outstanding Organization 2023 (White 500)” and “Sports Yell Company 2023”

Nippon Sanso Holdings and Taiyo Nippon Sanso have been designated by Nippon Kenko Kaigi as “Health & Productivity Management Outstanding Organization 2023 (White 500)” and Taiyo Nippon Sanso has been designated by the Sports Agency as “Sports Yell Company 2023.”



## United States

Matheson Tri-Gas Received Champions of Sustainability Award from Salt River Project

Matheson Tri-Gas received Champions of Sustainability Award from the Salt River Project, a publicly owned electric utility in the United States, for its efforts to save electricity at its production plants during the summer power demand period.



## Europe

NGE Received Four EIGA (European Industrial Gas Association) 2022 Awards

Nippon Gases Euro-Holding (NGE) received four top awards from EIGA for its safety and environmental initiatives.



## Operating Company Groups in Asia and Oceania

Nippon Sanso Ingasco Received a Letter of Appreciation from the Philippines Government

Nippon Sanso Ingasco received a letter of appreciation from the Philippines government for its continued prompt and reliable supply of medical oxygen despite the spread of COVID-19.



Nippon Sanso Vietnam Received the Typical Enterprise Award

Nippon Sanso Vietnam received the Typical Enterprise Award from Ba Ria-Vung Tau Province for its contribution to the local community through the prompt and reliable supply of medical oxygen despite the spread of COVID-19.



Nippon Sanso Thailand Received Awards from the Thailand Institute of Occupational Safety and Health

Nippon Sanso Thailand received awards from the Thailand Institute of Occupational Safety and Health, which is conducting Zero Accident Campaign 2022, for six factories that have maintained zero lost time injury accidents.



Nippon Sanso Thailand Received a Letter of Appreciation from the Northern Industrial Estate

Nippon Sanso Thailand received a letter of appreciation from the Northern Industrial Estate for its work in developing a forest fire prevention line in the Ton Nam Forest in Thailand.



Shanghai Taiyo Nippon Sanso Received a Letter of Appreciation from Shanghai Minhang District

Shanghai Taiyo Nippon Sanso received a letter of appreciation from Shanghai Minhang District for its continued prompt and reliable supply of medical oxygen despite the spread of COVID-19.

Supagas Selected as the “Most Satisfied Customers” Brand in LP Gas Category for the Third Consecutive Year by Canstar Blue

Supagas has been selected as the “Most Satisfied Customers” brand in the Australian LP gas category for the third consecutive year by Canstar Blue, a consumer review and product comparison website for the Oceania region.



# Editorial Policy



We strive to guarantee management transparency and believe in the importance of building relationships of trust with stakeholders through dialogue. Accordingly, in this report we place a priority on ensuring that stakeholders understand our overall value creation process.

Since FYE2017, we have published an annual integrated report. The purpose of this report is to provide financial information, including that related to corporate

strategies and operating conditions, and non-financial information, such as that related to environmental protection and social contribution initiatives and to corporate governance. Information has been selected with consideration to relevance to give shareholders, investors, and other stakeholders an accurate overall understanding of the Nippon Sanso Holdings Group, its operating activities, and its approach to value creation. In editing the report, we have referred to the IFRS Foundation's *Integrated Reporting Framework*, and the *Guidance for Integrated Corporate Disclosure and Company-Investor Dialogue for Collaborative Value Creation*, published by the Ministry of Economy, Trade and Industry (METI).

## Reporting Boundary

In the 2023 report, we have focused on communicating the business activities and initiatives in each specific region of operations. To describe the activities of the individual companies or groups, we have applied the following expression standard. Furthermore, the terms "Nippon Sanso Holdings Group" or "the Group" may be used for convenience to refer to Nippon Sanso Holdings and its Group companies. These terms may also be used in cases where there is no beneficial purpose in identifying a specific company.

## Expression Standard

- Formal names (e.g., Nippon Sanso Holdings Corporation): Used primarily in the formal titles of corporate officers, executive officers, and employees
- Truncated formal names (e.g., Nippon Sanso Holdings): In principle, used as the basic way of expressing company names
- Acronyms (e.g., NSHD): Used as a simple expression to allow the reader to identify a particular company in the context (e.g., in dialogue)

- Generic expressions (e.g., the Company, the Group): Capitalized to describe Nippon Sanso Holdings or the Nippon Sanso Holdings Group, and used with lower case (e.g., the company, the group) when describing segment operating companies

## Period Covered

Data in this report is for FYE2023, ended March 31, 2023, although some FYE2024 activities and future issues and targets are also featured.

## Disclosure System

This report contains important basic information that Nippon Sanso Holdings Corporation particularly wishes to communicate to stakeholders. In the 2023 edition, we have utilized links to our corporate website and guidance to relevant pages in an effort to increase the usability of the report.

# Editorial Note

## Publication Process of This Report

In publishing Integrated Report 2023, the Group worked as one under the Production Committee led by CFO Alan David Draper, gathering and collating information on initiatives in each business and region for the entire Group while keeping in mind our daily conversations with shareholders and investors, the results of investor survey questionnaires, and feedback and requests received from a wide range of stakeholders.

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Secretariat: Keita Kajiyama, Takayoshi Umehara, Soichiro Momiyama

## People Who Helped to Produce This Report (in no particular order)

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**Thermos K.K.** Tomoko Hayakawa

## Editorial Note

Thank you for taking the time to read Integrated Report 2023 to the end. Each year, in producing the integrated report, we listen to the valuable opinions and impressions of our stakeholders who have read it, and we hope to develop the contents into something that they will find interesting and readable. This year, we aimed to make the volume more concise and readable, while at the same time improving quality and quantity of information. We have also taken advantage of the fact that the report is published on the web, rather than on paper, by providing links throughout the report so that those who wish to read more in detail can easily access detailed information. In addition, we have continued to include multiple round-table discussions and member introductions in the hope that by introducing not only management but also as many of our nearly 20,000 employees as possible, you can get a sense of the atmosphere and enthusiasm of our Company.

We hope that this integrated report will help you better understand and become more interested in our Group. We will continue to enhance this report through various forms of communication with stakeholders. We would therefore appreciate your continued frank opinions and support.

Finally, I would like to thank the many colleagues within the Nippon Sanso Holdings Group for their direct and indirect cooperation in the production of this report. We would like to express our deepest gratitude to all of you for your cooperation.

## Keita Kajiyama

General Manager, Investor Relations, Group Finance and Accounting Office, Nippon Sanso Holdings Corporation

# Appendix

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## Sustainability Data

## Environment

		Unit	FYE2021	FYE2022	FYE2023
<b>Greenhouse Gas (GHG) Emissions</b>					
GHG Emissions Scope 1		Thousands of tonnes CO <sub>2</sub> e	987	1,087	<b>1,103</b>
GHG Emissions Scope 2		Thousands of tonnes CO <sub>2</sub> e	4,664	4,834	<b>4,765</b>
GHG Emissions Scope 3—Total for the Following Categories		Thousands of tonnes CO <sub>2</sub> e	4,341	3,408	<b>3,341</b>
Category 1 Purchased goods and services		Thousands of tonnes CO <sub>2</sub> e	883	897	<b>911</b>
Category 2 Capital goods		Thousands of tonnes CO <sub>2</sub> e	44	42	<b>67</b>
Category 3 Fuel- and energy-related activities not included in Scope 1 and Scope 2		Thousands of tonnes CO <sub>2</sub> e	248	276	<b>261</b>
Category 4 Upstream transportation and distribution (Including transportation services whose cost is borne by the Company)		Thousands of tonnes CO <sub>2</sub> e	37	39	<b>36</b>
Category 5 Waste generated in operations		Thousands of tonnes CO <sub>2</sub> e	2	1	<b>1</b>
Category 6 Business travel		Thousands of tonnes CO <sub>2</sub> e	1	1	<b>1</b>
Category 7 Employee commuting		Thousands of tonnes CO <sub>2</sub> e	3	3	<b>3</b>
Category 8 Upstream leased assets		Thousands of tonnes CO <sub>2</sub> e	N/A	N/A	<b>N/A</b>
Category 9 Downstream transportation and distribution		Thousands of tonnes CO <sub>2</sub> e	N/A	N/A	<b>N/A</b>
Category 10 Processing of sold products		Thousands of tonnes CO <sub>2</sub> e	N/A	N/A	<b>N/A</b>
Category 11 Use of sold products		Thousands of tonnes CO <sub>2</sub> e	2,436	1,466	<b>1,382</b>
Category 12 End-of-life treatment of sold products		Thousands of tonnes CO <sub>2</sub> e	N/A	N/A	<b>N/A</b>
Category 13 Downstream leased assets		Thousands of tonnes CO <sub>2</sub> e	N/A	N/A	<b>N/A</b>
Category 14 Franchises		Thousands of tonnes CO <sub>2</sub> e	N/A	N/A	<b>N/A</b>
Category 15 Investments		Thousands of tonnes CO <sub>2</sub> e	687	683	<b>679</b>

Reporting boundary: Scope 1 emissions and Scope 2 emissions represent Nippon Sanso Holdings and its main consolidated subsidiaries. For information on Scope 3 emissions aggregation, please refer to [here](#).

Scope 1 emissions: Direct emissions occurring from sources owned or controlled by the company

Scope 2 emissions: Indirect emissions from the use of electricity, steam, and heat

Scope 3 emissions: Indirect emissions other than Scope 2 emissions

Calculation methods: GHG emissions in Japan are calculated using emission factors provided in Japan's Act on Promotion of Global Warming Countermeasures (for electricity, up until FYE2021 the basic emission factors for each electricity provider and from FYE2022 the adjusted emission factors for each provider). For GHG emissions overseas, Scope 1 emissions are calculated using emission factors set forth in Japan's Act on Promotion of Global Warming Countermeasures. Scope 2 emissions are calculated using country-specific emission factors published by the IEA. However, for electricity in Europe, beginning FYE2021 a separate emission factor for each electricity provider is used, and emissions are calculated making reference to the Guarantee of Origin. Furthermore, from FYE2022, emissions from electricity use at Taiyo Gases Co., Ltd. and Top Thermo Manufacturing (Malaysia) Sdn. Bhd are calculated using emissions coefficients for each electricity provider, while emissions from electricity use in the United States, China, Taiwan, and Singapore are calculated using published grid coefficients for each country. Please refer to [here](#) for calculation method for Scope 3 emissions.

Indicators with mark have been assured by KPMG AZSA Sustainability Co., Ltd. for FYE2023.

		Unit	FYE2021	FYE2022	FYE2023
<b>Contributions to Environmental Protection through Products</b>					
GHG Emission Reduction Contribution	Products and Services	Thousands of tonnes CO <sub>2</sub> e	2,892	3,176	<b>3,556</b>
	Industrial Gases	Thousands of tonnes CO <sub>2</sub> e	2,174	3,689	<b>3,752</b>

For information on the reporting boundary and the method of calculation, please refer to [here](#).



## Sustainability Data

## Environment

	Unit	FYE2021	FYE2022	FYE2023
<b>Energy Usage*1, *2</b>				
Energy Consumption ☐	GWh	12,570	14,273	<b>13,945</b>
Electric power	GWh	9,592	10,776	<b>10,475</b>
Fuels	GWh	2,779	3,293	<b>3,269</b>
Heat	GWh	199	204	<b>201</b>

Reporting boundary: Nippon Sanso Holdings and its main consolidated subsidiaries

The energy of the consumed fuels are calculated based on the gross calorific values specified in Japan's Act on the Rational Use of Energy.

\*1 Until to FYE2022, purchased electricity and purchased steam were converted into a primary energy amount. However, from FYE2023, we have changed to a method of not performing the conversion. Figures presented in previous fiscal years have been retroactively amended due to this revision.

\*2 From FYE2023, the unit of energy usage was changed from TJ to GWh.

<b>Environmental Impact</b>				
Nitrogen oxide (NOx) emissions ☐	Tonnes	1.8	2.0	<b>2.6</b>
Sulfur oxide (SOx) emissions ☐	Tonnes	1.0	1.1	<b>1.1</b>
Particulate emissions ☐	Tonnes	0.1	0.1	<b>0.1</b>
Volatile organic compound (VOC) emissions ☐	Tonnes	5	8	<b>5</b>
Releases of substances designated under the Pollutant Release and Transfer Register (PRTR) ☐	Tonnes	8	10	<b>8</b>

Reporting boundary: Consolidated subsidiaries in Japan, including Taiyo Nippon Sanso Corporation

Water Usage					
Breakdown of sources of fresh water withdrawn	Water Withdrawal ☐	Thousands of m³	43,345	45,911	<b>44,988</b>
	Water supply from local government	Thousands of m³	14,723	17,589	<b>18,161</b>
	Municipal water	Thousands of m³	4,901	5,757	<b>6,332</b>
	Industrial water	Thousands of m³	9,823	11,832	<b>11,829</b>
	Groundwater	Thousands of m³	2,578	2,710	<b>2,366</b>
	Surface water	Thousands of m³	26,016	25,582	<b>24,440</b>
	Other	Thousands of m³	28	30	<b>21</b>

Reporting boundary: Gas production plants operated by consolidated subsidiaries of Nippon Sanso Holdings in Japan, business locations with facilities specified under the Water Pollution Prevention Act, and main overseas consolidated subsidiaries

<b>Waste</b>				
Waste generated*1 ☐	Tonnes	14,715	14,352	<b>15,392*5</b>
Waste disposed of as landfill*2 ☐	Tonnes	7,152	3,875	<b>5,052*5</b>
Hazardous waste generated*3 ☐	Tonnes	1,799	2,015	<b>2,000*5</b>
Waste recycled*4	Tonnes	4,885	7,623	<b>7,975*5</b>

Reporting boundary: Nippon Sanso Holdings and its main consolidated subsidiaries

Waste generated by consolidated subsidiaries in Japan is the volume for which the Company issued a manifest.

\*1 Includes valuable materials \*2 Includes residue after intermediate treatment outside the Group company \*3 Includes specially controlled industrial waste

\*4 We consider waste collected to be the amount of resources recycled. \*5 Due to restrictions on availability of information, of the consolidated subsidiaries presented on P.91, Continental Carbonic Products, Inc. is not included among the aggregated total.

<b>Others</b>				
Number of environmental violations*	Incidents	0	0	<b>0</b>
Amount of fines paid for environmental violations*	Millions of yen	0	0	<b>0</b>

\* From FYE2023, values presented in past fiscal years have been retroactively amended.

The figures for chemical oxygen demand (COD) emissions, nitrogen emissions in wastewater, and phosphorus emissions have been omitted from disclosure since the amounts of these emissions have been immaterial. The Nippon Sanso Holdings Group uses water primarily for indirect cooling, and its impacts on water quality are therefore not large. Taiyo Nippon Sanso and its Japanese subsidiaries have five business sites that are subject to restrictions on the concentration of COD, nitrogen, and phosphorous emissions in wastewater. The total amounts of COD, nitrogen, and phosphorous emissions for all five sites amount to less than one tonne each.

	Unit	FYE2021	FYE2022	FYE2023
<b>GHG Emissions</b>				
GHG Scope 1 + Scope 2 ☐	Thousands of tonnes CO <sub>2</sub> e	5,651	5,921	<b>5,868</b>
Japan	Thousands of tonnes CO <sub>2</sub> e	2,014	2,253	<b>2,054</b>
the United States	Thousands of tonnes CO <sub>2</sub> e	2,066	2,130	<b>2,251</b>
Europe	Thousands of tonnes CO <sub>2</sub> e	1,049	885	<b>916</b>
Asia and Oceania	Thousands of tonnes CO <sub>2</sub> e	511	638	<b>632</b>
Thermos	Thousands of tonnes CO <sub>2</sub> e	11	15	<b>15</b>
<b>Energy Consumption*1, *2</b>				
Total ☐	GWh	12,570	14,273	<b>13,945</b>
Japan	GWh	3,580	3,978	<b>3,757</b>
the United States	GWh	5,215	5,917	<b>6,106</b>
Europe	GWh	2,753	3,180	<b>2,889</b>
Asia and Oceania	GWh	1,002	1,171	<b>1,167</b>
Thermos	GWh	20	27	<b>26</b>
<b>Electricity Consumption*3</b>				
Total ☐	GWh	9,592	10,776	<b>10,475</b>
Japan	GWh	3,402	3,783	<b>3,552</b>
the United States	GWh	2,824	3,114	<b>3,249</b>
Europe	GWh	2,442	2,762	<b>2,585</b>
Asia and Oceania	GWh	908	1,094	<b>1,066</b>
Thermos	GWh	16	23	<b>23</b>
<b>Water Withdrawal</b>				
Total ☐	Thousands of m <sup>3</sup>	43,345	45,911	<b>44,988</b>
Japan	Thousands of m <sup>3</sup>	6,760	7,464	<b>7,445</b>
the United States	Thousands of m <sup>3</sup>	7,074	7,293	<b>8,464</b>
Europe	Thousands of m <sup>3</sup>	27,292	27,029	<b>25,136</b>
Asia and Oceania	Thousands of m <sup>3</sup>	2,049	3,929	<b>3,744</b>
Thermos	Thousands of m <sup>3</sup>	170	196	<b>199</b>
<b>Waste Generated (Including Valuable Materials)*4</b>				
Total ☐	Tonnes	14,715	14,352	<b>15,392*5</b>
Japan	Tonnes	5,505	4,187	<b>3,909</b>
the United States	Tonnes	5,691	3,486	<b>5,415*5</b>
Europe	Tonnes	758	2,909	<b>3,068</b>
Asia and Oceania	Tonnes	395	1,399	<b>602</b>
Thermos	Tonnes	2,366	2,371	<b>2,398</b>

\*1 Until to FYE2022, purchased electricity and purchased steam were converted into a primary energy amount. However, from FYE2023, we have changed to a method of not performing the conversion. Figures presented in previous fiscal years have been retroactively amended due to this revision. \*2 From FYE2023, the unit of energy usage was changed from thousand GJ to GWh. \*3 From FYE2023, the unit of electricity usage was changed from Millions of kWh to GWh. \*4 Waste generated by the consolidated subsidiaries of Nippon Sanso Holdings in Japan is the volume for which the Company issued a manifest. \*5 As with the reporting boundary for "Waste" on the left, of the consolidated subsidiaries presented on P.91, Continental Carbonic Products, Inc. is not included among the aggregated total.

The names of reportable segments were previously "Gas Business in Japan," "Gas Business in the United States," "Gas Business in Europe," "Gas Business in Asia and Oceania," and "Thermos Business." Effective from FYE2023, these names were changed to "Japan," "United States," "Europe," "Asia and Oceania," and "Thermos," respectively.

## Sustainability Data

## Society

	Unit	FYE2021	FYE2022	FYE2023
<b>Employees and Diversity (Consolidated)</b>				
Employees* ㊦	Number of individuals	19,155	19,172	<b>19,541</b>
Japan	Number of individuals	6,295	6,465	<b>6,391</b>
the United States	Number of individuals	4,534	4,406	<b>4,532</b>
Europe	Number of individuals	2,884	2,912	<b>3,013</b>
Asia and Oceania	Number of individuals	4,114	4,102	<b>4,267</b>
Thermos	Number of individuals	1,328	1,287	<b>1,338</b>
Employees by gender				
Male ㊦	Number of individuals	15,307	15,233	<b>15,651</b>
Female ㊦	Number of individuals	3,848	3,939	<b>3,890</b>
Employees by age group (Composition ratio)				
20s and below	%	16.6	16.4	<b>15.7</b>
30s	%	24.6	25.0	<b>25.0</b>
40s	%	28.6	30.1	<b>27.0</b>
50s and above	%	30.2	28.5	<b>32.4</b>
Years of consecutive service				
Overall average	Years	11.3	11.4	<b>11.6</b>
Men	Years	11.7	11.5	<b>11.8</b>
Women	Years	9.5	11.1	<b>11.4</b>
Average age	Years	42.3	44.2	<b>44.1</b>
New hires	Number of individuals	1,893	2,917	<b>3,161</b>
Employee turnover rate	%	5.7	7.1	<b>6.9</b>
Female employees as a percentage of the total number of employees ㊦	%	20.1	20.5	<b>19.9</b>
Female managers as a percentage of total managerial positions ㊦	%	14.6	14.8	<b>14.5</b>

\* Aggregated from actual figures of the Nippon Sanso Holdings Group companies as of the end of each fiscal year. Due to differences in the reporting periods, part of the data includes figures as of the end of December.

<b>Employees and Diversity (Non-Consolidated)</b>				
Employees	Number of individuals	81*	86*	<b>88*</b>
Employees by gender				
Male	Number of individuals	66	71	<b>72</b>
Female	Number of individuals	15	15	<b>16</b>
Female employees as a percentage of the total number of employees	%	18.5	17.4	<b>18.2</b>
Female managers as a percentage of total managerial positions	%	4.1	3.6	<b>3.6</b>

\* Includes employees working concurrently for Taiyo Nippon Sanso Corporation (47 employees in FYE2021, 49 employees in FYE2022, 47 employees in FYE2023)

	Unit	FYE2021	FYE2022	FYE2023
<b>Employees, Diversity, and Work-Life Balance (Registered employees of Taiyo Nippon Sanso Corporation)</b>				
Employees	Number of individuals	2,065	2,075	<b>2,086</b>
Employees by gender				
Male	Number of individuals	1,789	1,784	<b>1,780</b>
Female	Number of individuals	276	291	<b>306</b>
Employees by age group (Composition ratio)				
20s and below ㊦	%	19.5	19.8	<b>20.2</b>
30s ㊦	%	20.1	20.3	<b>20.5</b>
40s ㊦	%	27.6	25.7	<b>24.2</b>
50s and above ㊦	%	32.9	34.2	<b>35.1</b>
Years of consecutive service				
Overall average	Years	17.8	17.8	<b>18.7</b>
Men	Years	18.5	18.6	<b>19.4</b>
Women	Years	12.9	13.3	<b>14.0</b>
Average age ㊦	Years	42.3	42.4	<b>42.7</b>
New hires ㊦	Number of individuals	102	85	<b>88</b>
Employee turnover rate*1 ㊦	%	2.8	3.3	<b>3.7</b>
Companywide employee training hours*2				
New employee training hours	Hours	32,160	16,320	<b>27,360</b>
Employee training hours	Hours	17,716	21,504	<b>24,052</b>
Union members ㊦	Number of individuals	1,195	1,214	<b>1,232</b>
Union members as a percentage of the total number of employees ㊦	%	57.8	58.5	<b>59.1</b>
Layoffs*3 ㊦	Number of individuals	0	0	<b>0</b>
Female employees as a percentage of total number of employees	%	13.4	14.0	<b>14.7</b>
Female managers as a percentage of total managerial positions	%	1.5	1.5	<b>1.8</b>
Employment ratio of persons with disabilities (as of June 1 of each fiscal year) ㊦	%	2.3	2.5	<b>2.5</b>
Number of employees reemployed after retirement ㊦	Number of individuals	74	82	<b>86</b>
Employees using childcare leave systems ㊦	Number of individuals	16	19	<b>39</b>
Men ㊦	Number of individuals	6	6	<b>21</b>
Women ㊦	Number of individuals	10	13	<b>18</b>
Employees using nursing care leave or long-term nursing care leave ㊦	Number of individuals	0	0	<b>0</b>
Usage rate for annual paid leave** ㊦	%	60.2	61.5	<b>67.0</b>
Employees using volunteer leave system ㊦	Number of individuals	0	0	<b>0</b>

\*1 Employee turnover rate is the number of employees leaving the Company during the fiscal year (including mandatory-age retirees and excluding personnel transferring to other Group companies) divided by the number of employees at the end of the fiscal year \*2 Reporting boundary: Training hours of Taiyo Nippon Sanso Corporation employees and Taiyo Nippon Sanso Group employees who took training held by Taiyo Nippon Sanso Corporation \*3 Employees leaving the Company for reasons attributable to the Company (dismissals) \*4 The number of new days granted in the reporting year is the denominator. The number of days used in the reporting year is the numerator. The denominator does not include the number of days carried over from the previous fiscal year.

## Sustainability Data

### Society

	Unit	FYE2021	FYE2022	FYE2023
<b>Others (Consolidated)</b>				
Expenditures on social contribution initiatives	Millions of yen	109.7	84.5	<b>78.3</b>

<b>Occupational Health and Safety</b>				
Frequency rate of occupational accidents resulting in lost workdays (Number of injuries / fatalities due to occupational accidents per million work hours)				
Nippon Sanso Holdings Group (Including Taiyo Nippon Sanso Group) ㊦	—	2.51	2.14* <sup>1</sup>	<b>1.56</b>
Taiyo Nippon Sanso Group ㊦	—	0.64	0.52	<b>0.81</b>
Number of fatalities (Consolidated)* <sup>2</sup>		1	1	<b>0</b>
Employees	Number of individuals	1	0	<b>0</b>
Contractors	Number of individuals	0	1	<b>0</b>

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

\*1 To improve the accuracy of data aggregation, values presented in past fiscal year have been retroactively amended.

\*2 From FYE2023, values presented in past fiscal years have been retroactively amended.

## Reporting Boundary

### Main consolidated subsidiaries

Consolidated subsidiaries in Japan including Taiyo Nippon Sanso Corporation; Matheson Tri-Gas, Inc.; Continental Carbonic Products, Inc.; Western International Gas & Cylinders, Inc.; Nippon Gases Euro-Holding S.L.U. and its consolidated subsidiaries; Leeden National Oxygen Ltd.; Leeden Gases Sdn. Bhd.; Nippon Sanso Ingasco, Inc.; Nippon Sanso Ingasco Philippines, Inc.; Nippon Sanso Ingasco Clark, Inc.; Nippon Sanso (Thailand) Co., Ltd.; Ayutthaya Industrial Gases Co., Ltd.; Taiyo Gases Co., Ltd.; Nippon Sanso Vietnam Joint Stock Company; Taiyo Nippon Sanso India Pvt. Ltd.; Shanghai Taiyo Nippon Sanso Gas Co., Ltd.; Suzhou Taiyo Nippon Sanso Gas Co., Ltd.; Dalian Changxing Island Taiyo Nippon Sanso Gas Co., Ltd.; Dalian Taiyo Nippon Sanso Gas Co., Ltd.; Yangzhou Taiyo Nippon Sanso Semiconductor Gases Co., Ltd.; Matheson Gas Products Korea Co., Ltd.; Nippon Sanso Taiwan, Inc.; Taiyo Nippon Sanso Engineering Taiwan, Inc.; Fu Yang Gas Co., Ltd.; Supagas Pty Ltd; Nippon Sanso Myanmar Co., Ltd.; Top Thermo Manufacturing (Malaysia) Sdn. Bhd.; Vacuumtech Philippines Inc.

Beginning FYE2022, environmental data includes International Carbon Dioxide Co., Ltd., Nippon Gases Euro-Holding S.L.U. and its subsidiary filling sites, Leeden Gases Sdn. Bhd., and Matheson Gas Products Korea Co., Ltd. From FYE2023, data from eight consolidated subsidiaries in Japan, Continental Carbonic Products, Inc. and Western International Gas & Cylinders, Inc. were also included.

## Sustainability Data

## Governance

	Unit	FYE2021	FYE2022	FYE2023
<b>Activities of Committees</b>				
Management Configuration	Number of individuals	9	9	<b>9</b>
Internal directors	Number of individuals	7	6	<b>4</b>
Independent outside directors	Number of individuals	2	3	<b>5</b>
Directors serving concurrently as executive officers	Number of individuals	3	1	<b>1</b>
Percentage of directors serving concurrently as executive officers	%	33.3	11.1	<b>11.1</b>
Independent outside directors as a percentage of total Board of Directors' members	%	22.2	33.3	<b>55.6</b>
Female directors as a percentage of total Board of Directors' members	%	0.0	11.1	<b>22.2</b>
Term of appointment	Years	1	1	<b>1</b>
Frequency of Board of Directors' meetings	Times	11	14	<b>11</b>
Attendance at Board of Directors' meetings	%	98.0	98.4	<b>100.0</b>
Attendance of independent outside directors at Board of Directors' meetings	%	100.0	100.0	<b>100.0</b>
Number of directors attending less than 75% of Board of Directors' meetings	Number of individuals	0	0	<b>0</b>
Audit & Supervisory Board members	Number of individuals	4	4	<b>4</b>
Internal Audit & Supervisory Board members	Number of individuals	1	1	<b>1</b>
Independent outside Audit & Supervisory Board members	Number of individuals	2	2	<b>2</b>
Independent outside Audit & Supervisory Board members as a percentage of total Audit & Supervisory Board members	%	50.0	50.0	<b>50.0</b>
Female Audit & Supervisory Board members as a percentage of total Audit & Supervisory Board members	%	0.0	0.0	<b>0.0</b>
Frequency of Audit & Supervisory Board meetings	Times	16	17	<b>14</b>
Attendance at Audit & Supervisory Board meetings	%	100.0	100.0	<b>100.0</b>
Attendance of independent outside Audit & Supervisory Board members at Audit & Supervisory Board meetings	%	100.0	100.0	<b>100.0</b>
Number of Audit & Supervisory Board members attending less than 75% of Audit & Supervisory Board meetings	Number of individuals	0	0	<b>0</b>
Average age of directors and Audit & Supervisory Board members	Years	64.8	65.8	<b>66.1</b>
Number of executive officers	Number of individuals	7	6	<b>7</b>
Female executive officers as a percentage of total executive officers	%	0.0	0.0	<b>0.0</b>

	Unit	FYE2021	FYE2022	FYE2023
<b>Activities of Committees</b>				
Advisory Committee on Appointments and Remuneration				
Members	Number of individuals	3	5	<b>6</b>
Internal directors	Number of individuals	1	2	<b>1</b>
Independent outside directors	Number of individuals	2	3	<b>5</b>
Frequency of meetings	Times	6	10	<b>12</b>
Attendance	%	100.0	100.0	<b>100.0</b>
Management Committee				
Members	Number of individuals	13	13	<b>12</b>
Frequency of meetings	Times	6	11	<b>12</b>
Attendance* <sup>1</sup>	%	100.0	100.0	<b>100.0</b>
Investment Committee				
Members* <sup>2</sup>	Number of individuals	15	15	<b>15</b>
Frequency of meetings	Times	1	3	<b>2</b>
Attendance* <sup>1</sup>	%	93.3	93.3	<b>93.3</b>
Global Strategy Review Committee				
Members	Number of individuals	17	17	<b>17</b>
Frequency of meetings	Times	1	1	<b>1</b>
Attendance	%	100.0	100.0	<b>100.0</b>
Global Risk Management Committee				
Members	Number of individuals	17	18	<b>18</b>
Frequency of meetings	Times	1	1	<b>1</b>
Attendance	%	100.0	100.0	<b>100.0</b>
Global Compliance Committee				
Members* <sup>3</sup>	Number of individuals	20	8	<b>8</b>
Frequency of meetings* <sup>4</sup>	Times	0	1	<b>1</b>
Attendance	%	—	87.5	<b>100.0</b>

\*<sup>1</sup> Average attendance rate \*<sup>2</sup> Excluding additional attendees and Secretariat\*<sup>3</sup> Excluding attendees and Secretariat from FYE2022 \*<sup>4</sup> Not held during FYE2021 due to COVID-19



## Sustainability Data

## Governance

	Unit	FYE2021	FYE2022	FYE2023
<b>Remuneration for Officers</b>				
Remuneration for directors (excluding outside directors)				
Total	Millions of yen	263	200	<b>152</b>
Basic remuneration	Millions of yen	169	141	<b>102</b>
Corporate political contributions	Millions of yen	94	59	<b>47</b>
Non-financial KPI-linked bonuses	Millions of yen	—	—	<b>3</b>
Remuneration for Audit & Supervisory Board members (excluding independent outside members)				
Total	Millions of yen	27	28	<b>28</b>
Basic remuneration	Millions of yen	27	28	<b>28</b>
Remuneration for independent outside directors				
Total	Millions of yen	100	108	<b>129</b>
Basic remuneration	Millions of yen	100	108	<b>129</b>
Remuneration for independent auditors				
Total	Millions of yen	210	222	<b>206</b>
Remuneration for audit services	Millions of yen	209	218	<b>205</b>
Other remuneration for independent auditors	Millions of yen	1	4	<b>1</b>
<b>Others</b>				
Anti-takeover measures	—	Not adopted	Not adopted	<b>Not adopted</b>
Code of ethics	—	Adopted	Adopted	<b>Adopted</b>
Policy on transparency of tax affairs	—	Adopted (Currently disclosed on the Company website)	Adopted (Currently disclosed on the Company website)	Adopted (Currently disclosed on the Company website)
Corporate political contributions*	Millions of yen	0.0	0.2	<b>0.0</b>
Violations of rules for the prevention of corruption	Number of violations	0	0	<b>0</b>
Monetary penalties incurred as a result of violations of guidelines for the prevention of corruption	Millions of yen	0	0	<b>0</b>
Rate of receiving compliance training	%	—	—	<b>99.7</b>

\* Reporting boundary is consolidated from FYE2022.

## Intellectual Property and Research and Development

	Unit	FYE2021	FYE2022	FYE2023
<b>Intellectual Property</b>				
Registered patents				
Total	Patents	1,578	1,591	<b>1,682</b>
Japan	Patents	925	941	<b>1,038</b>
Overseas	Patents	653	650	<b>644</b>
<b>Research and Development</b>				
Research and Development				
Total	Millions of yen	3,315	3,569	<b>3,515</b>
Japan	Millions of yen	2,694	2,872	<b>3,054</b>
the United States	Millions of yen	589	659	<b>429</b>
Thermos	Millions of yen	32	37	<b>31</b>

\* Sum of patents at all operating companies. From FYE2023, the figure includes the consolidated subsidiaries of each operating company.

## Sustainability Data

### Independent Assurance Report

#### Independent Assurance Report

To the Representative Director, President CEO of Nippon Sanso Holdings Corporation

We were engaged by Nippon Sanso Holdings Corporation (the “Company”) to undertake a limited assurance engagement of the environmental and social performance indicators marked with ☑ (the “Indicators”) for the period from April 1, 2022 to March 31, 2023 included in its Integrated Report 2023 (English version) (the “Report”) for the fiscal year ended March 31, 2023.

#### The Company's Responsibility

The Company is responsible for the preparation of the Indicators in accordance with its own reporting criteria (the “Company's reporting criteria”), as described in the Report.

#### Our Responsibility

Our responsibility is to express a limited assurance conclusion on the Indicators based on the procedures we have performed. We conducted our engagement in accordance with the ‘International Standard on Assurance Engagements (ISAE) 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information’ and the ‘ISAE 3410, Assurance Engagements on Greenhouse Gas Statements’ issued by the International Auditing and Assurance Standards Board. The limited assurance engagement consisted of making inquiries, primarily of persons responsible for the preparation of information presented in the Report, and applying analytical and other procedures, and the procedures performed vary in nature from, and are less in extent than for, a reasonable assurance engagement. The level of assurance provided is thus not as high as that provided by a reasonable assurance engagement. Our assurance procedures included:

- Interviewing the Company's responsible personnel to obtain an understanding of its policy for preparing the Report and reviewing the Company's reporting criteria.
- Inquiring about the design of the systems and methods used to collect and process the Indicators.
- Performing analytical procedures on the Indicators.
- Examining, on a test basis, evidence supporting the generation, aggregation and reporting of the Indicators in conformity with the Company's reporting criteria, and recalculating the Indicators.

- Visiting the Kurashiki Plant of JFE Sanso Center Co., Ltd. and the Lemont2 Plant of Matheson Tri-Gas, Inc. selected on the basis of a risk analysis.
- Evaluating the overall presentation of the Indicators.

#### Conclusion

Based on the procedures performed, as described above, nothing has come to our attention that causes us to believe that the Indicators in the Report are not prepared, in all material respects, in accordance with the Company's reporting criteria as described in the Report.

#### Our Independence and Quality Management

We have complied with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which includes independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. In accordance with International Standard on Quality Management 1, we design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

/s/ Kazuhiko Saito

Kazuhiko Saito, Partner, Representative Director  
KPMG AZSA Sustainability Co., Ltd.

Tokyo, Japan

September 14, 2023

Notes to the Reader of Independent Assurance Report:

This is a copy of the Independent Assurance Report and the original copies are kept separately by the Company and KPMG AZSA Sustainability Co., Ltd.



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